This form is used for documenting multiple property groups relating to one or several historic contexts. See instructions in *How to Complete the Multiple Property Documentation Form* (National Register Bulletin 16B). Complete each item by entering the requested information. For additional space, use continuation sheets (Form 10-900-a). Use a typewriter, word processor, or computer to complete all items.

____ New Submission ____ Amended Submission

A. Name of Multiple Property Listing

Agricultural Resources of Pennsylvania, c1700-1960

B. Associated Historic Contexts

(Name each associated historic context, identifying theme, geographical area, and chronological period for each.)

XIV. Lehigh County Potato Region, c1850-1910
XV. York-Adams Diversified Field Crops, Cannery Crops, and Livestock, c 1750-1960
XVI. Lancaster Plain Historic Agricultural Region, c.1730-1960
XV. The Great Valley, c 1800-1960
XVIII. Southeastern Pennsylvania, 1750-1960

C. Form Prepared by

name/title  Sally McMurry, Head, Department of History, The Pennsylvania State University

street & number  108 Weaver Bldg   telephone   814-865-6097

city or town  University Park   state  PA   zip code  16802

D. Certification

As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this documentation form meets the National Register documentation standards and sets forth requirements for the listing of related properties consistent with the National Register criteria. This submission meets the procedural and professional requirements set forth in 36 CFR Part 60 and the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation. (___ See continuation sheet for additional comments.)
USDI/NPS NRHP Multiple Property
Historic Agricultural Resources of Pennsylvania, c1700-1960

Signature and title of certifying official  August 27, 2012
Date

Pennsylvania Historical & Museum Commission
State or Federal Agency or Tribal government

I hereby certify that this multiple property documentation form has been approved by the
National Register as a basis for evaluating related properties for listing in the National Register.

Signature of the Keeper  Date of Action

Table of Contents for Written Narrative

Provide the following information on continuation sheets. Cite the letter and the title before each
section of the narrative. Assign page numbers according to the instructions for continuation
sheets in How to Complete the Multiple Property Documentation Form (National Register
Bulletin 16B). Fill in page numbers for each section in the space below.

E. Statement of Historic Contexts (If more
than one historic context is documented,
present them in sequential order.)  Page #

986 -1587

F. Associated Property Types (Provide
description, significance, and registration
requirements.)  1 - 45

G. Geographical Data  NA

H. Summary of Identification and Evaluation
Methods (Discuss the methods used in developing
the multiple property listing.)  NA

I. Major Bibliographical References (List major
written works and primary location of additional
documentation: State Historic Preservation Office,
other State agency, Federal agency, local government,
university, or other, specifying repository.)  NA

Paperwork Reduction Act Statement: This information is being collected for applications to the
National Register of Historic Places to nominate properties for listing or determine eligibility for
listing, to list properties, and to amend existing listings. Response to this request is required to
obtain a benefit in accordance with the National Historic Preservation Act, as amended (16
U.S.C. 470 et seq.).
Estimated Burden Statement: Public reporting burden for this form is estimated to average 120 hours per response including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Chief, Administrative Services Division, National Park Service, P.O. Box 37127, Washington, DC 20013-7127; and the Office of Management and Budget, Paperwork Reductions Project (1024-0018), Washington, DC 20503.
F. Property Types and Registration Requirements

This statement outlines considerations for Pennsylvania as a whole and then specifies Criterion A registration requirements for each region.

Farmstead: A farmstead is defined here as encompassing the farm dwelling[s]; barn; outbuildings; and the immediately surrounding land on which these buildings are situated. It normally excludes cropland, meadow, pasture, orchard, and woodland, but would include such landscape features as yards, windbreaks, ponds, gardens, ornamental trees, decorative fences, driveways, etc.

Farm: the farmstead plus crop fields, meadows, pastures, orchards, woodlots, etc., including landscape features such as fences, tree lines, contour strips, streams, etc., and circulation networks.

Historic Agricultural District: a group of farms which share common architectural and agricultural landscape features; are linked together by historic transportation corridors, including roads, railroads, paths, and/or canals; and together express characteristic features of local historical agricultural patterns.

I. Criterion A, Agriculture

General Considerations for Pennsylvania as a Whole
National Register eligibility with respect to agriculture in each Historic Agricultural Region of Pennsylvania will depend upon how well a given property reflects the historical farming system in that region. It is very important to remember that Criterion A significance should be assessed in relation to how a given property typifies a farming system, not in relation to whether a property is exceptional or unusual. A property should exemplify a farming system in all its aspects. The totality of a property’s representation in the areas of production, labor patterns, land tenure, mechanization, and cultural traditions will determine its National Register eligibility.

Historic Patterns of Agricultural Production: A key characteristic of Pennsylvania agricultural production from settlement to about 1960 is diversification on small, family farms. Therefore, a farmstead, farm, or historic agricultural district must reflect diversified agriculture through a variety in historic buildings and landscape features. It is critical to note that diversified agricultural production involves two facets:

1) a mix of products. This mix varied with time, place, and culture. For each region, the narrative explains the prevalent mix.

2) a variety in use for those products, ranging from direct household consumption, to animal consumption, barter exchange, and cash sale to local or distant markets. In general, as far as use is concerned, over time a larger proportion of products went to cash markets, and money figured more and more prominently as farm income. However, production for family consumption, animal consumption, and barter exchange continued to occupy a significant position well into the twentieth century, with a notable surge during the Depression years. Historic resources should reflect the variety of household and market strategies employed by farming families.

Social Organization of Agricultural Practice: Historic production patterns are necessary but not sufficient to determine eligibility. Social organization of agricultural practice had a profound influence on the
landscape that must be recognized. Labor, land tenure, mechanization, and cultural practice should be considered. For example, in the Central Limestone Valleys, share tenancy was an important and enduring practice that significantly influenced the architecture and landscape of farmsteads, farms, and farm districts. In the Northern Tier, conversely, high rates of owner-occupation lent a different appearance to the landscape. The level of mechanization was related to labor practices, and also shaped the landscape through field patterns and architectural accommodation (or lack thereof) for machinery storage. Insofar as cultural factors influenced agricultural production or practice, they should be taken into account in determining the eligibility of farmsteads, farms, and farm districts. For example, Pennsylvania German food ways may have influenced agricultural production patterns and hence architectural forms; Yankee/Yorker families brought with them the English barn (which, because of its organization, shaped farming practice) and the penchant for classical revival styling.1

Issues of Chronology: To be determined significant with respect to Criterion A for agriculture, a farmstead should either:

1) possess a strong representation of typical buildings and landscape features from one chronological phase of the region’s agricultural history,

-OR-

2) possess a strong representation of typical buildings and landscape features that shows important agricultural changes over time.

How to Measure a Property In its Regional Context: Whether it depicts one chronological period or change over time, a farmstead, farm, or historic agricultural district will normally be significant under Criterion A only if:

1) its individual production, for the period in question, reflects the average or above average levels for its township in the same period. (This can be determined by comparing the farm’s manuscript agriculture figures to township figures.)

2) its built environment reflects that product mix. (The Narrative explains how different agricultural building types relate to agricultural production.)

3) its built environment reflects locally prevalent social organization of agriculture including a) levels of mechanization, b) labor organization (including gender patterns) and c) tenancy.

3a) levels of mechanization: in highly mechanized areas (relative to the state levels) we would normally expect an array of machine sheds, machinery bays integrally placed in barns, horse-power extensions, etc.2 Conversely, in low-mechanization areas such as the Northern Tier, these facilities will likely be less visible.

3 b) labor organization: Patterns of collective neighborhood labor may be present; for example, a butcher house might be located near the road. For early phases of agricultural

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1 Note that while the buildings represent an identifiable cultural tradition, the owners or occupants may not have necessarily shared the same cultural heritage over the entire history of the property. People borrowed, reused, and adapted. For example, an “English” farmer in southeastern Pennsylvania may have built a Switzer barn because it best suited the diversified farming of the region.

2 In some places, only some farmers owned machinery, and it was shared around, so some farms would have lots of machinery buildings and others would have few. This was not true in the regions researched for this context.
development, we would not expect to find overt architectural accommodation for hired laborers. But in the wage-labor era, those expressions would range from accommodations on the farm (rooms over springhouses, wings of houses) to purpose-built migrant housing. Mechanization could affect labor organization because it eliminates workers. Architectural and landscape elements that illustrate patterns of labor organization should be assessed for significance (with respect to agriculture) based on the level of clarity, intensity, and chronological consistency with which they show labor patterns. For example, if a c. 1850 farm house has a c.1880 workers’ wing with back stair and no access to the family living area, that is both a clear and chronologically consistent illustration of shifts in hired labor’s status.

Establishing significance for the gender organization of labor is more complex. We could think in terms of a continuum: from work almost always done by men—to work almost always equally shared by men and women—to work almost always done by women. In general, the farmstead and even the farm should be regarded as a mixed-gender workspace, because so much farm work was shared. However, there are a few cases where work was not only clearly associated with either men or women, but also had spatial and architectural manifestations to match. So we should focus on these cases when assessing significance with respect to gender patterns of agricultural labor. In the regions under discussion here, besides work done in the house (by women), several cases fit these criteria. On Northern Tier farms (1830–1900), men generally milked, and women made butter; the former activity occurred in the barn, the latter either in a farmhouse ell or in a separate “dairy kitchen” sited between house and barn. Later, fluid milk sale (mainly organized and conducted by men) replaced home butter making. Some sort of facility for home dairying is a sine qua non; one that is sited and oriented efficiently with respect to house and work-yard would be of greater significance than one that was not. And, a farmstead that contained both an ell or kitchen and a milk house located by the barn would demonstrate the shift in gender patterns better than a farm with just one of each. Another important case is pre-1945 poultry raising, which was dominated by women. If a pre-1945 poultry house is located well within the house’s orbit, it suggests that expresses more significance with respect to women’s agricultural labor than a pre-1945 poultry house that sits on the edge of a field. And, if a farmstead has both a pre-1945, small poultry house located between house and barn, and a large, post-1945 poultry house sited far from the house, this illustrates changes in gender patterns better than a farmstead that has only one poultry house.

3 c) Tenancy: This aspect of social organization will be reflected most in historic agricultural districts (rather than on farmsteads or farms). A historic agricultural district should reflect prevalent levels of tenancy for its region. So, we would expect to see fewer documented tenant properties in Northern Tier districts than in a Central Limestone valleys district. Where individual farms or farmsteads are concerned, a farm or farmstead with a documented history of tenancy are significant for tenancy, but only in regions where tenancy rates were historically higher than the state average.

Cultural Patterns: If, in instances where a farm has a strong, documented connection to a particular ethnic group, its architecture and landscape should show evidence of that connection. [See Narrative for
discussion]. Significance should be evaluated by the degree of clarity with which ethnic heritage is expressed (i.e. is it highly visible in more than one way, for example in both construction details and use?); and in cases of farmsteads, the extent to which multiple buildings and landscape features express ethnically derived agricultural practice.

In every case, even where all of these substantive requirements are met, there will be degrees of quality in representation. In other words, it is not just the presence of links to the region’s agricultural history (i.e. the overall property’s integrity) that makes a property outstanding, but also the quality and consistency of those links. Where possible, nominations should attempt to assess what we might call “intensity” or “layering” of representation. This intensity of representation may appear in the way the farm’s component parts preserve historical relationships. For example, if a farmstead retains a springhouse near the main house and a milk house sited near the barn, that is an especially intense illustration of changes in the dairy industry. The idea of “layering” connotes the multiple meanings that can be contained in the siting, layout, and content of the architectural and landscape features. The farmstead and farm features together might, for instance, offer expressions that are simultaneously cultural and local, and also show how wider trends affected agriculture. For example, a Northern Basement Barn indicates cultural heritage (in placing an “English barn” above a basement) and agricultural change (in dairying-oriented basement level). Another example of “layering” could be if the economic and cultural importance of livestock is illustrated by several buildings and landscape features – not just one or two. And, there could be a variety of farm workspaces that testify to the diversified strategies historically pursued by farming families in the region.

When assessing agricultural change, remember to consider not only changes in barn, outbuildings, and landscape, but also in the farmhouse. For example, on a farm where large-scale production was accompanied by a shift in gender patterns of labor, look for changes in the farmhouse’s interior work space; typically these might include smaller, more isolated kitchen spaces and more spaces devoted to display or leisure. Or, where dairy processing became centralized, dairy dependencies attached to a house might be converted to other uses. Rural electrification and the shift away from wood for fuel could also affect interior farmhouse organization. For example, with electrification, the summer kitchen’s function often moved back inside the house.

II. Criterion A, Agriculture: Registration Requirements Specific to the Settlement Period, c1700-c1840

The entire twenty-four county area constitutes one region for this time period. Registration requirements like those that have been established for later time periods cannot apply without modification to this period, because of the relative rarity of resources and the lack of quantitative and qualitative historical sources. Looser estimates of farm production, social patterns of labor, the presence of multiple flexible enterprises, and cultural influences must suffice. Tax records sometimes give indications for individual farm production; the 1798 Direct Tax lists buildings (as do the 1796 tax records for early Mifflin County); and occasionally there may be ledgers, letters, or travel descriptions relating to an individual property. Lacking these, reliance will have to be placed on the general descriptions of agriculture such as those cited in this document.

It seems likely that properties with resources dating to this period fall into two categories. One would be those which retain remnants of a typical early farming operation. The other would be those which originated as elite establishments and therefore retain exceptional buildings.
By definition, since there is only one chronological period covered in this portion of the context, a property could:

- possess a strong representation of typical buildings and landscape features from this chronological phase of the region’s agricultural history.

To be determined eligible for illustrating just this period, a farmstead should retain integrity, and a small log house and a small tripartite log or frame barn. A kitchen, spring house, or other outbuilding dating to this period would be a plus. Alternatively, an elite farmstead would retain an elite house (not necessarily stone or brick, but two stories, and larger than the local average as noted in the Direct Tax), and at least a “thirty by forty” barn or a Pennsylvania barn (probably a log crib barn). A farm should retain clear evidence of original property boundaries and siting. A historic agricultural district should have a collection of connected farms that collectively show these attributes. It is highly doubtful that very many properties exist that can meet these standards and illustrate solely this early period.

III. Criterion A, Agriculture: Registration Requirements Specific to the North and West Branch Susquehanna River Valleys Region

A. Properties may possess a strong representation of typical buildings and landscape features from one chronological phase of the region’s chronological history.

To represent the period c1840-1860 (“Diversified Production on Highly Mechanized Farms”):

A farmstead should include, at a minimum, a four-over-four, five-bay, or three-bay farmhouse; a Pennsylvania barn; and at least two outbuildings relating to its prevalent township production profile, level of mechanization, and cultural patterns. For example, a Greenwood Township farm should have at least two of: corncrib, granary, hog house, (these first three can be integrated into a larger barn); butcher house, summer kitchen, spring house, machine shed. If the barn is a bank barn, it should have a machinery bay or some other accommodation for machinery. A farm should have surviving landscape features, which could include tree lines, woodlots, road and path locations. Any of these, if they survive, should carry additional weight. Labor patterns and cultural patterns should be represented as outlined in the discussion above under “General Considerations for Pennsylvania as a Whole.” A historic agricultural district should include contiguous or clearly connected farmsteads that share visual, landscape, and architectural characteristics that date to and are typical of the period. Since individual properties which solely illustrate this early period are likely to be rare, districts with a concentration of such properties are also likely to be rare. It is very important to note that not only production patterns, but historic patterns of tenancy, labor, and culture should be clearly represented.

To represent the period 1860-1940 (“Diversified Production for Local Markets”):

A farmstead should retain a three-, four-, or five-bay house, either constructed or updated during the period; a Pennsylvania barn or three-gable barn. The barn could be multifunctional (see Narrative), or accompanied by outbuilding extensions. Outbuildings and extensions should illustrate high mechanization, and diversified production – so buildings for more than one enterprise (poultry raising, hog housing and processing, small scale dairying, corn storage, and so on) should be present. For a farm surviving landscape features could include tree lines, vegetable gardens, ornamental plantings, windbreaks, orchards, woodlots, road and path locations. Any of these, if they survive, should carry
additional weight. Labor patterns and cultural patterns should be represented as outlined in the discussion above under “General Considerations for Pennsylvania as a Whole.” A historic agricultural district should include contiguous or clearly connected farmsteads that share visual, landscape, and architectural characteristics that date to and are typical of the period. For example, along transportation corridors where strong development took place during this period, there may be clusters of farms whose architecture and landscape elements were built during the period. Not every farmstead or farm in the district would need to possess all the registration requirements; but collectively they should clearly represent the period.

To represent the period 1940–1960 (“Fossil Fuel Powered Diversified Production”):

A farmstead should include a house that either was built during this era or predates it; an older barn with dairy and/or poultry alterations (see narrative for specifics); or a large barn (most likely a three-gable barn) that shows centralization and diversification, i.e. that has facilities for hogs, poultry, machine storage, and cattle under one roof or in a connected complex. Outbuildings and freestanding structures should include at least two of: corn crib, a machinery shed, a garage dating to the period, a large (multistory, and/or footprint greater than say 10 X 15 feet) poultry house, brooder house. A milk house or silo is a plus, but not essential, because dairying was not important in most North/West Branch townships. For a farm there should be one or more surviving landscape features from the period, such as ornamental plantings, ponds, etc. Labor patterns and cultural patterns should be represented as outlined in the discussion above under “General Considerations for Pennsylvania as a Whole.” A historic agricultural district should include contiguous or clearly connected farmsteads that share visual, landscape, and architectural characteristics that date to and are typical of the period. For example, a cluster of farms on or near a road that was paved in the 1920s might have all undergone a building spurt during that time. Such a district should clearly show poultry and/or hog houses, milk houses, silos, and barn additions all built within a limited time period.

B. Properties may possess a range of buildings and landscape features that illustrate change over time in the region’s agricultural history:

Properties may offer a strong illustration of change over time. Most rural historic properties have evolved over time; therefore most are likely to fit into this category. In general, to qualify for significance under this rubric, a property ought to illustrate the changes in production, farming methods, and labor systems (including gender patterns and farm tenancy) outlined in the narrative above. The possibilities are quite varied and no list can encompass them all. It should be noted that in illustrating change over time, a farmstead, farm, or historic agricultural district may contain resources from the period of settlement. Please note that the settlement era (to c1830) has been treated for the entire study area in a single document. Please refer to that document to determine the nature of resources from this period.

Rather than list all the many ways in which change over time could be illustrated, below are some examples. A farmstead in this category might typically have a 19th century farmhouse; a 19th century barn with extensive alterations that could include a gable ell, enclosed forebay, alterations for dairying and/or poultry, and centralization of hog, poultry, and dairy production. Outbuildings could show a chronological range, but there should be at least three, and they should reflect agricultural shifts. Combinations might include a butcher house, smoke house, spring house, hog house, and summer kitchen; corn cribs, poultry houses, and root cellar; etc. Or perhaps there might be an early corncrib and a mid-twentieth century cylindrical one, showing the continued importance of corn as a feed and cash crop. Or, a machinery bay integrated into the barn, and a pole barn. The assemblage should be
tied to typical production and ethnic patterns for this agricultural region, i.e. the livestock enterprises most prominent would be hogs and chickens, not dairy; and therefore complementary feed buildings would be corncribs, not silos. See Narrative for trends in production.

A farm, to be eligible, would need to include all the requirements of the farmstead, plus significant acreage; and intact or remnant landscape features from the period of significance. Thus for example, contour strips that date from the 1930s would be a significant surviving landscape feature, as would treelines, woodlots, crop fields, pasture, meadow, paths, fencing, and the like.

A historic agricultural district would include a number of farms sharing prominent characteristics of the region, and which were contiguous and connected by historic roads, pathways, or waterways.

IV. Criterion A, Agriculture: Registration Requirements for the Northern Tier Grasslands Region

A. Properties may possess a strong representation of typical buildings and landscape features from one chronological phase of the region’s agricultural history.

To represent the period c. 1830 to 1860 (“A Diversified Woodland, Grassland, and Livestock Economy”):

A farmstead should retain a frame or log house with characteristic features; an English barn; and one of: freestanding granary or ice house. Relict farmstead landscape features from this period are rare. A farm should retain the farmstead elements named above, plus significant acreage with remnant landscape features such as fields, treelines, boundaries, and woodlots. A historic agricultural district should include contiguous or clearly connected farmsteads that share visual, landscape, and architectural characteristics that date to and are typical of the period. Since individual properties which solely illustrate this early period are likely to be rare, districts with a concentration of such properties are also likely to be rare. It is very important to note that not only production patterns, but historic patterns of tenancy, labor, and culture should be clearly represented.

To represent the period 1860-1900 (“Diversified Home Dairying”) for the Northern Tier Grassland Historic Agricultural Region:

A farmstead should include, at a minimum, a Classical Revival house in upright-and-wing or foursquare form and kitchen ell; a Basement Barn or Gable-Entry Banked Barn, or an English Barn modified with extensions; and at least two outbuildings relating to its township production profile, level of mechanization, and cultural patterns. For example, a West Burlington Township, Bradford County farm should have at least two of: detached dairy kitchen (if house lacks a kitchen ell); small poultry house; ice house; wood shed; freestanding granary; carriage shed; shop. There should be evidence of remnant farmstead landscape features such as front yard, dooryard, ornamental plantings, fencing, and treelines. A farm should include, at a minimum, the elements of a farmstead, plus two or more remnant landscape features as follows: significant acreage, treelines, small fields, pasture lot, stone fencing remnants, woodlot. A historic agricultural district should include contiguous or clearly connected farmsteads that share visual, landscape, and architectural characteristics that date to and are typical of the period. For example, along transportation corridors where strong development took place during this period, there may be clusters of farms whose architecture and landscape elements were built during the period. Not every farmstead or farm in the district would need to possess all the registration requirements; but collectively they should clearly represent the period.
It is very important to note that not only production patterns, but historic patterns of tenancy, labor, and culture should be clearly represented for any property.

To represent the period 1900-1960 ("Fluid Milk and Poultry") in the Northern Tier Grassland Historic Agricultural Region:

A farmstead should include a house characteristic of the region that either was built during this era or predates it; an older barn with interior dairy alterations (see narrative for specifics) and/or added cow shed; at least two outbuildings relating to its township production profile, level of mechanization, and cultural patterns (where applicable). For most townships this will mean at minimum a silo, milk house, and poultry house. Machine sheds, garages, and workshops are desirable but not essential. In addition, a farmstead should have two or more relict landscape features as follows: yard; ornamental plantings; farm pond. A farm should have, in addition to the farmstead elements named above, at least two of the following: significant acreage; wire fencing; woodlots; dirt roads; electrical utility poles; contour stripping. A historic agricultural district should include contiguous or clearly connected farmsteads that share visual, landscape, and architectural characteristics that date to and are typical of the period. For example, a cluster of farms on or near a road that was paved in the 1920s might have all undergone a building spurt during that time. Such a district should clearly show milk houses, silos, and barn additions all built within a limited time period.

It is very important to note that not only production patterns, but historic patterns of tenancy, labor, and culture should be clearly represented for any property.

B. Properties may possess a range of buildings and landscape features that illustrate change over time in the region’s agricultural history:

Properties may offer a strong illustration of change over time. Most rural historic properties have evolved over time; therefore most are likely to fit into this category. In general, to qualify for significance under this rubric, a property ought to illustrate the changes in production, farming methods, and labor systems (including gender patterns and farm tenancy) outlined in the narrative above. The possibilities are quite varied and no list can encompass them all. It should be noted that in illustrating change over time, a farmstead, farm, or historic agricultural district may contain resources from the period of settlement. Please note that the settlement era (to c1830) has been treated for the entire study area in a single document. Please refer to that document to determine the nature of resources from this period. Rather than list all the many ways in which change over time could be illustrated, below are some examples.

Rather than enumerate all the possibilities, some examples are offered. For the Northern Tier Grassland, typical assemblages illustrating key agricultural changes would reflect a shift from one phase to another, such as from diversified home dairying to an emphasis on fluid milk and poultry in the 20th century. In this instance, for a farmstead, a 19th century house characteristic of the region, ideally with service ell; a Basement Barn with dairy adaptations; at least one silo; at least one poultry house; and freestanding granary would show change over time. Farmstead landscape elements could include yard, circulation paths, ornamental plantings.

For a farm, in addition to the farmstead elements named above, significant acreage that shows continuous patterns of land use, especially as regards pasture and hay production; boundaries, treelines, fences, and relict fields.
For a **historic agricultural district**, the possibilities are numerous; it could include a number of farms that individually show change over time, or 19th-century farms together with 20th-century farms. These should be clearly linked by transportation corridors that helped to shape the changes being illustrated. In the Northern Tier, Route 6 is one example. It is very important to note that not only production patterns, but historic changes in patterns of tenancy, labor, and culture should be clearly represented for any property.

V. Criterion A, Agriculture: Registration Requirements Specific to the Central Limestone Valleys Region

A. Properties may possess a strong representation of typical buildings and landscape features from one chronological phase of the region’s agricultural history.

To represent the period 1830 to about 1880 (“A High-Powered Cash-Grain and Livestock Economy”):

A **farmstead** should possess a dwelling that dates to and is typical of the period; a Pennsylvania Barn; and at least two outbuildings relating to the cash-grain and livestock economy and illustrating shared family labor, mechanization, and/or tenancy; and at least traces of landscape features related to the historic system of the period, such as yards, ornamental plantings, and the like. A **farm** should have, in addition, at least remnants of landscape features characteristic of the period such as paths, roadways, treelines, small fields, woodlots, etc. A **historic agricultural district** should have a preponderance of farms dating to and characteristic of this period; plus remnants of historic transportation corridors, pathways between farms, etc. It should include contiguous or clearly connected farmsteads that share visual, landscape, and architectural characteristics that date to and are typical of the period. Since tenancy was such an important part of the region’s agricultural history, there should be evidence of tenancy as detailed in the narrative. Other social and cultural patterns of labor, especially family labor and gender patterns, should be clearly visible on the landscape.

To represent the period 1880 to 1920 (“A High-Powered Feed Grain and Livestock Economy”):

A **farmstead** should possess a dwelling that dates to the period or earlier (perhaps modernized during this period) and is typical for the region; a Pennsylvania Barn or Three-Gable Barn; at least two outbuildings relating to the feed-grain and livestock economy and illustrating shared family labor, mechanization, and/or tenancy; and at least remnants of landscape features such as windbreaks, sentinel trees, yards. A **farm** should have in addition, small fields, woodlots, paths, roadways, treelines, and the like. A **historic agricultural district** should have a preponderance of farms dating to and characteristic of this period; plus remnants of historic transportation corridors, pathways between farms, etc. It should include contiguous or clearly connected farmsteads that share visual, landscape, and architectural characteristics that date to and are typical of the period. Since tenancy was such an important part of the region’s agricultural history, there should be evidence of tenancy as detailed in the narrative. Other social and cultural patterns of labor, especially family labor and gender patterns, should be clearly visible on the landscape.

To represent the period 1920-1960 (“Continued Reorientation of the Livestock Economy”):

A **farmstead** should have a house that dates to and is characteristic of the period, or an earlier house modernized during the period; a barn that either dates to the period or contains alterations typical of the
period; and at least two outbuildings or structures that illustrating the shifts in production mix and methods (as described above, and including shifts in the gender distribution of work—for example, milk house, silo, poultry house). A farm should add landscape features characteristic of the period (farm pond, drainage ditches, contour stripping, longer narrow fields, utility poles, etc). A historic agricultural district should include contiguous or clearly connected farmsteads that share visual, landscape, and architectural characteristics that date to and are typical of the period. Since tenancy was such an important part of the region’s agricultural history, there should be evidence of tenancy as detailed in the narrative.

B. Properties may possess a range of buildings and landscape features that illustrate change over time in the region’s agricultural history:

Properties may offer a strong illustration of change over time. Most rural historic properties have evolved over time; therefore most are likely to fit into this category. In general, to qualify for significance under this rubric, a property ought to illustrate the changes in production, farming methods, and labor systems (including gender patterns and farm tenancy) outlined in the narrative above. The possibilities are quite varied and no list can encompass them all. It should be noted that in illustrating change over time, a farmstead, farm, or historic agricultural district may contain resources from the period of settlement. Please note that the settlement era (to c1830) has been treated for the entire study area in a single document. Please refer to that document to determine the nature of resources from this period. Rather than list all the many ways in which change over time could be illustrated, below are some examples.

A farmstead might have an early farmhouse; a Pennsylvania Barn with straw shed addition; a 19th century smokehouse, a 20th century poultry house, milk house, and silo; and 20th century landscape features such as a windbreak or pond. This assemblage would show the transition from low-intensity farming, to cash-grain and livestock farming combined with ethnic foodways and attention to “competency;” to a more standardized emphasis on poultry and dairy. OR, a farmstead could have a mid-19th century “four over four” house, springhouse, corn crib, and smokehouse; a 19th century Pennsylvania Barn with lower-level dairy alterations made c. 1930; a silo; a milk house; and a poultry house. This assemblage would show changes from about 1850 to 1960. A farm might have buildings as described above, plus a fenceline along an original boundary; one or two fields of about ten acres that retains a square shape; a woodlot; and contour fields. A historic agricultural district could have a mix of early settled farms and later ones; tenant farms and landowner properties; historic pathways between farms, especially between tenant and landlord farms; and so on.

VI. Registration Requirements Specific to the Allegheny Mountain Part-Time Farming Region

Properties associated with agriculture in the Allegheny Mountain Part-Time Farming Historic Agricultural Region will possess integrity of location, design, setting, materials, workmanship, feeling, and association, (see separate document for guidelines on assessing integrity) and either

1) possess a strong representation of typical buildings and landscape features from one chronological phase of the region’s agricultural history,

OR

2) possess a strong representation of typical buildings and landscape features that shows important
agricultural changes over time.

To represent the period 1830-1850 (“Diversified Farming and Small-Scale Industry”) in the Allegheny Mountain Historic Agricultural Region,

A **farmstead** should include at minimum a dwelling and outbuilding dating from the period. A **farm** should include the farmstead elements named above, plus significant acreage with at least traces of field patterns, fencing, boundaries, pathways, streams, or woods. A **historic agricultural district** should include contiguous or clearly connected farmsteads that share visual, landscape, and architectural characteristics. It is unlikely that a historic agricultural district in this region will only illustrate this early period.

To represent the period 1850-1920 (“Diversified Farming and Large-Scale Industry”) for the Allegheny Mountain Historic Agricultural Region,

A **farmstead** should include at minimum a dwelling, a barn typical of the period, and at least two outbuildings typical of and dating to the period. A **farm** should include the farmstead elements named above, plus acreage of the original farm tract; and at least two relict landscape elements such as traces of field patterns, mine shafts, fencing, boundaries, streams, or woods. A **historic agricultural district** should include contiguous or clearly connected farmsteads that share visual, landscape, and architectural characteristics from the time period. Not every property in a district must possess all of the required elements, but collectively the district should show them all. For example, there might be a cluster of farms near a mining patch town, which retain dwellings, barns, outbuildings, fields, and fencing, all connected by the road that leads to the mine town. A few, but not all, of the farms may retain a small-scale mine shaft.

To represent the period 1920-1960 (“Dairy and Poultry Production for Local and Regional Markets”) in the Bald Eagle Valley portion of the Allegheny Mountain Historic Agricultural Region,

A **farmstead** should have at minimum a dwelling (which can date to an earlier period), a barn typical of and/or dating to the period, and at least two outbuildings or structures typical of and dating to the period. A barn can be interpreted as representing this period if it was constructed earlier, as long as it shows characteristic alterations for the period. Relict landscape features should be present, such as yards, ornamental plantings, windbreaks, and ponds. A **farm** in the Bald Eagle Valley should retain significant acreage and include relict landscape features such as small irregularly shaped fields, crop strips, treelines, fencelines, sentinel trees, and woodlots. A **historic agricultural district** in the Bald Eagle Valley should include contiguous or clearly connected farmsteads that share visual, landscape, and architectural characteristics. It is likely that such a district may be found in compact geographic areas that experienced rapid agricultural development, such as those which occurred near Howard, Pennsylvania when milk processing plants and highways brought the area into the urban milk sheds. Farms within the district need not all possess all required elements, but collectively they must illustrate the period clearly. For example, perhaps a building boom in the 1930s resulted in milk houses, silos, and barn alterations that were very similar.

To represent the period 1920-1960 (“Household Production”) in the areas beyond the Allegheny Front for the Allegheny Mountain Historic Agricultural Region:
A farmstead should have at minimum a dwelling and one outbuilding or structure. A farm should have a small remaining acreage, and include some relict landscape features such as treelines and fields. A historic agricultural district should include contiguous or clearly connected farmsteads that share visual, landscape, and architectural characteristics. Farms within the district need not all possess all required elements, but collectively they must illustrate the period clearly. For example, perhaps an enclave of immigrants farmed small plots near an industrial town.

Properties may also possess a strong representation of typical buildings and landscape features that shows important agricultural changes over time. Most properties will likely fall into this category. Because change could have many manifestations, the following is intended as a guide, not a recipe. It should be noted that in illustrating change over time, a farmstead, farm, or historic agricultural district may contain resources from the period of settlement.

A farmstead could show change over time through the presence of one or two early buildings (probably most often a dwelling); and presence of later of agricultural buildings (for example, a 19th century barn, a 20th century silo and milk house) which reflect the agricultural shifts described in the narrative above. In the case of the Bald Eagle Valley, there should be outbuildings that reflect the diversified phase of the 19th and early 20th centuries (smokehouses, spring houses, etc) and the shift to fluid milk dairying in the middle decades of the 20th century (silo, milk house). A farmstead could also show change over time in alterations to dwellings and agricultural buildings. For dwellings, this might mean ell additions, porches, the disappearance or reuse of productive spaces such as summer kitchens; for barns, it could mean additions for more space, windows for more light, reorientation of stalls, addition of hay tracks, etc. In any case, there should be sufficient built evidence to interpret the diversified history of agriculture in this farming region, and to interpret the key labor, ethnic, and social systems that were an integral part of the farming system. Thus in this region, there should be outbuildings that can be effectively related to family labor, including women’s labor. The same is true for the Allegheny Plateau, but on the more modest scale characteristic of that area.

A farm could show change over time through farmstead changes as described above; plus consolidation of fields; introduction of mine shafts; renegotiation of boundaries; evidence of shifting crop or livestock management practices (for example contour stripping and old pasture).

A historic agricultural district could show change over time by assembling a number of farms that themselves illustrate agricultural change, or by assembling farms each of which represents a different time period.

VII. Criterion A, Agriculture: Registration Requirements for the Potter County Potato and Cannery Crops Region

A. Properties that possess a strong representation of typical buildings and landscape features from one chronological phase of the region’s agricultural history:
In all cases, a property should have a documented history of production that reflects average or above levels for its township, particularly where potatoes and/or canny crops were concerned.

To represent the period 1850-1915, (“Diversified Home Dairying and Potato Production”):

A farmstead should include a farmhouse dating to and typical of the period, i.e. Greek Revival influenced house with one or more of: eyebrow windows, Greek Revival detailing or proportions, kitchen ell or detached dairy kitchen; have some kind of root cellar, either incorporated into the farmhouse or freestanding. It should show evidence of diverse production dating to this time period, i.e. a multipurpose barn (such as an English barn), small shed or multipurpose outbuilding. A farm should have the elements of a farmstead plus remnant woodlot, pasture, hay fields. A historic agricultural district should contain a cluster of farms with the requisite features, and which are contiguous or connected by roads, farm lanes, or paths.

To represent the period 1915-1940, (“Diversified Dairying Plus Potatoes”):

A farmstead should have a house dating from or before the period; and evidence of storage facilities for potatoes, either in separate structure or within a larger barn, as evidenced by insulation, storage bins, ventilation systems. If it can be documented as a large diversified operation, then we should expect a basement barn or modified English barn, silo, and milk house, and one of poultry house, sheep barn, granary, or machine shed. A farm should have the requisites for a farmstead plus remnant woodlots, remnant pasture, hay fields, and traces of treelines, fencing, hedges, or ornamental plantings. A historic agricultural district should contain a cluster of farms with the requisite features, and which are contiguous or connected by roads, farm lanes, or paths. Not all farms in the district must necessarily possess evidence for potato cultivation, but many if not most should have such evidence. Otherwise, the district might be considered for significance with respect to the Northern Tier Grassland Historic Agricultural Region.

To represent 1940-1960, (“Diversified General Farming Plus Potatoes and Vegetables”):

A farmstead should have, at a minimum, a farmhouse dating from or prior to the period; a barn (most likely a gambrel-roof basement barn typical of Northern Tier grassland dairying); poultry buildings; milkhouse; silo; and evidence of potato storage as detailed in the narrative. Evidence of migrant housing is also desirable. This can include agricultural buildings that were converted from other uses (evidence for conversion would include insertion of windows and doors, addition of exterior stairs and/or ramps; installation of running water and/or electricity in an existing barn or other outbuilding.) The second category of migrant housing would be purpose built “camps.” The available evidence (especially the map of the migrant school bus route) suggests that these were located on a few large scale farms. These would consist of one-story, gable-roofed, multi-unit buildings, usually made of balloon framing though sometimes concrete block. The housing itself would not necessarily have plumbing in the individual units, or even cooking facilities. The third category would be tenant houses on the farm property. These would be hard to recognize except in that as secondary residences they would likely lack the main house’s architectural trim, size, and scale. For this period, a farm should retain the characteristics of the farmstead, plus remnant woodlots, remnant pasture, hay fields, and traces of treelines, fencing, hedges, or ornamental plantings; and at least one of a farm pond, contour stripping, planted woodlot. A historic agricultural district should include a cluster of farms that is contiguous or connected by roads, farm lanes, or paths, and at least one of which possesses documented migrant housing.
B. Properties may possess a range of buildings and landscape features that illustrate change over time in the region’s agricultural history:

Properties may offer a strong illustration of change over time. Most rural historic properties have evolved over time; therefore most are likely to fit into this category. In general, to qualify for significance under this rubric, a property ought to illustrate the changes in production, farming methods, and labor systems (including gender patterns and farm tenancy) outlined in the narrative above. The possibilities are quite varied and no list can encompass them all. It should be noted that in illustrating change over time, a farmstead, farm, or historic agricultural district may contain resources from the period of settlement. Please note that the settlement era (to c1830) has been treated for the entire study area in a single document. Please refer to that document to determine the nature of resources from this period.

Rather than list all the many ways in which change over time could be illustrated, below are some examples. A farmstead could establish significance over the period 1850-1960 by showing change over time – perhaps the presence of a small root cellar from the early period, and a larger, later storage building, plus as appropriate buildings showing diversification. For example, a farmstead could have a house with root cellar and kitchen ell; Basement Barn converted for migrant housing; milk house; potato barn.

A farm could show change over time by showing the farmstead changes as indicated above, plus combined remnant pasture, treeline, and contour strips, and farm pond.

A historic agricultural district could show change over time either by containing farmsteads or farms representing different time periods; or by having a group of farms each of which shows the changes outlined above. A historic agricultural district for this context should have purpose-built migrant housing on at least one property.

VIII. Criterion A, Agriculture: Registration Requirements Specific to the River Valleys Tobacco Region

A. Properties may possess a strong representation of typical buildings and landscape features from one chronological phase of the region’s chronological history

Since there is just one period in which tobacco culture was important, by definition a property associated with this context will possess a strong representation of typical buildings and landscape features from one chronological phase. However, a property with a tobacco barn could conceivably represent change over time with respect to another context. For example, a property could have a tobacco barn plus elements which would make it eligible under the context for the Northern Tier Grassland Historic Agricultural Region.

In order to be considered for eligibility with respect to this context, a property must have a documented connection to tobacco culture. Documentation could be demonstrated by using the manuscript agriculture census for either (or both) 1880 or 1927. If the property is in Tioga County, the 1909 Directory (online; see bibliography) could also establish a clear connection to tobacco culture. The other agricultural activities in which historic property owners were engaged should also be documented using these same sources.

To be significant as representing the River Valleys Tobacco culture, a farmstead should possess integrity plus a house; either a tobacco barn, OR another barn that has been adapted for tobacco in
ways described above; and other outbuildings which illustrate other productive activities that were being pursued along with tobacco raising. This will vary depending on strategies that a particular family employed historically. So, for example, Calvin R. Phoenix had dairy cows and raised horses on a 100 acre farm, in addition to growing tobacco. We should expect a Northern basement barn on his property, and perhaps a separate stable. The context for the wider region in which tobacco growing took place will provide guidance (i.e. if the property is in Snyder County, refer to the North and West Branch narrative; if in Tioga County, to the Northern Tier narrative, and so on.) While not all of the general Pennsylvania-wide requirements will be relevant, social factors such as tenancy and labor patterns will still be important.

A Farm should possess the farmstead elements listed above, plus siting or land acreage in the alluvial river bottom areas.

A historic agricultural district should have a cluster of farms that share key characteristics of the farming system, and are connected by transport links, waterways, and visual similarity. For the River Valleys Tobacco Culture, a historic agricultural district could contain a mix of farms with and without tobacco buildings, since that would reflect the historic pattern. However, the percentage of farms with tobacco features in a given township should approximate the percentage of farms that raised tobacco in that township.

IX. Registration Requirements for Criterion A Specific to the Erie Fruit Belt

To be considered significant for Agriculture under Criterion A for the period 1850-1925”, Diversified Livestock, Field Crops, Fruits, and Vegetables”

A farmstead should include, at a minimum, a farmhouse typical for the region (for these purposes the “region” means Northwestern Pennsylvania); barn or outbuildings related to livestock raising and crop production; 3 and definite architectural evidence of fruit culture. This last could include barn modifications for packing, fruit storage, or container storage; a house cellar intended for fruit storage; separate packing house; worker housing, either in the upper story of a packing barn or in a separate tenant house. A farm should have, in addition to orchard and vineyard acreage, at least remnant pasture, cropland, or woodlot. A historic agricultural district would need a collection of farms representing these features.

To be considered significant for Agriculture under Criterion A for the period 1925-1965, "Diversified Fruit Culture"

A farmstead should have architectural evidence of diversified fruit / vegetable growing, namely at least one of: packing barn, migrant quarters, roadside stand, cold storage. A farm should have landscape evidence extant for more than one fruit or vegetable culture. So, it should have both vineyard and orchard, or vineyard and vegetable truck garden, etc. And a historic agricultural district should have a more or less contiguous collection of farms representing these features.

3 See Northwestern Pennsylvania Historic Agricultural Region MPDF for discussion of agricultural buildings related to livestock and crops for the broader northwestern Pennsylvania region.
To be considered significant for Agriculture under Criterion A representing the major agricultural changes in the Erie Fruit Belt from 1850-1965

A farmstead should possess clear architectural evidence showing the major changes over time. A packing house turned to migrant quarters would qualify, for example; or a multipurpose livestock barn with conversions or additions for fruit storage, packing, etc.; or an early farmhouse with later tenant house. A farm should have these architectural features, plus a mix of orchard, vineyard, and pasture or cropland. A historic agricultural district should have a more or less contiguous collection of farms representing these features.

X. Registration Requirements for Significance under Criterion A Specific to the Northwestern Pennsylvania Woodland, Grassland, and Specialized Products Agricultural Region

To be considered significant for Agriculture in the period “A Woodland, Grassland, and Diversified Livestock Economy, c. 1830-to About 1865,” a farmstead should contain a house characteristic of the period; an English barn or New England barn; and two or three outbuildings (such as a spring house, dairy kitchen, cheese house, corn crib, or freestanding granary) reflecting production patterns of the era. A kitchen ell on a farmhouse should be considered an equivalent productive space. A farm should contain at least remnant woodlot, pasture land, and cropland. A historic agricultural district should have a more or less contiguous collection of farms representing these features.

To be considered significant for Agriculture in the period “A woodland, Grassland, and Cattle-based Livestock Economy, c 1865-1900,” a farmstead should have a farmhouse characteristic of the period; an extended English barn, basement barn, three-gable barn, or Pennsylvania forebay barn; at least two outbuildings (such as spring house, granary, corn crib, machine shed, or carriage house) reflecting production patterns and the intensified mechanization of the era. A farm should have a woodlot, crop or hay land, and pasture land. Remnant fencelines, treelines, and circulation corridors would enhance the farm’s significance. A historic agricultural district should have a more or less contiguous collection of farms representing these features.

To be considered significant for Agriculture in the period “Fluid Milk Dairying with Diverse Sidelines, c 1900-1940” it is desirable – but not imperative -- that a farmstead have a house characteristic of the period. More important for this period would be for a farmstead to have a basement barn (built or altered to accommodate dairy animals); a stable barn; or a foundation barn. Construction techniques introduced in the period (such as the Shawver truss) add to the significance. A farmstead should also have a milk house and silo dating from the period. Other outbuildings which strengthen the case for significance would include granaries, machine sheds, garages, poultry houses, corn cribs, and any building that would illustrate the “diverse sidelines” of the period. A farm should have the buildings plus woodlot, hay land, and tree lines. Evidence of drainage, contour or strip farming, ornamental plantings, or fencing would enhance the case for significance considerably. A historic agricultural district should have a more or less contiguous collection of farms representing these features.

To be considered significant for Agriculture in the period “Petroleum era Specialized Farming, 1940-1960,” a farmstead need not have a house characteristic of the period. It should have either an older barn with clear adaptations made for dairying during the period; or a style of barn characteristic of the period, such as a pole barn or a Wisconsin style dairy barn. It should have a milk house and silo dating from the
period. Since agriculture became more specialized and mechanized during this period, outbuildings which illustrate significance would normally include machine sheds, garages, and corn cribs. A farm should have the buildings plus woodlot, hay land, tree lines. At least one of: contour strips, drainage features, ponds, ornamental plantings, or period fencing should be represented. A historic agricultural district should have a more or less contiguous collection of farms representing these features.

To be considered significant under Criterion A for representing the major agricultural changes in the Northwestern Pennsylvania Historic Agricultural Region from 1830-1960, a farmstead should have architectural evidence of the major shifts over time. A 19th century house with spring house, late 19th or early 20th century barn, early 20th century silo, and milk house, for instance, would effectively portray a shift from home dairying to centralized dairying. There should be an array of outbuildings which illustrates key changes. For example, mechanization could be illustrated if a farmstead possessed a c1890 carriage house and a c1930 garage or machine shed. Early 20th-century poultry houses and springhouses illustrate adaptive subsistence strategies. In all cases, diversification should be represented in the form of outbuildings related to contributing enterprises – spring houses, corn cribs, granaries, root cellars, and the like. A farm should have woodlots, pasture, and cropland. Orchards are desirable but not required. Landscape evidence of change would include drainage works, ponds, contour or strip cropping, varying types of fencing, or a combination of old, small and irregular fields with enlarged more recent ones. A historic agricultural district should have a more or less contiguous collection of farms representing these features.

XI. Registration Requirements for Criterion A Specific to the Southwestern Pennsylvania Diversified Agriculture and Sheep Raising Region

To be considered significant for Agriculture under Criterion A for the period 1830-1850, “Diversified Agriculture and the Rise of Sheep Raising,” a farmstead should include, at a minimum, a farmhouse typical for the region (for these purposes the “region” means Southwestern Pennsylvania); barn or outbuildings related to general livestock raising, subsistence, or crop production; and architectural evidence of sheep raising. This last could include a larger barn with modifications for sheep (as outlined in the narrative) or a separate sheep barn. A farm should have woodlots, pasture, and cropland. A historic agricultural district would need a collection of farms representing these features.

To be considered significant for Agriculture under Criterion A for the period 1850-about 1890, “the Civil War Peak Period,” a farmstead should have a farm house typical of the period and place, or an older house showing appropriate modifications; and architectural evidence of sheep raising in the form either of a southwestern Pennsylvania style basement barn, or a separate sheep barn. It should also have architectural representation of crop farming and subsistence activity as shown in buildings such as springhouses, granaries, corncribs, and the like. A farm should have landscape evidence of sheep raising especially pasture land. A historic agricultural district should have a more or less contiguous collection of farms representing these features.

To be considered significant under Criterion A for Agriculture for the period 1890-about 1930, “Industrialization and Agricultural Reorientation,” a farmstead should include a house typical of the time and place or an older house showing appropriate modifications; a barn showing 20th century reorientation

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4 See Northwestern Pennsylvania Historic Agricultural Region narrative for discussion of agricultural buildings related to livestock and crops for the broader northwestern Pennsylvania region.
to dairying or modernizing types and materials; evidence of sheep culture (sheep barn, hay barn); evidence of mechanization (carriage house, machine shed); and at least one outbuilding from the period which shows intensified subsistence activity (spring house, summer kitchen, root cellar). A farm should have these features plus cropland, pasture land, or woodlot. A historic agricultural district should have a more or less contiguous collection of farms representing these features.

To be considered significant for Agriculture under Criterion A for the period 1930-1960, “Crisis and Decline: Land Use Shifts and Further Agricultural Adjustments,” a farmstead need not have a house which dates precisely from this period, but should have a barn dating from the period, and evidence of agricultural shifts to dairying. Such as a silo or milk house. It should also represent crop farming and subsistence activity. A farm should have cropland and woodlot; pasture is less important. Orchards are desirable but not required. A historic agricultural district should have a more or less contiguous collection of farms representing these features.

To be considered significant under Criterion A for representing the major agricultural changes in the Southwestern Pennsylvania Historic Agricultural Region from 1850-1965, a farmstead should have architectural evidence of the major shifts over time. A 19th century house, late 19th or early 20th century sheep barn, and ground level stable barn, for instance, would effectively portray a shift from sheep to dairying. In all cases, however, diversification should also be represented in the form of outbuildings related to contributing enterprises – spring houses, corn cribs, granaries, root cellars, and the like. A farm should have cropland, pasture, and tree lines or woodlots. Orchards are desirable but not required. A historic agricultural district should have a more or less contiguous collection of farms representing these features.

Criterion B Association with the Lives of Significant Persons
To be eligible under Criterion B, a farmstead, farm, or historic agricultural district must establish a documented link to an individual who had a sustained and influential leadership role which resulted in a verifiable impact on local, state, or national agricultural practices, trends, or thought. A “sustained” leadership role would mean long-term involvement in important agricultural organizations such as the Grange, Dairymen’s League, rural electric cooperative, and so on. Impact should be demonstrated, not asserted. An agrarian figure who achieved a higher than usual degree of productivity or prosperity in farming would not normally meet this standard, nor would one who was an early adopter of new agricultural methods or technologies. But, an individual who influenced others to adopt new practices could. For example, Robert Rodale clearly played a foundational role in the rise of the organic farming movement nationally. On a more local level, a hatchery owner who initiated a new industry in an area, thus creating a shift in production patterns on many farms, might qualify.

XIV. Property Types and Registration Requirements for Criterion A, Agriculture, Specific to the Lehigh Potato Region
A. Properties may possess a strong representation of typical buildings and landscape features from one chronological phase of the region’s agricultural history:

A property will normally be significant under Criterion A only if: 1) its individual production system, for the period in question, reflects the average or above average production levels for its township in the same period, 2) its built environment and landscape reflects that product mix, 3) its built environment and landscape reflects locally prevalent levels of mechanization and tenancy,
and labor patterns, and 4) if, Lehigh County Potatoes Historic Agricultural Region, 1850-1960. In instances where a farm has a strong, documented connection to a particular ethnic group or land tenure system, its architecture and landscape shows evidence of that connection.

To be considered significant under Criterion A for “Potatoes as one component in a diversified farming system, 1850-1910,” a farmstead should contain a representative house dating to the period or earlier; a Pennsylvania bank barn; and at least two outbuildings related to this phase, such as a corn crib, root cellar, smoke house, pigsty, butcher house, spring house, or summer kitchen. A farm should have these buildings plus cropland with some evidence of historic field and property boundaries. A historic agricultural district should have a more or less contiguous collection of farms representing these features.

To be considered significant under Criterion A for “Potatoes as a primary cash crop with diversified complements, 1910-1960,” a farmstead should have a representative house dating from this period or earlier; evidence of potato growing and storage as demonstrated by at least one of the following: A Pennsylvania barn altered as discussed in the narrative; a potato cellar; evidence for home cellar potato storage; at least other three outbuildings related to this period’s farming system, such as a butcher house, summer kitchen, granary, milk house, poultry house, combination building, or others named in the narrative for the period. A farm should have the buildings plus cropland and a pond or evidence of contour plowing or strip cropping. A historic agricultural district should have a more or less contiguous collection of farms representing these features.

B. Properties may possess a range of buildings and landscape features that illustrate change over time in the region’s agricultural history:

There are many ways in which a farmstead, farm, and historic agricultural district can illustrate the key changes over time in the Lehigh County potato region’s agricultural history. Key agricultural changes should be represented architecturally and by landscape features, so there should be plentiful subsistence buildings, architectural evidence of potato storage, and Pennsylvania bank barns.

XV. Property Types and Registration Requirements for Criterion A, Agriculture, Specific to the York-Adams Region

A. Properties may possess a strong representation of typical buildings and landscape features from one chronological phase of the region’s agricultural history:
A farmstead will normally be significant under Criterion A only if: 1) its individual production system, for the period in question, reflects the average or above average production levels for its township in the same period, 2) its built environment and landscape reflects that product mix, 3) its built environment and landscape reflects locally prevalent levels of mechanization and tenancy, and labor patterns, and 4) if, in instances where a farm has a strong, documented connection to a particular ethnic group or land tenure system, its architecture and landscape shows show evidence of that connection. [See Narrative for discussion].

To be considered significant for the period of “Diversified Small Scale Production, c. 1750-1830,” a *farmstead* should include, at a minimum, a farmhouse typical for the region, dating to the
period; and at least one barn or outbuilding related to diverse production dating to the period. A farm should have remnant crop fields or woodlot. It is a plus if historic field or property boundary lines are represented. A historic agricultural district would need a collection of farms representing these features.

To be considered significant for the period of “Small farms, mechanization, and new markets, c. 1830-1885,” a farmstead should have a farm house typical of the period and place, or an older house showing period modifications; a barn typical of the period; and at least one subsistence related outbuilding (summer kitchen, springhouse, smokehouse, bake house, etc.). The more outbuildings there are which illustrate agricultural diversification, the better. A farm should have crop land and retain at least some historic field size or boundary. A historic agricultural district should have a more or less contiguous collection of farms representing these features.

To be considered significant for the period of “Diversified Small Scale Farming, Poultry Raising, and Cannery Crops, c. 1885-1940,” a farmstead should include a house typical of the time and place or an older house showing period modifications; an older barn showing 20th century adaptations, or a new type such as a stable barn; at least one subsistence outbuilding dating from the period or modified during the period; at least one outbuilding showing poultry raising, hog raising, dairying, or truck farming; and architectural accommodation for farm machinery. The more outbuildings there are which illustrate agricultural diversification, the better. If the farm has a history of specializations such as tobacco growing, the buildings should reflect that. A farm should have cropland. Remnant field boundaries such as treelines or fencing are a plus. Landscape evidence for truck farming or orcharding is a plus because of its rarity. A historic agricultural district should have a more or less contiguous collection of farms representing these features.

To be considered significant for the period of “Poultry Production, Fossil Fuel Power, and Off-Farm Labor, 1940-1960,” a farmstead need not have a house which dates precisely from this period, but should have barn dating from the period or a barn with adaptations dating from the period; poultry housing (or barn adaptations for poultry housing) dating from the period; and architectural accommodation for farm machinery. A farm should have cropland. Remnant field boundaries such as treelines or fencing are a plus, as is a farm pond. A historic agricultural district should have a more or less contiguous collection of farms representing these features.

B. Properties may possess a range of buildings and landscape features that illustrate change over time in the region’s agricultural history:

To be considered significant for representing the major agricultural changes in the York-Adams Historic Agricultural Region, a farmstead should have architectural evidence of the major shifts over time. An early 19th century house, late 19th century barn and subsistence buildings, and 20th century poultry housing, for instance, would effectively portray a shift from small-scale agriculture to diversified grain and livestock farming to small scale farming with poultry production as a main enterprise. A farm should have some cropland, but the acreage would not necessarily be high, since farms were so small historically. A historic agricultural district should have a more or less contiguous collection of farms representing these features.
XVI. Property Types and Registration Requirements for Criterion A, Agriculture, Specific to the
Lancaster Plain

A. Properties may possess a strong representation of typical buildings and landscape features from
one chronological phase of the region’s agricultural history:

A property will normally be significant under Criterion A only if: 1) its individual production
system, for the period in question, reflects the average or above average production levels for its
township in the same period, 2) its built environment and landscape reflects that product mix, 3) its
built environment and landscape reflects locally prevalent levels of mechanization and tenancy,
and labor patterns, and 4) if, in instances where a farm has a strong, documented connection to a
particular ethnic group or land tenure system, its architecture and landscape shows show evidence
of that connection. [See Narrative for discussion].

To be considered significant for agriculture in the period “Diverse Production for Diverse Uses, c.
1730 to about 1780,” a farmstead should contain a house characteristic of the period; and either an
early barn or an outbuilding dating from the period. A kitchen ell or basement cellar on a
farmhouse should be considered an equivalent productive space. A farm should contain remnant
cropland and woodlot. A historic agricultural district should have a more or less contiguous
collection of farms representing these features.

To be considered significant for agriculture in the period “Diversified Production, Intensification,
and Livestock Raising, c. 1780-1865,” a farmstead should have a farmhouse characteristic of the
period; a Pennsylvania Barn; at least two outbuildings (such as spring house, smoke house, corn
crib, machine shed, or carriage house) reflecting production patterns and the intensified
mechanization of the era. A tenant house would enhance the case for significance, particularly if
the property documentation shows that the farm historically had tenants. A farm should have crop
land and pasture land. Remnant fencelines, treelines, and circulation corridors would enhance the
case for significance. A historic agricultural district should have a more or less contiguous
collection of farms representing these features.

To be considered significant for agriculture in the period “Crops, Livestock, and Tobacco, c 1865-
about 1920,” it is desirable -- but not imperative -- that a farmstead have a house characteristic of
the period, preferably with summer kitchen. If the farm has a history of tenancy, a tenant house
would add to significance. The farmstead should have a Pennsylvania Barn dating from the
period, or an older barn with modifications characteristic of the period. There should be
architectural evidence for tobacco raising – either a freestanding tobacco barn or modifications to
another building. Other outbuildings which strengthen the case for significance would include
machine sheds, hog houses, smoke houses, spring houses, poultry houses, and corn cribs. A farm
should have the buildings plus cropland. A historic agricultural district should have a more or
less contiguous collection of farms representing these features.

To be considered significant for agriculture in the period “Livestock, Truck Farming, Tobacco,
and Poultry, 1920-1960,” a farmstead should have a house characteristic of the period, or one with
an earlier date. If the property has a history of tenancy, a tenant house would add to significance.
The farmstead should have a Pennsylvania Barn (likely an earlier barn with modificatings dating
Outbuildings should reflect the specific property’s production history. In other words, if poultry was emphasized, there should be twentieth-century poultry housing. Other outbuildings which strengthen the case for significance would include machine sheds, garages, and corn cribs. A farm should have the buildings plus cropland. A historic agricultural district should have a more or less contiguous collection of farms representing these features.

B. Properties may possess a range of buildings and landscape features that illustrate change over time in the region’s agricultural history:

There are many ways in which a farmstead, farm, and historic agricultural district can illustrate the key changes over time in the Lancaster Plain region’s agricultural history. An individual farmstead might have an eighteenth-century house, mid-nineteenth-century Pennsylvania Barn and smokehouse, late nineteenth-century summer kitchen and tobacco barn, and twentieth-century poultry house. A historic agricultural district might contain farmsteads each representing a different period. Key agricultural changes should be represented architecturally and by landscape features.

XVII. Property Types and Registration Requirements for Criterion A, Agriculture, Specific to the Great Valley

A. Properties may possess a strong representation of typical buildings and landscape features from one chronological phase of the region’s agricultural history:
A farmstead will normally be significant under Criterion A only if: 1) its individual production system, for the period in question, reflects the average or above average production levels for its township in the same period, 2) its built environment and landscape reflects that product mix, 3) its built environment and landscape reflects locally prevalent levels of mechanization and tenancy, and labor patterns, and 4) if, in instances where a farm has a strong, documented connection to a particular ethnic group or land tenure system, its architecture and landscape shows show evidence of that connection. [See Narrative for discussion].

To be considered significant for the period of “Diversified small-scale farming and wheat for export: Mid 18th to early 19th century,” a farmstead should include, at a minimum, a farmhouse typical of extant buildings for the region, dating to the period; and at least one outbuilding related to diverse production dating to the period. A farm should have remnant crop fields or woodlot. It is a plus if historic field or property boundary lines are represented. A historic agricultural district would need a group of contiguous farms collectively representing these features.

To be considered significant for the period of “Diversified grain-and-livestock farming: early 19th century to c. 1900,” a farmstead should have a farm house typical of the period and place, or an older house showing period modifications; a barn typical of the period; and at least one smaller outbuilding typical of the period -- summer kitchen, springhouse, smokehouse, bake house, pigsty, machine shed, etc. The more outbuildings there are which illustrate agricultural diversification, the better. A farm should have crop land and retain at least some historic field size or boundary.
A historic agricultural district should have a more or less contiguous collection of farms collectively representing these features.

To be considered significant for the period of “Diversified Crops, Livestock, and Poultry, c. 1900-1940,” a farmstead should include a house typical of the time and place or an older house showing period modifications; an older barn showing 20th century adaptations; at least one summer kitchen, smoke house, or butcher house; at least one outbuilding showing poultry raising, hog raising, or dairying; and architectural accommodation for farm machinery. The more outbuildings there are which illustrate agricultural diversification, the better. A farm should have cropland. Remnant field boundaries such as treelines or fencing are a plus. Landscape evidence for truck farming or orcharding is a plus because of its rarity. A historic agricultural district would need a group of contiguous farms collectively representing these features.

To be considered significant for the period of “Specialization, Petroleum Based Production, and Off-Farm Labor, 1940-1960,” a farmstead need not have a house which dates precisely from this period, but should have barn dating from the period or a barn with adaptations dating from the period; architectural evidence for dairying and/or poultry raising; and architectural accommodation for farm machinery. A farm should have cropland. Remnant field boundaries such as treelines or fencing are a plus, as is a farm pond. Historic contour strips are a plus. A historic agricultural district would need a group of contiguous farms collectively representing these features.

B. Properties may possess a range of buildings and landscape features that illustrate change over time in the region’s agricultural history:

To be considered significant for representing the major agricultural changes in the Great Valley Historic Agricultural Region, a farmstead should have architectural evidence of the major shifts over time. For example, an early 19th century house, late 19th century barn and subsistence buildings, and 20th-century silo, milk house, and barn adaptations would effectively portray the shift from diversified strategies to dairying. A farm should have cropland and some remnant landscape features such as woodlot, pond, or treelines. A historic agricultural district should have a more or less contiguous collection of farms representing these features.

XVIII. Property Types and Registration Requirements for Criterion A, Agriculture, Specific to the Southeastern Pennsylvania region.

A. Properties may possess a strong representation of typical buildings and landscape features from one chronological phase of the region’s agricultural history:

A farmstead will normally be significant under Criterion A only if: 1) its individual production system, for the period in question, reflects the average or above average production levels for its township in the same period, 2) its built environment and landscape reflects that product mix, 3) its built environment and landscape reflects locally prevalent levels of mechanization and tenancy, and labor patterns, and 4) if, in instances where a farm has a strong, documented connection to a particular ethnic group or land tenure system, its architecture and landscape shows show evidence of that connection. [See Narrative for discussion.]
To be considered significant for the period “Diverse Production with wheat as an export crop, c. 1730 to about 1780” a farmstead should include, at a minimum, a farmhouse typical for the region, dating to the period; and at least one barn or outbuildings related to diverse production with wheat as an export crop, dating to the period. A farm should have remnant crop fields or pasture. It is a plus if historic field or property boundary lines are represented. A historic agricultural district would need a collection of farms representing these features.

To be considered significant for the period 1780-1870, “Livestock Feeding and Home Dairying in a diversified system,” a farmstead should have a farm house typical of the period and place, or an older house showing period modifications; a barn typical of the period; at least one dairy related or cattle feeding related outbuilding; and architectural evidence for farm mechanization. The more outbuildings there are which illustrate agricultural diversification, the better. A farm should have pasture land and crop land. A historic agricultural district should have a more or less contiguous collection of farms representing these features.

To be considered significant for the period 1870-1940, “Fluid Milk Dairying, Poultry, Truck Farming, Nurseries, and Specialty products,” a farmstead should include a house typical of the time and place or an older house showing period modifications; an older barn showing 20th century adaptations, or a new type such as a stable barn; a milk house; architectural accommodation for farm machinery; and architectural evidence for subsistence activity. The more outbuildings there are which illustrate agricultural diversification, the better. If the farm has a history of specializations such as a nursery business, the buildings should reflect that. A farm should have these features plus cropland and pasture land. A historic agricultural district should have a more or less contiguous collection of farms representing these features.

To be considered significant for the period 1940-1960, “Suburbanization and Specialization,” a farmstead need not have a house which dates precisely from this period, but should have barn dating from the period or a barn with adaptations dating from the period, and a silo dating from the period. A farm should have pasture and cropland. A historic agricultural district should have a more or less contiguous collection of farms representing these features.

B. Properties may possess a range of buildings and landscape features that illustrate change over time in the region’s agricultural history:

To be considered significant for representing the major agricultural changes in the Southeastern Pennsylvania Historic Agricultural Region, a farmstead should have architectural evidence of the major shifts over time. An 18th century house, late 19th century double decker barn and granary, and 20th-century milk house and silo, for instance, would effectively portray a shift from very small-scale agriculture to diversified grain and livestock farming to dairying. A farm should have cropland, pasture, and tree lines or woodlots. Orchards are desirable but not required. A historic agricultural district should have a contiguous collection of farms representing these features.

Criterion C, Architecture and Engineering
Unlike with Criterion A, where typical examples are encouraged, for Architecture, average or ordinary examples are not likely to qualify under Criterion C. A farm or farmstead will not be eligible under Criterion C simply because it has farm buildings that retain integrity. Under Criterion C, to be eligible as property must exhibit the “distinctive characteristics of a type, period, or method of construction or that represent the work of a master, of that possesses high artistic values, or, as a rural historic district, that represent a significant and distinguishable entity whose components lack individual distinction”.  

This MPDF follows the evaluation models established by the 1992 MPDF Farms in Berks County and the 1994 MPDF Historic Farming Resources of Lancaster County, which defines standards for architectural significance of farm buildings as "a rare or intact example of a period, style or type" or as a “noteworthy example of a particular building type ...”. To be eligible under Criterion C for Architecture, a farm building, farmstead, farm, or historic agricultural district must possess physical characteristics that specifically reflect aesthetic, cultural, craftsmanship, or production values associated with regional agriculture and rural life. Farm buildings and structures must exhibit qualities of design, workmanship, and artistic merit that are tied to the period of construction.

This document explains the unique Criterion C issues that apply to farm buildings and structures. Criterion C relates to significance primarily for Architecture, Art, and Engineering. While most farm structures will not be evaluated individually, structures notable for their advanced construction technology or design may factor into the Criterion C significance of a property.

Evaluation conventions for the architectural style of dwellings are well established so they are not covered here. However, what constitutes architectural significance for farm dwellings and agricultural buildings and structures in the area of Agriculture is less widely defined. This section lays out some considerations for how to assess architectural significance for farm buildings and structures based on their engineering and design characteristics related to agriculture.

As with any other architecturally significant building type, resources must conform closely to the seven aspects of integrity. Significance must be demonstrated, not merely asserted.

What does qualify as a significant design?
A barn might qualify if its design retained essential characteristics of specific barn types such as Pennsylvania bank barn, Wisconsin style Dairy barn, English Barn etc. The salient architectural features of each type are defined within the narratives that accompany this MPDF. The significant elements of barn layout (location of threshing floors, hay mows, stables, granaries; typical interior organization for a given type; vertical work-flow arrangement where relevant) should retain integrity. The same would be true for outbuildings, for example if a granary or spring house retained essential characteristics of its type. A house, barn, or outbuilding that has been altered or modified to accommodate changing maintenance habits, popular taste, or the convenience of the farmer would not be considered significant unless the new features are demonstrably tied to regional patterns in agricultural buildings and the built environment for the period of significance. For instance, a mid-19th century vernacular farmhouse that was Colonial

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5 NR Bulletin How to Apply the National Register Criteria for Evaluation, p 17.
6 Historic Farming Resources of Lancaster County, MPDF, 1994.
7 In addition see the discussion of the regional architecture of farm buildings in the MPDFs Farms in Berks County (1992) and Historic Farming Resources of Lancaster County (1994).
Revitalized in the early 20th century might be significant for its stylistic features outside this MPDF but would not be architecturally significant under this MPDF because the alterations are not associated with the needs and priorities of farm life. But a farmhouse modified to reflect important transitions in the relationships of farm family members to each other, labor, or the market could be considered significant (such as the addition or removal of quarters for hired hands, cooking facilities for feeding threshing crews, social spaces separated from spaces devoted farm matters, etc). Changes reflecting access to modern amenities and willingness to adopt modern amenities could also be considered significant, such as the addition of a bathroom, running water, a heating plant, or electrification. However, the design features reflecting these changes must be demonstrated to be part of a local or regional pattern of construction; individual, personalized or idiosyncratic alterations that lack design features not adopted elsewhere in the community would not be considered significant under Criterion C, but would support significance under Criterion A for their association with labor and production patterns. In the post World War 2 era, many farmhouses have undergone dramatic changes in ways that make them indistinguishable from contemporary suburban residences in their materials, styles, amenities, and use. Thus it will be difficult to evaluate the Criterion C significance of post war farmhouses without further study.

Design could also include overall layout of the farmstead or farm, for instance if buildings are arranged in a recognized, regionally typical pattern in orientation and layout, such as linear organization of eastern and central Pennsylvania (as described by Henry Glassie, Joseph Glass, and others); or; farmsteads bisected by a road as is common in the Northern Tier (as described by Trewartha).

Design could also include examples of marked visual relationship of buildings to one another through such qualities as colors (historically), siting, proportions, and materials. Thus significant design can potentially apply to a farmstead or even a historic agricultural district.

Design includes massing, proportion, fenestration, and ornament. Ornamentation will be very important in determining Criterion C eligibility. It could include decorative ironwork (hinges especially); roof-ridge cupolas; gable-end “stars”; painted or trimmed louvers; datestones; painted decorations; cutout designs; cornice detailing; brick-end patterns; and bracketing.

What qualifies as significant workmanship?
Workmanship is evidenced in high-quality masonry, timber framing, durable construction, including evidence of skilled workmanship in details such as hardware or even nails. Again, the bar should be high. Masonry, for example, might exhibit carefully cut stone rather than fieldstone. Another facet of workmanship would be cases where there is an excellent example of particular construction method such as log, blockstanderbau, plank, timber frame, Shawver Truss, etc. Workmanship applies primarily to individual buildings.

What qualifies as significant “artistic merit”?
This is the most hard to define category of the three. It connotes skill in achieving desired aesthetic qualities. For example, careful proportions, sensitive siting, and originality of design are important components of aesthetic merit. Again, ornament is where aesthetic merit shows most clearly, for example in locally characteristic designs for hardware, weathervanes, bracketing, and the like.

Examples
Example 1: An oversized (probably 75 feet long) double-decker Pennsylvania barn with unique ornament, double bankside bridges, and unusual struts under the forebay, located in Centre County. This barn would qualify under Architecture because of its design features (double decker with multiple mows and floors), its workmanship (technical mastery represented in bridges, struts, and interior framing), and its artistic merit (unique ornament). It is unique, regardless of region.

**Figure 1:** Ornament on Hodge Barn, Centre County

**Figure 2:** Hodge Barn, Centre County, two bridges to barn floors

**Figure 3:** Hodge Barn, Centre County, struts under forebay

Example 2: The Bertolet Barn in the Oley Valley of Berks County, 1787 and 1839. This barn shows the evolution of the Pennsylvania Barn. The 1787, stone portion has a Germanic *liegender stuhl* framing system; forebay granary with bins; two mows flanking a threshing floor; and unusually intact stable level. It is significant because it shows a high degree of design excellence (the multi-level system was worked out to perfection), workmanship (the masonry and especially the timber framing are superior in this regard), and artistic merit (in its proportions, materials, etc). The 1787 date is inscribed over the bankside door. The 1839 portion (also dated, thus affording a rare chronological benchmark) is equally significant but for different reasons: it shows adaptations of framing systems, but still assembled with a high degree of skilled workmanship; it shows continuity of design and artistic merit from the earlier portion.

**Figure 4:** The Bertolet Barn in the Oley Valley of Berks County, 1787 and 1839.

Example 3: the Plank Barn in Cumberland County. This brick-end barn was built in 1853. It possesses exceptional qualities of design, workmanship, and artistic merit. Its significant design features include an unusual attention to simple proportions. Its workmanship is important in the significant masonry technique needed to create the openwork patterns in the gable ends. Its artistic merit is represented in the diamond motifs. It is significant in the Cumberland Valley partly because brick-end barns are rare, and partly because it is significant even among brick-end barns. The datestone helps to establish chronological frameworks for these barns. The owner manufactured a local plow and the barn is evidence that he was consolidating his wealth.

**Figure 5:** Plank Barn, Cumberland County, 1853

**Figure 6:** Floor plan of Plank Barn, Cumberland County

Example 4: Most examples of significant architectural merit will likely be larger buildings such as barns, but this smokehouse (in Berks County) is an example of a smaller building which might qualify because of its masonry (which qualifies both under workmanship and design, because its decorative corner quoins are clearly ornamental) and the hand-wrought ironwork, which includes a bar against thieves which is inscribed with the owner’s name and date. The building clearly exhibits the characteristics of its type and has excellent integrity.
Figure 7: Berks County smokehouse

Criterion D, Archaeology

To be eligible under Criterion D, a property must “have yielded or...be likely to yield information important in prehistory or history.” For Agriculture, although farms and farmsteads may contribute other (or various types of) information to the study of Pennsylvania history important information on archaeological farm properties in Pennsylvania is information that contributes to the understanding of the major themes identified in this context either for the state or for the individual agricultural regions or for both. To recap, these themes include representation of agriculture of one time period or representation of agricultural change over time; representation of typical production, in terms of both production and use; and representation of labor patterns, land tenure, mechanization, and cultural traditions. These requirements should not be considered in a vacuum; they must be examined in the context of the cultural milieu of the historic agricultural regions developed elsewhere in this MPDF.

Based on current research in historical archaeology, the registration requirements for archaeological properties that are farmsteads in Pennsylvania are that the site provide important information on changes to landscape and the built environment over time; on the use of agricultural products; on labor and land tenure; and on cultural patterns. To be eligible under these registration requirements, a site must provide important information on the topics listed below and must also demonstrate integrity. For archaeology, integrity should be measured in light of the current state of archaeological knowledge for that region, the research questions being addressed, and the unit of analysis. For example, the standards of integrity for a region without a robust archaeological record would be less stringent than for an area that is well-documented archaeologically. In addition, a site where the significance lies in its ability to provide information about change over time should have discrete deposits that can be directly associated with different time periods. The above are only two general examples to guide assessments of integrity.

Change Over Time

Agricultural resources may yield important information about modifications to the landscape to accommodate both farming and changes in farming. The creation of a farm obviously involves alteration of the landscape; archaeology can document this alteration. For example, Mary Beaudry (2001-2002: 137-138), working at Milton Farm in Scotland, was able to document how the landscape was altered to accommodate the creation of a farm dedicated to raising sheep. Excavations revealed the massive drainage efforts that were undertaken to turn the land from marsh into productive pastureland. Therefore, important information would document how farmers modified the landscape to begin farming as well as to keep up with changing agricultural practices in their region.

Archaeology can also provide important information on the evolution of the built environment. “The rendering of a farmstead on an atlas dating to the middle of the 19th century does not mean the site sprang from the ground full blown… (Catts 2001-2002: 145).” Often, buildings were moved or reused over time (Beaudry 2001-2002: 130). In some cases, buildings were never even documented in the historical record or the documentation is contradictory (Garrison 1996: 24, 32). These data can provide important information on how farmers responded to the larger movements and innovations in agricultural practice for their regions, documenting both the degree to which farmers followed the latest prescriptions, and the amount of time it took for these ideas to diffuse from other areas (Beaudry 2001-2002: 130; Catts 2001-2002: 145).
Archaeology can also provide important information on how changing patterns of refuse disposal illustrate larger changes in farming practice. For example, archaeologists were able to tie modernization theory into their study of South Carolina farmsteads by examining refuse disposal at these sites (Cabak, Groover, and Inkrot 1999: 35). Comparing the density of artifacts at both “modern” and “traditional” farmsteads, archaeologists were able to document the ways that disposal patterns reflected modernization. In addition, useful features may be filled with refuse later on. Mary Beaudry (1986: 39) documents the filling in of water-related features, pointing out that that process can be related to “…an ongoing series of changes made in response to technological innovations, economic and social pressures…” etc. Catts (2001-2002: 148) also documents a trend of refuse disposal in specific dumping areas away from the farmstead. The timing and reasons for this change could provide important information on the evolution of agricultural practice, as well as on the degree with which innovations diffused from other areas.

**Agricultural Production**

In terms of production, archaeology can provide important information on agricultural production for a market economy. One of the most fruitful lines of evidence, faunal analysis, has the potential to reveal a great deal of important information regarding how market forces shaped production patterns on farms. By comparing faunal remains from both rural and urban sites in Massachusetts, archaeologists were able to document changes in rural production to meet urban demand (Bowen 1998). The percentage of calves in urban assemblages was much higher than in rural assemblages; therefore, it appears that increased production of milk for urban areas also led to increased production of veal for those same areas. Rather than spend precious resources on animals that were useless for dairying, farmers would sell male calves to urban consumers (Bowen 1998: 143).

Examination of faunal disposal patterns is most profitable when done in conjunction with oral historical or other information (Whittaker 1999: 53-54). In Iowa, for instance, archaeologists found that, in general animals that were slaughtered for farm consumption were generally either burned or discarded; rarely, they were buried. The existence of a large, rapidly filled pit, filled with more remains than would be necessary for a farm family, therefore, pointed out that slaughter for market was taking place at this site (Whittaker 1999: 53-54). These types of data could provide important information on the degree to which individual farms participated in the market system.

**Labor and Land Tenure**

In terms of labor and land tenure, archaeology can produce important information on the interplay between land tenure and changes over time. For example, archaeologists in Massachusetts were able to correlate changes to the landscape with specific changes in ownership in Estabrook Woods (Garman et al. 1997: 65-66). One owner clearly modified the yard to create better drainage. In addition, as ownership changed, the field layout also changed: earlier field features (mounds for corn cultivation) were incorporated into later field patterns. This type of information could be especially useful if different owners represented different ethnic groups. For example, archaeology could provide important information on the changes wrought when a Welsh family purchased a farm from a Pennsylvania German family, and how those changes are manifested in the archaeological record.

Aside from providing important information on individual farms and individual ownership, archaeology can provide important information on the effects of larger events on the farming culture. For example, during the Napoleonic Wars in Europe, European demand for American goods (including agricultural products) rose dramatically. With this in mind, archaeology can document the effects of this heightened demand on agricultural production and practice in each agricultural region in Pennsylvania (Garman et al. 1985: 73). In addition, the Civil War was another event that had a dramatic impact on agricultural society.
Besides raids, forage, and simply the movement of large bodies of troops across the agricultural landscape, this event occasioned a tremendous loss of life and shortage of manpower after the war. In the southern United States, this loss of manpower hastened the mechanization of many farms. Archaeology could demonstrate how this loss of manpower was manifested in the landscape and material culture of Pennsylvania’s agricultural regions (Catts 2001-2002: 149).

Labor and land tenure also ties into several major research themes within historical archaeology, including status (e.g. Miller 1980), class (e.g. McGuire and Walker 1999), and ethnicity (e.g. Stine 1990). In terms of status, the archaeology of Pennsylvania farms can provide important information about the ways in which farmers displayed their status. For instance, investigations in New Jersey suggest that farmers chose to display their status by improving their agricultural holdings, as opposed to participating in the consumer culture (Friedlander 1991: 27). Ceramic and glass artifacts indicated a status position that was not in keeping with the farmer’s status as derived from the historic record. Tenant farmers, on the other hand, may have more fully embraced consumer culture since there was little use in improving structures and land that they did not own (Rotman and Nassaney 1997: 56). Archaeology within Pennsylvania’s agricultural regions could provide important information on the general applicability of these findings.

Status, in combination with ethnicity and role (owner, tenant, etc.), has the potential to yield important information on the social hierarchy of agriculture. For example, statistical analyses in North Carolina found that the material remains of African American landowners were more similar to those of white tenants than to those of either African American tenants, or white owners (Stine 1990: 40). African American and white tenants, on the other hand, were nearly impossible to distinguish. Overall, ethnicity played a role in the ranking of landholding farmers; however, economics appears to have played a more important role than ethnicity in the rank of tenant farmers. Investigations in Pennsylvania could test this model across regional lines.

Closely related to the above themes of ethnicity, status, and role, is the concept of class. Class has variously been defined as “the relationship of a social group to the means of production” (McGwire and Walker 1999: 160), as a description of a fixed position in society, and as a relative measure of the relationships between different social groups (Wurst and Fitts 1999: 1). According to some archaeologists, however, regardless of the definition of class, its role has not been sufficiently examined in the archaeological record; the historical archaeology of class has been “meager.” (Wurst and Fitts, 1999). Therefore, this concept may yield important information for the study of Pennsylvania agriculture. For example, in New York state, archaeologists examined the manifestations of class between servants and their employers in Binghamton and found that artifact types and locations can represent different classes within the same property and that mixed assemblages may be the result of different class structures on the same property (Wurst 1999: 17). In agricultural regions of Pennsylvania where migrant labor was important, this type of study could produce important information on the differences between the owners and the workers. In addition, Wurst (1999: 13) demonstrated how, at a rural tannery, the owners minimized the material cultural differences between themselves and the workers.

Cultural Patterns
In terms of cultural patterns, archaeology can provide important information about the degree of cultural exchange that took place in agricultural communities (i.e. assimilation and acculturation). In some areas of New Jersey, for example, English and Scottish farmers borrowed certain architectural elements from their Dutch neighbors; archaeology may be able to document this exchange in other areas, such as land use and other material culture. In addition, the historical record indicates that the Dutch maintained many of their ethnic ties, including language; however, other aspects of material culture, such as ceramics, indicate that
some cultural exchange was taking place (Scharfenberger and Veit 2001-2002: 68). For Pennsylvania, archaeology can provide important information on assimilation within the cultural milieu of the agricultural regions discussed within this MPDF.

Archaeology can also provide important information about cultural patterns, as manifested in religion and religious practice. For example, in Arkansas, archaeology, in conjunction with the documentary record, was able to document the degree to which one family maintained its Jewish heritage, despite being isolated from any large Jewish congregation. The faunal assemblage demonstrated that this family did not observe kosher law; however, the documentary record points out that the family was active in establishing a synagogue in New Orleans and was still a participant in the larger Jewish world. It appears, therefore, that the family’s location in an isolated, non-Jewish area led to certain changes (e.g. not keeping Kosher law), but did not break all of their ties to the Jewish community (Stewart-Abernathy and Ruff 1989: 97 and 105).

In Pennsylvania, archaeological investigations at a Quaker-owned farmstead in Chester County were able to provide important information on the interplay (and contradictions) between Quaker belief and Quaker participation in the larger market system (Bailey et al. 2004:131).

Faunal Studies

Although not one of the overarching themes in Pennsylvania agriculture, faunal analyses have the potential to provide a great deal of important information about the above themes. For example, past archaeological studies have used faunal analyses to examine the use of the landscape and change over time, as well as status. By combining oral history with faunal analysis, archaeologists in Missouri were able to provide information on different processing methods and disposal of fauna (Price 1985: 46-47). For example, smaller animals, such as squirrels, would have been processed in the yard, leaving some bones there. Other bones, however, would have been discarded at the margins of the yard after the meal. Larger animals, such as pigs, would have been slaughtered near the smokehouse (Price 1985: 48). In areas without standing remains, or where spatial relationships are not clear, this data could provide important information on the layout of agricultural properties through time. Also, the use of wild animals in the diet can point out the status of the site’s inhabitants. Both higher status and lower status farmers would likely have a larger percentage of wild animals in their diet, either through conscious choice, or due to economics (Scharfenberger and Veit 2001-2002: 64).

Conclusion

The registration requirements for archaeological properties that are farmsteads in Pennsylvania are that they must provide important information on the themes developed in this MPDF. It is important that the important information relate not only to the themes, but also to the themes as they are manifested in each agricultural region. Broadly, these themes are change over time, agricultural production, labor and land tenure, and cultural patterns. In addition, a separate category, faunal analysis, has the potential to yield important information on several of the themes identified in the MPDF. Aside from significance, as represented by the potential to yield important information, farmsteads must also display integrity. The assessment of integrity should be based on the archaeological record of a particular region, as well as the research questions and the unit of analysis.

The above examples are not meant to be an exhaustive list of ways in which a farm or farmstead site could be eligible under Criterion D in Agriculture; instead, they are meant to provide a limited overview of current research into the archaeology of farms or farmsteads and of data that these excavations have yielded. Other datasets could yield significant information about agriculture. In addition, many of these research topics pertain equally well to both demolished and extant farms or farmsteads.
In addition, keep in mind that archaeology can be used to support evaluation under any Criterion or area of significance.

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Statement of Integrity
This Statement of Integrity discusses the seven categories of integrity as defined by the National Register, for each of the three Property Types (farmstead, farm, historic agricultural district) defined in this context.

Location:
Integrity of Location refers to the requirement that buildings and landscape elements remain in their original location. Normally, a building loses eligibility if it has been moved. However, where a farmstead is concerned, farm buildings present a challenge to the normally straightforward rule. Historically it has been very common to move and reuse farm buildings. Some, like poultry houses, were actually designed to be easily moved. Other types of smaller farm buildings were frequently rearranged. The New England Connected Farm complex, for example, resulted from moving buildings. Therefore, if an agricultural building has been moved, and the change in location can be interpreted as a reflection of changing agricultural patterns, integrity of location has not been compromised. If a farm building has been moved or reused after the period it is supposed to represent, integrity of location is not present.

Integrity of Location for a farm is well defined by the SR 30 context, which says “an agricultural property must be located either where it was constructed or where important trends or patterns in agriculture occurred…. Siting with respect to natural features and topography, use of local and indigenous materials, relationship to roadways, the presence of native species… and other responses to the natural environment all add to integrity of location.”

Integrity of Location by definition is present in a historic agricultural district, as it is unlikely that an entire area would be relocated.

Design:
To quote the Georgia agricultural context, design is the “combination of natural and cultural elements that create the form, plan, style, and spatial organization of a property.”

For individual farmstead buildings, design includes such elements as siting, orientation, form, massing, proportion, fenestration, location of doors, roof types, and ornament. Integrity of Design applies to both exterior and interior elements. For houses, interior integrity is well established elsewhere; for barns and outbuildings, interior integrity of design refers to the presence of significant plan elements characteristic of a given barn type. So, for example, an English Barn should retain the characteristic one-level, three-bay layout with mow, threshing floor, and stables arranged crosswise to the roof ridge. A Pennsylvania Barn should exhibit the characteristic multi-level work-flow arrangement, and the diagnostic features of the type (forebay, banked construction, and so forth.) Another aspect of interior design would be framing systems; while these are covered under Workmanship, they also fall under Design because often they were assembled to permit hay tracks, expand storage space, and delineate spatial divisions both vertically and horizontally. Barn and outbuilding interior alterations that show significant agricultural changes in a region do not compromise integrity, because they can contribute to significance based on change over time. However, if they postdate the period of significance and/or obliterate historical fabric, then integrity is not present. For example, a Pennsylvania Barn whose lower level was cemented and fitted with stanchions for dairy cows in the 1930s could retain integrity because it illustrates changes within a period of significance, but if its entire lower level was gutted, expanded, cemented, with new partitions in the 1980s, it would likely not retain integrity.
Farmstead layout and the relationship of buildings to topography are important elements in Integrity of Design. Farm layout should retain integrity with respect to farm labor patterns for the period of significance in the region where the farmstead is located. In most cases, this means spatial organization to facilitate family and neighborhood labor. So, for most pre-1930 farms, a poultry house, detached dairy house, or hog facility should show a siting relationship to both house and barn, usually being situated between house and barn, or in a clear relationship to the house’s dooryard (as in the Yankee Northern Tier) or vorhof (more common in German Pennsylvania), or in an arrangement where all buildings are closely clustered. Integrity of farmstead design also can apply to characteristic cultural or regional patterns. In the Northern Tier, for example, it was common for a road to bisect the farmstead, whereas in German Pennsylvania, a linear or court-yard organization was more prevalent.

For farmstead landscape elements, Integrity of Design applies to whether the farmstead retains traces of the fabric and location of boundaries, lawns, fences, ponds, circulation elements (paths, drives), gardens, farm lanes, orchards, and ornamental plantings. It would be rare for these to survive in their entirety, but some vestiges should be present.

Integrity of Design also applies to the collection of buildings on a farmstead. Most farmsteads will contain a mix of contributing and noncontributing buildings and structures. A determination must be made as to whether there is too high a presence of noncontributing elements. In such cases, it is important that the farmstead adequately reflect the composite patterns of the relevant agricultural region and period. For example, a farmstead might have an early wood-stave silo, a c. 1940 concrete stave silo, and a c. 1975 Harvestore silo all clustered together, next to a barn complex that includes a c. 1900 Northern Basement barn, a milk house, and a c. 1950 cow shed. In this context, the noncontributing Harvestore silo does not detract from Integrity of Design, because its scale and siting relate to the historical fabric. On the other hand, a farmstead may have a Pennsylvania Barn surrounded by a 1990s livestock loafing shed twice its size, and a 1980s manure lagoon. If modern livestock-handling facilities dwarf the historic building in scale, or if they are sited so close as to overshadow the historic fabric, then Integrity of Design is doubtful. However, it should be noted that in many cases, modern livestock handling facilities are sited away from older buildings, and in these cases (especially if the modern facilities are all concentrated in one place), Integrity of Design may still be present. Scale and location should be considered in determining Integrity of Design in cases like these.

At the farm scale, Integrity of Design is present only when a significant proportion of acreage remains. It is desirable, though not an absolute requirement, if continuity of use is present – ie crop production, pasture, livestock raising, and so on. In addition, a farm’s Integrity of Design depends on the extent to which it retains traces of field divisions, fields (such as small fields or historic strip cropping) property boundaries, treelines, hedgerows, fencing, woodlots, circulation paths, and the like. If continuity of use is present, it is unlikely that all historic landscape features will have survived intact, because of the needs of modern farming; but at least some traces should be evident. If large-scale monocropping resulted in the removal of field boundaries, woodlots, treelines, fencing, and circulation paths in the 1990s, Integrity of Design may have been lost.

A historic agricultural district retains Integrity of Design when its constituent farms have an acceptable level of integrity collectively. Since contributing resources are counted individually (so, each resource, even within a farmstead, would be counted), this must be determined with respect to whether and how the sum total of contributing resources creates a coherent whole. For example, there may be cases in which one or
two farms are included because they have one outstanding building, even though its other resources are not exceptional. But overall, there should be a consistent presence of contributing resources on farms that make up the district. Also, elements of the historic transportation routes, waterways, etc. that connected the farms in the district should remain.

A historic agricultural district’s integrity of design depends very much upon landscape features. Intact historic field patterns, treelines, ponds, disposition of pasture and woodlot, etc. should count heavily in an assessment of integrity in a district. Consider also that since farm fields, waterways, and woodlots are such crucial components of an agricultural district, their integrity should weigh equally with architectural integrity of buildings. So for example, a district might contain buildings where there has been some impairment to integrity, but if many landscape features are clearly intact, the overall district’s integrity would still meet National Register standards. Another example would be a situation where small patches of modern development are interspersed within the boundaries of a historic agricultural district. In a case like this, the total number of noncontributing resources might be relatively high, but overall integrity would still meet National Register standards because the land area occupied by the intrusions would be minimal compared with the total area taken up by the district.

Setting:
Integrity of Setting with respect to a farmstead has two dimensions. Integrity of Setting can be present with respect to the farmstead’s interior organization, for example if it retains its original relationships among buildings, natural features, and landscape elements that make up the farmstead. Integrity of Setting also applies to the farmstead’s surroundings, so at least part of a farmstead (one or two sides at least) should border on open space, woodland, or agricultural land. If a literal spatial buffer is not present, Integrity of Setting may still be present if the farmstead retains visual buffers. For example, what if a farmstead lacks much original acreage, and abuts on a modern subdivision? It may retain Integrity of Setting if it is visually set off from the subdivision through such means as topographical features. However, if not, the farmstead probably does not retain Integrity of Setting.

Integrity of Setting with respect to a farm normally involves continuity of use. There may, however, be cases where continued farming with modern methods has all but wiped out historic farm landscape elements such as patterns of crop rotation and field organization, hedgerows, treelines, shade trees, rock piles, fencelines, fences, and the like. In extreme instances, Integrity of Setting may be compromised by continuous farming. An example would be if 1930s aerial photographs showed all of these features, and a present-day site visit showed that a large monocropped field had supplanted these earlier farm landscape features. Integrity of Setting for a farm is also present if a farm abuts open land, woodland, and/or historic transportation corridors.

Integrity of Setting with respect to a historic agricultural district can be reckoned with respect to internal relationships among buildings, landscapes, natural features, and transportation corridors. So for example a district along a historic canal corridor should include canal features like locks, masonry lining, and the like; a district in a sharecropping region should include a number of farms that were historically and thus architecturally interrelated. A historic agricultural district possesses Integrity of Setting if its external surroundings continue to reflect general historic patterns and use.

Materials:
Integrity of Materials refers to the presence of “key exterior materials from the period of significance” (Georgia p 115). Integrity of Materials is well covered for houses elsewhere. For the other buildings of the farmstead, barns and outbuildings often are constructed, or reconstructed, of recycled materials, and integrity of materials is present as long as the recycling can be interpreted as contributing to significance for agriculture. On a farm property, some materials may be organic – such as a fenceline made of rubble, trees, and spontaneous growth. (However, the original vegetative material of crops, or the original fence, does not need to be present.). A historic agricultural district retains Integrity of Materials if its constituent properties possess Integrity of Materials collectively. As well, in districts Integrity of Materials can refer to the presence of key materials across property boundaries, or along shared property boundaries. Remnants of irrigation systems would be an example.

**Workmanship:**

Integrity of Workmanship refers to the retention of traditional or historic craftsmanship. These include such familiar skills as wood joinery (log, plank, post and beam framing), masonry (stone and brick), but also skills more closely related to agriculture such as fence building, contour plowing, windbreak planting, crop rotation, garden construction, farm pond construction, or farm planning. Workmanship can also refer to the skilled use of technologies that are not necessarily hand-tool derived. For example, the Shawver Truss, a barn framing system popular c. 1900, combined artisan skill with industrial technologies. Evidence of recycling or reuse may contribute, as long as it is part of a pattern or historic trend. Integrity of Workmanship applies mainly to the farmstead buildings and landscape features. However, collectively Workmanship could conceivably have an impact on the overall appearance of a historic agricultural district in some instances, for example, if in a district a group of farms collectively exhibits particularly adroit arrangement of contour strips.

**Feeling:**

Integrity of Feeling refers to the “Ability to evoke the aesthetic sense of a particular time and place.” (Georgia, 115). This is an intangible quality, which depends to some extent on integrity of design, setting, materials, and workmanship. If the farmstead, farm, historic agricultural district, or the general area continues under agricultural use, integrity of feeling is enhanced. Integrity of Feeling also is present if a property retains a sense of scale characteristic for its period; the interrelationship of the human and natural that is so important in agriculture; if there are many vantage points from which agricultural activity or evidence of agricultural activity are vividly apparent.

**Association:**

Integrity of Association refers to the “direct link between the property and the… events and persons that shaped it.” (Georgia, 115). For significance with respect to agriculture, a farmstead or farm must have contributed to a working farm for its period of significance. The presence of historic landscape features related to agriculture is a key aspect of Integrity of Association. Close attention should be paid to identifying intact or remnant features. For example, are crop field size, scale, shape, and patterns are retained from the pre-contour stripping era? Are there remnants of early woodlots or sugar bushes? Is there evidence of land use such as pasturing? A majority of farms in a historic agricultural district should have a continued association with agriculture for the period of significance. To ensure Integrity of Association, the inevitable “intrusions” should be kept to a minimum. However, a historic agricultural district could conceivably have a high percentage of noncontributing properties relative to an urban district. For example, a concentrated 25-acre subdivision with 50 noncontributing houses might be contained within a 1,000-acre historic agricultural district with fifty contributing farms. Even though technically, the
subdivision elevates the percentage of noncontributing properties, it does not reduce Integrity of Association, because it is such a small percentage relative to the continuously farmed (and contributing) acreage in the remainder of the district land area.
Figure 1
Ornament on Hodge Barn, Centre County

Figure 2
Hodge Barn, Centre County, two bridges to barn floors
Figure 3
Hodge Barn, Centre County, struts under forebay

Figure 4
The Bertolet Barn in the Oley Valley of Berks County, 1787 and 1839.
Figure 5
Plank Barn, Cumberland County, 1853

Figure 6
Floor plan of Plank Barn, Cumberland County
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Berks County smokehouse
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Joel Dreibelbis Farm, Berks County, farm lane with outbuildings

Figure 10
Joel Dreibelbis Farm, Berks County, farm lane, fields, outbuildings
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Figure 1
Ornament on Hodge Barn, Centre County

Figure 2
Hodge Barn, Centre County, two bridges to barn floors

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Figure 4
The Bertolet Barn in the Oley Valley of Berks County, 1787 and 1839.

Figure 5
Plank Barn, Cumberland County, 1853

Figure 6
Floor plan of Plank Barn, Cumberland County

Figure 7
Berks County smokehouse

Figure 8
Chicken house at Landis Valley Museum, Lancaster County

Figure 9
Dreibelbis Farm, Berks County

Figure 10
Dreibelbis Farm, Berks County
NOTE: Before reading this narrative please read the Introduction and User’s Guide to the MPDF, particularly the section “Conceptualization (Historical Farming Systems and Historic Agricultural Regions).”

XIV. Lehigh County Potato Region, c1850-1910

Location
The Lehigh County Potato Historic Agricultural Region consists of several townships in northwestern Lehigh County, plus Albany Township in northeastern Berks County. The Lehigh County townships are Heidelberg, Lowhill, Lynn, North Whitehall, and Weisenberg. They extend from the southern edge of the Blue Mountain on the north, southward approximately to where the Great Valley becomes less hilly and the conurbation of Allentown: Bethlehem: Easton lies. Albany Township is just west of Lynn Township; it is bordered within a “V” formed where the Blue Mountain bends around to the east.

Figure 1: Map of region

Climate, Soils, and Topography
Lehigh County falls within the climate region designated as “southeast” by Penn State geographer Brent Yarnal. Average temperatures are around 32° F in January to 77° F in July. The region has relatively hot summers and warmer winters than elsewhere in the state. Annual precipitation averages about 40–45 inches. The frost-free season is about 150 days.1

Soils in this area tend to belong to the Trexler association. According to the 1959 county soil survey, these are moderately deep to deep, and well-drained. The parent rock is mostly shale.2

The region is hilly, with moderate to steep slopes. A number of creeks drain the area. The main ones are the Jordan, Ontelaunee, Mill, Kistler, Switzer, and Pine Creeks, and Stony Run. They drain to the Lehigh River eastward, and to the Schuylkill River southward.

Historical Farming Systems
Potatoes as one component in a diversified farming system, 1850-1910

Products, 1850-1910
By the mid-19th century, farms in northwestern Lehigh County averaged about ninety acres – among the smallest in the state, and well below the state average of 117 acres. Even so, farms in the region had more improved acres than statewide – 70 acres, as opposed to 55. Lehigh County’s percentage of improved acres was thus high – nearly 80 percent, as opposed to 47 percent statewide. By 1880, overall land use patterns in the region had changed little; the percentage of tilled land had edged up to about 83 percent, while woodland took up only 12 percent of farm land and pasture even less. The average Pennsylvania farm now had more improved acres than a typical Lehigh County farm, but still a smaller percentage of total acreage improved. Overall, the biggest change by 1880 was that Lehigh County farm size had decreased to just 53 acres, fourth smallest in the state. In just one generation, Lehigh County farm size shrank twice as fast as elsewhere in Pennsylvania. Farm families here were rapidly dividing up their farms and tinkering with their farming systems to make them work on smaller acreages. Though the farm values were around state

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averages, falling populations in Heidelberg and Lowhill Townships suggest that even subdividing farms couldn’t prevent outmigration.3

There were several essential characteristics of Lehigh County farming during this period. Northwestern Lehigh County farm families raised the usual field crops – corn, oats, wheat, rye, potatoes, buckwheat, and hay. A first point to make is that on these small farms, total crop production was comparable to that on the average-sized Pennsylvania farm of 117 acres. Second, the particular crop and product mix was distinctive: rye and potatoes were proportionally more important than were the other crops, while wheat and corn were less important than elsewhere. Mid-century Lehigh County farms produced about 150 bushels of rye (statewide, the average farm reported only 38). By the late 19th century, rye production was diminishing everywhere, but Lehigh County still exceeded statewide averages. Meanwhile, potato raising became more popular everywhere, but more so in Lehigh County. In both 1850 and 1880, northwestern Lehigh County farms significantly exceeded the rest of the state in per-farm potato production. While the average Pennsylvania farm produced 47 bushels in 1850, for example, Lynn Township farms averaged 100 bushels. By 1880, even though farm size had dropped significantly, potato production was up: Lynn Township’s farms now averaged 185 bushels of potatoes, and Heidelberg’s nearly 200, still significantly above state averages. These numbers are small compared with later achievements, but for the period they stand out. Moreover, a few individuals were already experimenting with significantly larger acreages.4

Figure 2: Lehigh County Potatoes region farm crops, 1850

This emphasis reflected distinctive circumstances. One was the region’s ethnic makeup. Lehigh County was (and remains) one of the most “German” in Pennsylvania. One historian estimated that three-quarters of the county population was Pennsylvania German. And, northwestern Lehigh County is arguably even more “German” than the rest of the county.5 The Allentown Morning Call ran a popular dialect column for many years and local cultural pride is strong. Rye was related to Pennsylvania German cultural practices. Some rye went to distilleries, and rye was also useful as a cover crop. But the main use for rye was probably rye bread, which remained important to Pennsylvania German foodways for a long time. An 1835 report from the county noted: “we produce a great quantity of rye for sale and home consumption, for man and beast; for be it remembered that we eat rye bread in preference, even when we have both sorts on the table.” These preferences persisted; a family of eccentric bachelor brothers in Albany Township was reported in 1891 to have raised “mostly rye” on their 155-acre farm, threshing it entirely with flails.6

Soils and topography also help explain the increased interest in rye and potatoes. The land in northwestern Lehigh County is hilly and the soils are not quite as productive as are the limestone-based soils nearby. Already in the mid 1840s a local historian noted that Heidelberg Township’s gravelly soils produced “an abundant crop of rye.”7 As time went on, northwestern Lehigh County farm families recognized both the strengths and limitations of their soils, and adjusted accordingly to crops that were suited to conditions. Potatoes thrived in the well-drained, shaly soils here. Local residents also cut ample hay crops, between 10

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3 Crop and farm size information is from the US Census of Agriculture. Population information is from F. A. Davis, New Illustrated Atlas of Lehigh County, Pennsylvania…. (Reading, PA, 1876), 9-10.
7 I. Daniel Rupp, History of Northampton, Lehigh… Counties (Harrisburg: 1845), 127.
and 13 tons on the average farm. Some observers believed that the incorporation of lime had helped substantially to preserve fertility and crop yields. Of Lowhill township, for example, atlas maker F. A. Davis remarked in 1876: "the soil is not naturally fertile, being chiefly white gravel; but the skill and industry of many of its farmers have rendered their lands quite productive. The application of lime has been found to be highly beneficial, resulting in generous harvests; while the use of different composts has amply repaid the intelligent cultivators of the Low Hill farms." It is not clear what Davis meant by "composts," but these could have been manure and straw mixes or cover crops.

Improving road and especially rail connections made it possible to send crops to the rapidly growing towns in the Lehigh River Valley and up into the developing coal country in the opposite direction. Some were even exported. It is notable that Lynn and Heidelberg Townships’ potato and hay production were higher than even other townships in northwestern Lehigh County in 1880; rail connections ran right through the center of these two townships and connected to the Lehigh Valley Railroad, which led south to Philadelphia and north to the anthracite region.

Clover seed was a valuable product on some northwestern Lehigh County farms. In 1850 the average Pennsylvania farm listed one bushel, while in northwestern Lehigh County the typical farm produced 1.8 bushels. Lynn Township had two clover mills in the mid-1840s to serve local demand for processing seed. The figures suggest that Lehigh County farm practices were progressive; clover was a key contributor in crop rotations as a nitrogen fixer. Demand in southeastern Pennsylvania markets was brisk, so clover seed was another cash crop.

Except for wheat, field crops and hay were fed to animals. On northwestern Lehigh County farms in the mid to late 19th century, livestock enterprises also varied slightly in proportions from typical profiles for the rest of the state, most conspicuously in that virtually no sheep were kept. Otherwise, Lehigh County farms nearly kept pace with the state in numbers of horses, swine, chickens, and dairy cattle per farm, and had fewer than average beef cattle than the average Pennsylvania farm. These numbers might suggest that Lehigh County farming was much more intensive than in the rest of the state, since the animals were kept and the crops raised on smaller farms; but these small farms had just as much improved farmland as the average, larger farm in the state. In other words, Lehigh County farm families were able to keep average number of livestock on below-average sized farms because they had more land cleared, not because they were farming more intensively acre for acre.

The animals on the typical northwestern Lehigh County farm served both household and commercial purposes. Horses worked in the fields, powered stationary machinery, and hauled wagons and passenger carriages. Swine provided meat for the family; in Pennsylvania German cuisine, pork still predominated, and lard was highly valued too. Most families probably also traded or sold some hogs. Poultry weren’t counted until the 1880 census, by which time the average flock in Lehigh County (three or four dozen birds) provided for family needs and some exchange in the local markets. Dairying became relatively more important over time. In northwestern Lehigh County, home buttermaking (not fluid milk dairying) took precedence. On the average northwestern Lehigh County farm at mid-century, buttermaking just sufficed for household use, but by the late 19th century, farm women were making modest surpluses.

9 Ann Bartholomew, “Agriculture in Lehigh County to 1920,” 81, 94-5.
The farm orchard was another central element in the agricultural economy. It supported important Pennsylvania German foodways by supplying apples for cider, vinegar, applejack, schnitz (sliced dried apples), and apple butter. Samuel Reitz, for example, advertised his farm in the 1876 *New Illustrated Atlas of Lehigh County*; he mentioned an “apple distillery” among his farm buildings.\(^\text{11}\) By the late 19\(^{th}\) century, Heidelberg, Lynn, and Weisenberg Townships had substantially more apple trees than the average Pennsylvania farm. Like potatoes, fresh apples must have found an outlet to market along the rail lines.

The farm garden was ample, and from it came vegetables to supply the family. A typical Pennsylvania German garden yielded cabbage (for fresh consumption, slaw, and sauerkraut); turnips; parsnips; carrots; beets; onions; tomatoes; peppers; cucumbers; sweet corn; beans (dry and green); radishes; corn; peas; rhubarb; asparagus; lettuces; squashes; and various herbs and seasonings. The garden work was mainly done by women and children. Traditional Pennsylvania German garden design often divided the site into squares, separated by wood-plank walkways.

Cordwood, nuts, and logs from woodlots were other farm “products.” They were important for keeping the family warm and sometimes could provide food or income. For example, Charles Fritz bought six logs from a walnut tree in 1896 for $5.50 and sold the sawn lumber for $132.00.\(^\text{12}\) Woodlots were small in Lehigh County, so this resource was limited but lucrative.

Some farmers in the region combined farming with other occupations, often using resources on their lands. For example, the Hermany brothers of Jacksonville (Lynn Township) advertised a farm and saw and bone-milling business, declaring themselves "Manufacturers of bone-dust and dealers in Lumber." George M. Schellhammer had a tannery on his farm. Joseph Mosser had a farm and slate quarry.\(^\text{13}\) Like farming families elsewhere in the state, northwestern Lehigh County farm people pursued more than one occupation and developed non-farm resources on their land.

Reviewing this catalogue of farm products, we see that the Lehigh County potato region was beginning to take shape; farmers there gave potatoes a significant position in their cropping schemes, and correspondingly less to other field crops, particularly wheat and corn. Yet potatoes were still just one component, on a more or less equal footing with others in a complex, highly diversified crop and livestock system. Northwestern Lehigh County farms were not notably valuable or profitable; but neither were they hardscrabble affairs.

**Labor and Land Tenure, 1850-1910**

Family and neighborhood labor predominated in northwestern Lehigh County during this period. Evocative images made by turn of the century photographers give valuable clues. At least where potato harvest was concerned, everybody turned out, from grandparents on down.\(^\text{14}\) Wage workers were hired at peak seasons, such as haying time, but the census figures show that most farms around 1880 only hired labor for about 22 weeks each year.

\[\text{Figure 3: Potato harvest on the William Hoffman farm, Lehigh County}\]
\[\text{Figure 4: The William Mantz family at potato harvest time}\]

\(^{11}\) F. A. Davis, *New Illustrated Atlas of Lehigh County* (Reading, PA: 1876), ii.


\(^{13}\) F. A. Davis, *New Illustrated Atlas of Lehigh County* (Reading, PA: 1876), ii.

\(^{14}\) See more photographs in H. Winslow Fegley, *Farming, Always Farming*, Figures 211 through 216.
Farm work was divided very loosely along lines according to age and gender. As the potato harvest scenes above show, though, these lines were seldom hard and fast. Generally, men worked in the fields, planting, plowing, cultivating, and harvesting. Animal feeding was done by men, women, or children; poultry keeping was usually associated with women and children. Women and men milked cows. Women made butter and soft cheese. Butchering involved entire neighborhoods, with families visiting each others’ farms to do the work in turns. The same was true when it came time to make cider and applebutter and sauerkraut. At haying time also, everyone pitched in, and women also prepared meals for harvest workers. During this period, itinerant threshers replaced large threshing crews, so labor patterns in grain harvesting changed. Threshing day was still busy, but the whole process took much less time and fewer workers.

Farm tenancy rates were about the same in Lehigh County as across the state generally; about 80 percent of farms were owner occupied. Lowhill Township had a lower owner occupancy rate in 1880, but the other townships were at or above state averages. Most tenancy arrangements probably involved share cropping and were made between relatives.

Seasonality marked labor patterns here, as everywhere in 19th century rural Pennsylvania. Winter was a relatively quiet time, when people visited, attended Farmers’ Institutes, church and school events, and did indoor work. Of course, animals still had to be fed, but cows were not yet milked year-round and hens were less productive too. The pace accelerated when spring arrived. Milk production resumed when cows calved, and ploughing and planting took place. Early and mid summer brought haying and harvesting of other grains like oats. Fall probably had the most intense work pace, because the potato harvest, garden harvest, and orchard crop processing all took place then, followed soon after by butchering.

Not all farm work was done by hand. In 1850, farms in Lehigh County and the northwestern townships were significantly more mechanized than average.

Buildings and landscapes, 1850-1910

Northwestern Lehigh County agricultural building forms during this period were types that are found elsewhere in the state, such as the Pennsylvania forebay bank barn, springhouse, summer kitchen, and so forth. To some extent, construction materials and methods make the architectural patterns in northwestern Lehigh County distinctive. Most notably, slate roofs are very common, even on the smallest of outbuildings like corn cribs, milk houses, and even privies. This is because the Lehigh County “slate belt” directly adjoined the potato region, in some cases intruded right into it. Thus this durable, handsome, and long lasting roofing material was inexpensive and practical to use. Skilled workmen were available to install and maintain it. Second, traditional construction methods persisted longer than elsewhere. Machine sheds from the early 20th century not uncommonly are constructed with heavy posts and beams, pegged or mortised and tenoned. Finally, where houses are concerned, local people retained a preference for older styles and forms well after they had become old-fashioned elsewhere.

Farm House, 1850-1910

In 19th century rural Lehigh County, well-off farm families seem to have preferred the five-bay, double-pile house with central door on the eaves side. Except for one three-bay house and one four-over-four house, all the mid-19th century houses documented in field survey were five-bay center-door houses. In Lynn Township, for example, a fine five-bay stone house dates to the mid 19th century (Figure 5). It was

15 These were at sites 077-HE-002, 077-HE-003, 077-HE-011, 077-HE-012, 077-LY-003, and 077-LY-005. At 077-HE-006, an earlier five-bay house was Victorianized in the late 19th century. At 077-HE-004, the proprietors built a five-bay house in the late 19th century.
modernized in the 20th century, but its cornice moulding, gable returns, rubblestone masonry, end chimneys, and paneled shutters remain.

**Figure 5**: Five bay center door house, Lynn Township, Lehigh County

The form remained popular well after it was fashionable elsewhere. In 1870, for example, a Heidelberg Township family erected a five bay house in brick. Pennsylvania German families were conservative; they stuck with cultural forms a long time.

**Figure 6**: Five bay center door house, Heidelberg Township, Lehigh County

**Figure 7**: Four-over-four house, Lynn Township, Lehigh County

**Barns, 1850-1910**

Lehigh County barns from this period represented just one type: the classic Pennsylvania barn. This famous type was by now well developed. The barn was built with its long side into a bank, and the diagnostic forebay (overshoot) projected out on the opposite eaves side. On the upper level, mows, threshing floors, and usually a granary provided for grain and hay storage. On the lower level, stalls and stables housed horses, cattle, and sometimes pigs. The Pennsylvania barn was very efficient and flexible, and that is why it was so popular. Though it was adopted by farm families from many cultural backgrounds, it was primarily associated with Pennsylvania Germans.

The Pennsylvania barn suited the diversified farming system very well. Its upper-level spaces provided flexible storage areas for hay, straw, and grain. Hay was usually piled loose in the outer mows, at the gable wall ends. Then, straw could be put in the next mow in from the end. Or, unthreshed grain in sheaves would be carefully stacked inside so it could stay dry while it awaited threshing. Threshing floors still were needed even in the machine threshing era; some grains did not withstand machine threshing well, so they continued to be threshed by hand. Later, as machinery improved, the floors were used for machinery storage. A tightly sealed granary, usually in the forebay, contained bins where threshed grain was stored. Hay and grains could then be dropped down to animals in the lower level through openings in the floor. Below, cattle and horses were housed. Humans and animals were kept separate by doors and aisles, yet feeding could be accomplished efficiently. Thus the Pennsylvania Barn ideally suited the typical 19th century Lehigh County farm operation.

**Figure 8**: Pennsylvania Barn, Heidelberg Township, Lehigh County

**Figure 9**: Barn bank side, Heidelberg Township, Lehigh County

**Figure 10**: Pennsylvania Barn, Heidelberg Township, Lehigh County

**Figure 11**: Interior of barn in photo above.

**Figure 12**: Stone and frame barn, Lynn Township, Lehigh County

**Corn Crib, 1850-1910**

One early corncrib was documented in field study. This c. 1850 example at site 077-HE-007 (Figures 13-15) has a heavy pegged timber frame, vertical slats, and steeply canted sides. Its form was popular throughout the 19th century, but survivals with heavy framing are rare.

**Figure 13-15**: Corncrib, Heidelberg Twp, Lehigh County
Butcher House, 1850-1910
In Lehigh County, the term “butcher house” is often used for a freestanding building with interior set-kettle or heavy cooking hearth. It is not just a synonym for a summer kitchen; some properties have both a summer kitchen and a butcher house. As its name implies, the butcher house served for the heavy work at butchering time. The carcass might be set out on a long plank inside to cool. Scrapple was made by boiling cut-up pieces from a hog carcass and adding corn meal and spices. Sausages too were made at butchering time. Likely soap was made and other heavy work performed in the butcher house as well. By contrast, the summer kitchen’s equipment was lighter—a free standing, portable stove—and designed more for everyday cooking. Lehigh County butcher houses tend to be made of frame; gabled; have ample windows for light; and have either a masonry set-kettle or a manufactured one of iron. In either case the set-kettle has at least one and usually more openings in which to set the kettle. Butler houses are usually sited near the house, and sometimes are combined with summer kitchens or other buildings.

Figure 16-17: Butcher house, Heidelberg Township, Lehigh County
Figure 18: Butcher house, Heidelberg Township, Lehigh County
Figure 19: Interior set kettle in the butcher house depicted above

Root Cellar, 1850-1910
Root cellars were serious business in Lehigh County. Not only were they important for family subsistence, but in potato country they could also serve to house the cash crop. Extant examples studied in field survey work tended to be relatively large and deep, and to be located near the house and summer kitchen. Stone steps led down to the cool interior, which often had a stone floor. Here, vegetables, potatoes, and dairy products could be kept at a constant temperature around 50-55 degrees F. After canning became popular, some farm women also stored their jars of chutney, jam, canned fruit, vegetables, and meat in the root cellar as well.

Figure 20: Root cellar, Heidelberg Township, Lehigh County
Figure 21: Root cellar, Heidelberg Township, Lehigh County

Summer Kitchen, 1850-1910
Detached kitchens had existed in the 18th century, but the phrase “summer kitchen” and the particular form appeared much later and reached a peak around 1900. Lehigh County summer kitchens follow this trend. Most date from the late 19th to the mid 20th century. The summer kitchen, as its name implies, came into popular use in the modern cookstove era. Cookstoves generated a lot of heat, so the summer kitchen helped keep the house cool. Perhaps as importantly, this period witnessed a great expansion in the rural family’s subsistence activities. Canning and sugar-based food preservation (jams, preserves, etc) joined the traditional pickling, smoking, and salting. A summer kitchen provided a specialized space in which these activities could take place.

Lehigh County summer kitchens generally are located very near the house. They are usually gabled structures, made of wood frame, with ample windows, a high level of finish, and chimney or stove vent.

Figure 22: Summer kitchen, Heidelberg Township, Lehigh County

16 In the North and West Branch Susquehanna region, field study noted butcher houses too. It would seem logical that these butcher houses would have the same function as the ones further east, since people migrated to the Susquehanna Valley from places like Lehigh County. However, some buildings called butcher houses in the North and West Branch region lack set-kettles or even a stove of any type. But in either case, the buildings were traditionally associated with butchering and accommodated a smaller or wider range of the butchering process. Where set-kettles were not present, the cooking may have been done in a kitchen or a temporary outdoor facility.
烟房，1850-1910

Where Pennsylvania German customs were so strong, the smoke house was central to foodways. A few farm families still utilized an attic *rauchkammer*, but most properties also had a smoke house, either free standing or combined with another outbuilding.\(^{17}\) Smoke houses have a small, square-ish footprint; no windows; minimal vents if any; exterior access for ash removal; charred interiors; and hooks, bars, or pegs for hanging meats. The smoke house is usually in the house’s orbit, but on the periphery.

**Figure 23.** Smoke house added to summer kitchen, Lynn Township, Lehigh County

*Spring House, 1850-1910*

In the pre-refrigeration era, spring houses were important means of keeping perishables cool. Documented spring houses in Lehigh County were typically small, gabled structures built of stone and frame. The spring’s location determined the spring house’s siting, of course; but usually the spring house would not be too far from the house. Butter production was not high in Lehigh County, and the small size of spring houses there reflect production mainly for household use.

**Figure 24:** Spring house, Lynn Township, Lehigh County  
**Figure 25:** Spring house with walled spring, Heidelberg Township, Lehigh County

*Pig Sty, 1850-1910*

In a county such as Lehigh where pigs were so important to the farm economy, pig sties were common landscape expressions. A pig sty is typically located at right angles to the barn, on the perimeter of the barnyard. It is gabled with a human door in one gable end, usually off center, indicating the location of an interior feed aisle. Small stalls line one side and lead out into the barnyard via narrow openings.\(^{18}\)

**Figure 26:** Pig sty, Heidelberg Township, Lehigh County  
**Figure 27:** Pig sty, Lynn Township, Lehigh County

*Landscape, 1850-1910*

The Lehigh County potato region did not yet display landscape features specifically connected to potato culture. Farming had, however, combined with natural landscape features to give the overall farming region a distinctive look. Particularly in Lynn and Heidelberg Townships, the Blue Mountain running along the northern border formed an imposing backdrop. The farms by now had a rather wide-open character because so much land had been cleared. The photos of potato harvest suggest how wide the views were. Fields were small and form a patchwork of irregular shapes, demarcated by treelines, or not by any physical boundary. There would have been more fencing than now, but less than elsewhere at the same time, since this was not especially a livestock country. One prominent type of fence that has survived in places was the stone barnyard enclosure. These walls express the grain-and-livestock system well; they kept cattle confined so their manure could be collected and used. Farm orchards were very common. Available oral-history and aerial photographic evidence (from a later period, but still applicable since orchards are long-lived) suggests that they were usually situated close to the farmstead, rather than among the outer crop fields. Only remnants survive.

\(^{17}\) In a March 2010 email to Sally McMurry, agricultural extension agent Robert Leiby mentioned a house in Lynn Township which went up for sale after its elderly owners passed away, around 2002. When the house was readied for sale, its attic *rauchkammer* was found to have a dozen hams estimated at fifty years old.

\(^{18}\) Ann Bartholomew, “Agriculture in Lehigh County to 1920,” 91, offers a very good explanation of a pig sty interior layout and function.
II. Potatoes as a primary cash crop with diversified complements, 1910-1960

Products, 1910-1960

By 1927 Lehigh County farm size had risen to 62 acres after its late 19th century low. Northwestern Lehigh County was now attracting notice as a potato growing region. In September 1913 the Kutztown Patriot ran a story with the headline “Bergs and Lehigh Farmers in Potato Belt Harvesting Crop Exceeding One Million Bushels.” It described a “great potato belt” which “extends from Albany, Berks County, to Best station, Lehigh county, [sic] a distance of about 18 miles.” The article went on to note that at a string of stations along the Berks and Lehigh Railroad there were “shippers who make it a business to ship the potatoes and take the risk of quality and shrinkage.” Some farmers were harvesting two and three thousand bushels. The Patriot photographer snapped a photo of A. S. Greenawalt’s harvest crew: “Mrs. Mahlon Loy, Minerva Miller, Helen Boyer, Mrs. Austin Stump, Mrs. James Berk, Mrs. John Miller, Mrs. Ed. Bachman, Miss Alma Bailey, Neda Berk, Effie Rauch, Oscar Lenhart and Amandus Bachman. Henry Berk is in charge of the team and Will. L. Reber, foreman is operating the potato digger.” A list of prominent growers gave their acreages, which ranged from 15 acres all the way up to 55. The reporter mentioned that many potatoes were shipped immediately after harvest, but the article also noted that “many farmers . . . have built ground cellars and store them there till late winter and then they sell them at advanced prices.”

Lehigh County had become the pre-eminent potato county in the state, and production was concentrated in these northwestern townships. Production topped out (during our period at least) at 3.2 million bushels in 1949. Lehigh had far more acres in potatoes—over 12,000—than any other county. Lehigh was not the state leader in yield, but nonetheless a striking statistic is the county’s increase in yields between 1940 and 1950, from just 118 bushels per acre to 258.

Several factors combined to spur development in the potato belt. Local historian Ann Bartholomew credits the invention of an effective horse-drawn potato planter and rising use of Bordeaux and other insect control measures. As well, she mentions that Dr. David D. Fritch of Macungie, the “Potato King of Lehigh,” used his control over the Keystone Roller Mill to promote rotations (potatoes/wheat/ clover hay), use of certified Michigan seed potatoes, and use of commercial fertilizer. A decade or two later, the Agricultural Extension agent took credit for improvements. However, without ready markets in the booming Lehigh Valley and anthracite regions, few farmers would have bothered to develop potato culture. Between 1880 and 1910, for example, Lackawanna and Luzerne Counties nearly tripled in population, and Philadelphia and Lehigh County nearly doubled. Other potential markets were rapidly developing in neighboring New York State and New Jersey. The heavily immigrant and working class populations in these industrial communities needed inexpensive food supplies; potatoes suited the demand well. There was incentive aplenty for innovation and expansion in potato culture.

Most potatoes grown in the early 20th century were “table” potatoes, destined to be baked, boiled, or otherwise prepared at home. (Today, most US grown potatoes are processed into fries and chips.) Potato varieties grown in Lehigh County included Russets, Bilboa, Irish Cobbler, White Smooth, Blanc, Vulcan, and Mercer. Renowned potato expert E. L. Nixon mentioned the Cobbler as “the most widely distributed, early potato grown,” and the Rural Russet as the overall favorite. Stevenson Fletcher saw a shift from “local sorts” to Russet, White Rural, and Cobbler, which in 1934 he estimated made up “over 90 percent of the potato crop of Pennsylvania.” The Lehigh County agricultural extension agent report for 1931 mentioned the Green Mountain, New York State Cobbler, and Rural Russet, with the latter being the local favorite. In 1937 the home economics agent reported that her cooking demonstration participants voted the Chippewa and the White Rurals the best. General works on potato culture from the period list varieties by the dozen, giving the impression of great diversity. However, even this large list apparently had limited genetic diversity; and in any case only a few potato varieties achieved commercial importance. In the East, these were the ones already mentioned plus the Burbank and Green Mountain. The main division among potato varieties at this time was whether they were harvested early or late. Few sources specific to Lehigh County discuss varieties at any length. This suggests that variety was relatively unimportant, or that variety choice was settled and unremarked. In any case, we don’t find the kind of impassioned debates (at least not in printed sources) about potato varieties that, for instance, Adams County apple growers were having about the merits of their favorites.22

Around 1932 the USDA released an important new variety, the Katahdin. Within a few years this became the favorite in Lehigh County. Already in 1937 the extension agent thought it was the most popular, and by 1944 he estimated that sixty percent of the county’s potato acres were planted with Katahdins. The Katahdin was a good keeper with dependable productivity. Another popular variety, the Kennebec, was introduced in 1948. Its thin skin made it vulnerable to bruising but if handled carefully it stored well. The significance of these two varieties lies partly in their development by government sponsored researchers; the earlier varieties had been developed privately and through informal channels. The impact of the agricultural establishment was increasing. It is also important to note the traits for which the Katahdin was known: keeping quality and resistance to stresses such as drought. As potatoes became a larger scale enterprise in Lehigh County, storage became more important. Farmers wanted to be able to hold their crop and sell it over a long period, to benefit from rising prices in the winter months. Doubtless the Katahdin's hardiness also recommended it now that growers were expanding their acreage.23

At about the same time, the agricultural extension agent began to promote certified seed potatoes as a means of reducing problems from the myriad diseases that attack the potato. Certified seed potatoes were guaranteed free of certain diseases. They were generally grown in other Pennsylvania counties (especially Somerset and Potter) or in other states, notably Maine and Michigan. Certified seed potatoes did contribute

to higher yield and quality, but they also changed the traditional means of obtaining seed, which had always been to keep back some of the previous year’s harvest (some sources estimate one-seventh) for next year’s seed. Certified seed potatoes created a regular cash expenditure and increased growers’ dependence on outside sources. The county extension agent reported a rapid adoption of certified seed potatoes in the 1930s and 40s. However, potato guru E. L. Nixon also noted that many growers did not purchase certified seed potatoes every single year. In this respect, at least in the early 20th century, certified seed potatoes probably didn’t have the same impact on the farm economy as did hybrid corn in other places.24

Potato growing in the early 20th century involved complex processes. For example, rotations were very important. In the 1920s the agricultural extension agent thought that rotations were being shortened to just two years, alternating clover and potatoes. More typically rotations were three years and alternated wheat, clover or alfalfa hay, and potatoes. In the 1930s Penn State agricultural economist Emil Rauchenstein noted that in Lehigh County, “much less corn is grown than in other sections, as potatoes take the place of corn in the rotation.” The 1927 census figures seem to reflect this practice. Hay, potatoes, and wheat took up roughly equal acreage (nine to fifteen each, depending on the township), with corn and oats occupying markedly fewer acres (three to six). According to 2010 county agricultural extension agent Robert Leiby, these rotations would begin with winter wheat sown in the fall after the potato harvest. The wheat was overseeded with clover or other legumes, which later could be harvested as hay. The wheat was mainly sold as grain, but straw could be valuable too.

The rotations were important because of the particular requirements posed by the potato, which was both a demanding and susceptible plant; a high maintenance crop, so to speak. Arthur W. Gilbert, author of a 1917 treatise on The Potato, explained that rotations helped to avoid disease, they promoted economic diversity, they helped with weed and pest control, and they replaced organic matter. Potato growers could vary their methods for restoring organic matter. They could use livestock manure; but they also had the option to use green manure, cover crops, catch crops, lime, and artificial fertilizer in varying combinations. Nixon wryly remarked that “potato growers, generally, are pretty well sold on the idea of commercial fertilizer, and with the sales forces of many companies working at top speed they are likely to stay sold.” Among Pennsylvania’s elite “400 bushel club” members, most used all of these methods. In other words, the most successful growers combined liming, crop rotations, manure, and artificial fertilizer to maintain soil fertility and provide optimum growing conditions.25

Because blight and insect infestations were so damaging, spraying became a common practice as Lehigh County shifted its focus toward potatoes. The most often mentioned spray mix in the early 20th century was Bordeaux, which was a mixture of copper sulphate, hydrated lime, and water. Paris Green, a "toxic double salt of copper arsenate and copper acetate,” was another potent anti-insect spray. 27 400- bushel club members averaged seven spray applications in 1923, and twelve in 1929. After World War II, new petroleum-based sprays and fertilizers helped to boost productivity dramatically.

25 Ann Bartholomew, “Agriculture in Lehigh County to 1920,” 95-7; Emil Rauchenstein and F. P. Weaver, “Types of Farming in Pennsylvania,” Pennsylvania Agricultural Experiment Station Bulletin # 305 (April 1934), 57; E. L. Nixon, Principles of Potato Production, 89-90. In March 2010 the Lehigh County agricultural extension agent, Robert Leiby, noted that current philosophies held that three year rotations are best.
28 Dickey, “400 Bushel Club.”
Lehigh County potato growers increasingly operated within a wider context of declining consumption and increasing competition. United States per-capita consumption was 3.8 bushels in 1913 and only 2.8 bushels in 1934. J. B. R. Dickey offered this colorful explanation for the trend:

...it was not so long ago that potatoes appeared on the farmer's and working man's table nearly, if not quite, three times a day. After the season for home-grown vegetables was past potatoes were about the only thing of the kind available. Since then habits of diet have changed to a certain extent (no doubt for the better so far as health is concerned) in nearly all households. The cereal breakfast food has helped to crowd the fried potatoes off the breakfast table. Southern grown vegetables are now available nearly all winter in every town of any size, and at rather reasonable prices. They are being bought and eaten by nearly all classes, and since we eat only about so much we are cutting down on something else, with potatoes probably taking the largest share of the cut ... Another factor has been the female fear of superfluous flesh, and the universal placing of white potatoes in the class of the most fattening of foods ... 29

To these factors, Dickey added the general trend toward more sedentary occupations and the rise of the canning industry. Yet despite national trends, Lehigh County farmers seemed to do reasonably well in marketing their wares. According to a 1932 study of “Potato Marketing in Pennsylvania,” seventy percent of the Lehigh County crop was sold at the farm and hauled away by the buyer, and that “many” potatoes were “shipped to market each year by rail.” 30 This report was based on survey data. Historic photographs taken at places like Kempton, Wanamakers, and Lynnpport show farmers with wagonloads of potatoes waiting to offload at the local railhead. Quite a few potato farmers “huckstered,” or drove a wagon to market produce straight to the consumer, door to door. Machine grading, packaging in smaller quantities, and roguing to improve quality were marketing strategies designed to improve the product and its image. 31

Figure 33: Farmers with loaded potato wagons, 1918

Another important marketing strategy was to hold potatoes back, and not take them to market straight from the field when supplies were greatest and thus prices lowest. To pursue this strategy, farmers needed storage and so many potato cellars and other storage spaces appeared during this period. They are discussed under “Buildings and Landscapes.”

Potatoes were the main source of income and “mortgage lifter” in Lehigh County. Yet even during this era, when Lehigh County potato growing expanded both in absolute and relative terms, potatoes still took their place within an overall farming system. As we have seen, the other crops in the typical rotation were legumes (usually clover) and wheat. Smaller quantities of corn and oats rounded out the crop mix. Rye, formerly important, had fallen into insignificance. Where livestock were concerned, swine and poultry appeared more prominently than on the average Pennsylvania farm, while cattle were less important. Fruit trees still provided for family needs and the occasional surplus.

Several factors likely account for the nature of the Lehigh County potato farming system. In some ways it was similar to Lancaster County, where a high-value, high intensity money crop is grown along with other

31 See for example, Lehigh County Agricultural Extension Archives, Agent Report, 1918.
crops and livestock. But while Lancaster County farmers stall-fed beef animals as a way to generate fertilizer for their tobacco crop, Lehigh County farmers stressed crop rotations and commercial fertilizer for the potato crop. Their soils were probably less adapted to the main feed crops for beef animals. Poultry worked well because they could be sold at the same local markets where Lehigh County farmers huckstered other produce. Labor demands also enter the picture; dairy farming brought high labor demands, and these didn’t mesh well with potato culture. Swine were important to local markets and foodways, and their care could be fitted in more easily with the potato growing routine.

Garden crops, fruit, and family meat preparation were very important components of the Lehigh County farm system, even when families in other places were beginning to scale down their subsistence activities in favor of purchased food. Even today, Pennsylvania German cultural practices are still deep rooted in northwestern Lehigh County, and the Pennsylvania German dialect is still spoken. Local people still prepare favorite seasonal foods such as Fastnacht donuts at the beginning of Lent; in early spring, churches hold fund raiser dinners serving such culturally significant dishes as ham and dandelions, or pig stomach. Sauerkraut, scrapple, pickles, hand made noodles—the list of home-processed traditional foods is long. Canning merely added to the variety. So the typical northwestern Lehigh County garden was large, and produced cabbages, tomatoes, sweet corn, beans, cucumbers, and many other vegetables that went into these traditional dishes.

**Labor and Land Tenure, 1910-1960**

As before, labor for farming in the potato region came primarily from family and neighbors. Farms might have a hired hand during part or all of the year, usually a local man. For laboring families, the Depression years were very stressful; people found scattered jobs husking corn, working on road projects, selling strawberries and raspberries, shoveling snow, and working for the WPA. Mary Stump Snyder, born in Albany Township (Berk County) in 1915, remembered hand mowing hay in areas too wet to take a machine mower; picking potatoes; chopping, husking, and threshing grain for wages. Children were assigned jobs like feeding chickens and pigs, helping out in the garden, blacking stoves, washing kerosene chimneys, and weeding wheat fields. At potato harvest time, schools were let out so students could help pick potatoes. The list of pickers quoted in the opening to this section shows that women comprised a good portion of pickers. By the 1960s, a few growers hired migrant workers from Puerto Rico.

Lehigh County farms continued to be well equipped with machinery. They had more tractors than the average Pennsylvania farm in 1927. Even so, far fewer than half the farms had them. But the range of horse-powered equipment was expanding. In the potato region, spray rigs, potato digging equipment, planters, hay rakes and forks, seed potato cutters, potato graders, and plows were much used. Farmers here seemed to have a marked penchant for creative improvisation. If their equipment was inadequate, they invented new machines. For example, Albany Township, Berks County, inventor Albert E. Trexler invented a commercially successful seed potato cutter. Rather than spend money for equipment, some would make their own. Donald Lichtenwalner, for example, improvised a ventilation and chute system for his potato storage cellar. These talents extended also to building techniques. Traditional and new construction methods often are blended seamlessly in local buildings. For example, at one site a gambrel roof was constructed using both mortise and tenon joints and iron straps. In general, post and beam

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34 Lichtenwalner interview, March 2010.
construction persisted far longer here than elsewhere, and farm people stuck with older architectural styles long after they had passed from favor elsewhere. Their traditionalism was not merely reflexive; it seems to have been rooted in a deep cultural pride and a conviction that Pennsylvania German lifeways were worth preserving.

Figure 34: Lehigh County farm technology, 1950

Farm tenancy in Lehigh County was not far from statewide averages. A 1939 report shows that in the potato townships, the percentage of land rented ranged from under ten to around forty.\(^{35}\) As before, share tenancy probably dominated. Overall, in the potato regions tenancy was not a major factor shaping the landscape.

**Buildings and landscapes, 1910-1960**

**Houses, 1910-1960**

Few new houses appeared during this period on northwestern Lehigh County farms. This followed patterns common in most of the state, as farm families invested in the farm side of their building plant, if they had resources to invest. Two houses documented from the period show different approaches to house building. One continued an older form, even adding ornament that was old-fashioned for the day. The other, a “foursquare” house, showed that newer popular forms were reaching into Lehigh County.

One feature peculiar to farmhouses in the region was cellar storage of potatoes. Potato harvests were getting so big that farm people squirreled the tubers away in any dark, cool spot they could find. An oral history published in the *Albany Township Historical Society Newsletter* was accompanied by a photograph of a 19th century stone house that was renovated in the 1930s, adding a sleeping porch and enclosed potato cellar across the front eaves.\(^{36}\) Field survey workers did not obtain access to any house cellars historically linked to potato storage, but in interviews Mr. Stanley Billig, Mr. Carl Wertman, and Mr. Robert Leiby all mentioned that their families had at one time or another used house cellars for potato storage. Mr. Wertman and Mr. Billig mentioned equipment or specially built facilities for getting potatoes in and out of the cellar. At Site 077-LY-004 there is an earth mound outside the cellar bulkhead, built up when dirt was shaken from potatoes before putting them into the cellar. (This was difficult to capture on film so no image is included here.) Extra large cellar bulkheads may indicate that potatoes were stored in a house cellar.

Figure 35: House, Heidelberg Township, Lehigh County
Figure 36: House, Lynn Township, Lehigh County

**Barns, 1910-1960**

Few new barns were built during this period, but significant alterations to existing barns were made as farming changed. The traditional Pennsylvania forebay barn was frequently adapted to accommodate potatoes and sometimes also poultry.

Pennsylvania barn adaptations for potatoes were frequent and carried definite architectural markers. The lower level of the Pennsylvania bank barn could be altered to serve as potato storage. Field evidence of such alterations is ample and flows from the potato’s requirements. First, potatoes require dark conditions

\(^{35}\) Paul I. Wrigley, “Farm Tenancy in Pennsylvania,” Pennsylvania State College Agricultural Experiment Station *Bulletin* # 383, September 1939, 4.

\(^{36}\) Albany Township Historical Society *Newsletter*, Spring 2011, not paginated.
to inhibit sprouting. A lower-level bay altered for potato storage, therefore, will have any windows or other openings closed up. Second, potatoes require high humidity to minimize shrinkage; but they spoil if the moisture condenses. Therefore, the spaces are closed tight, but the crosswise walls in the former stable area are often lined with boards spaced an inch or two from the masonry, to provide air space and prevent condensation. Burlap-covered walls and openings are another clue that an area was adapted for potatoes. Occasionally ceiling-mounted fans help keep proper humidity conditions as well. Third, to facilitate loading and unloading, small Dutch doors give way to large hinged doors that admitted machinery and wagons. Fourth, sometimes potatoes were loaded from above, so hatches were cut into the upper level floor and removable chutes inserted. Fifth, sometimes bins were installed, to keep varieties separate or for ease of handling. Sixth, potato cellars (unlike livestock areas) will have no traces of whitewashing. Potato bays documented in field study often were interior bays; animals in end bays on either side helped to keep the potatoes from freezing during the winter.

Figure 37: Pennsylvania barn forebay area, Heidelberg Township, Lehigh County
Figure 38: Pennsylvania barn with potato alterations, Heidelberg Township, Lehigh County
Figure 39: Potato bay converted from machinery bay; opposite side from photo above.
Figure 40: Barn forebay with potato alterations, Heidelberg Township, Lehigh County
Figure 41: Same barn as above, different view
Figure 42: Lower level Pennsylvania forebay barn bay, Lynn Township, Lehigh County

Pennsylvania barns were sometimes also altered for poultry housing during this period. Commonly these changes involved inserting multiple windows in a wall.

Figure 43: Pennsylvania barn with poultry windows, Lynn Township, Lehigh County.

Potato Cellar, 1910-1960
Lehigh County farm families built many specialized potato cellars during these years. The defining marks of a purpose-built potato cellar are several. These cellars have a lower story of masonry, usually concrete block but sometimes stone. The lower story is usually encased in earth or built into earth. Some of the cellars only have a roof above ground, but others have a full story above ground, usually built of wood frame. These two-story cellars have two-level access; a ramp leads to a door on the upper level, while the lower level entry doors open to ground level. In the two-story cellars, the upper level is used for machine storage. Its floor is pierced with numerous small hatches, which would be opened at harvest time. The lower level often would be divided into bins, and it would have large access doors and wood lined block walls. Later potato cellars often have electric powered ventilation systems and occasionally heaters as well.

Figure 44: Potato barn, Heidelberg Township, Lehigh County
Figures 45 & 46: Potato barn, Heidelberg Township, Lehigh County
Figure 47: Potato barn, Heidelberg Township, Lehigh County
Figure 48: Potato barn, Lynn Township, Lehigh County
Figure 49: Potato barn interior, Lynn Township, Lehigh County
Figure 50: Potato barn interior, Lynn Township, Lehigh County
Figure 51: Potato barn interior, Lynn Township, Lehigh County
Figure 52: Potato cell interior, Heidelberg Township, Lehigh County
Figure 53: Potato barn, Lynn Township, Lehigh County
Figure 54: Potato storage, Heidelberg Township, Lehigh County
Huckster Truck Garage, 1910-1960
Occasionally a specialized building housed the huckster truck. One was documented in field survey work, and another was described to field workers, but not visited. The building documented has many features of a garage. However, it had a full second story with entrance door to the upper level in the banked eaves side directly opening to the farm field. It also was situated directly on the roadway rather than at the end of a driveway near the house. Mr. Donald Breininger remembers that the upper story was used for farm implement storage. Currently there is a relatively small door. This door may have replaced a larger one. It is possible also that loading of farm goods was facilitated by bringing in potatoes from the second level and loading them down into the wagon or truck bed.

Mr. Breininger wrote: “When auto travel became popular this building was erected to house the auto and huckster truck. The 2nd floor was farm implement storage. Originally there were two sliding doors to the road, at that time a dirt road. The one door was closed completely and the other replaced with the current door. The side door was added much later because of the increased traffic. The windows were also added. The similar building on our farm in the same neighborhood was built in 1919.”

Corn Crib, 1910-1960
Though corn was a minor crop, it still needed to be stored. Corn cribs in the area often had canted sides, even those built quite late.

Butcher House, 1910-1960
Some new butcher houses were built during this period, and existing ones were still used frequently. One butcher house from the 20th century was incorporated into a machine shed.

Root Cellar, 1910-1960
It is difficult to date root cellars with any accuracy. Whether or not they were built during the period, root cellars continued in active use throughout this period.

Summer Kitchen, 1910-1960
Most summer kitchens documented in field survey predated 1910, but as with butcher houses and root cellars, they continued in use.
Smoke House, 1910-1960
Rural people in northwestern Lehigh County continued to build new smoke houses well into the 20th century. Several oral history informants now in their seventies and eighties recalled smoking meats when they were children and young adults.

Figure 66 & 67: Smoke house interior and exterior, Heidelberg Township, Lehigh County
Figure 68: Smoke house showing door for ash removal, Lynn Township, Lehigh County

Granary, 1910-1960
An interesting appearance in the mid-20th century was the freestanding granary. This was unexpected, because so many Pennsylvania bank barns have interior granaries. The freestanding granaries were mainly built after about 1930. They were sited on a road or farm lane. They were usually gabled, made of tight boarded wood frame, elevated on concrete blocks, and contained interior bins. Field workers questioned local farmers and the county extension agent about why freestanding granaries would appear in this time and place, but no consensus emerged. It seems possible that their appearance may have had something to do with the disappearance of horse farming (thus it was no longer necessarily efficient to put grain in the barn), and/or with innovations in threshing technology or even marketing practices. It does not seem likely that grain was pushed out of the barn by potatoes, since grain would always have been stored on the upper level.

Figure 69: Granary and corn crib, Heidelberg Township, Lehigh County
Figure 70: Granary interior, Heidelberg Township, Lehigh County
Figure 71: Granary, Lynn Township, Lehigh County
Figure 72: Granary, Lynn Township, Lehigh County

Garage, 1910-1960
With the arrival of the auto, the garage also appeared. Close to ninety percent of farm families in the Lehigh County potato belt owned autos in 1927, and Lowhill and Lynn Township families averaged more than one. Garages were usually simple gabled structures.

Figure 73: Garage, Lynn Township, Lehigh County

Milk House, 1910-1960
Though dairying was relatively unimportant in northwestern Lehigh County, many farms had six or a dozen cows. Even small dairies would be required to have a milk house. Field survey documented several milk houses on Lehigh County potato farms. A milk house is a small structure used expressly for the purpose of isolating fresh milk from the smells, dust, and microbes of the barn environment. The milk house is a 20th century phenomenon. It would be sited conveniently near the roadside or on a farm lane for easy pickup of goods. The milk house was a small (typically ten or twelve feet on a side) structure with a square or rectangular footprint. Construction materials were often masonry, including concrete block or rock face concrete, but sometimes frame. Most milk houses have gabled roofs, but some have a shed roof or pyramid roof. Milk houses provided a place to store and cool fluid milk before it was transported to market; to store milk cans not in use; and to wash and dry containers (and sometimes other equipment like separators). The milk houses should be interpreted as a symbol of the expanded role of the state farming
system. By the early 20th century, municipalities had begun to regulate in the name of public health. The milk house also represents a shift in the work of dairying from women to men.  

Figure 74: Milk house, Heidelberg Township, Lehigh County  
Figure 75: Milk house, Lynn Township, Lehigh County

**Poultry House, 1910-1960**

As poultry became more important on northwestern Lehigh County farms, separate poultry housing appeared. The poultry houses documented in field work tended to be relatively small; one or two stories; built of frame; and usually sited near the house, reflecting that women and children still were deeply involved in poultry work. Some poultry buildings had brooder facilities and normally also housed laying hens. A few buildings survive with interior nest boxes, roosts, and even feeder apparatus still intact. The poultry buildings were well lighted and had small entry holes near the base.

Figure 76: Poultry house, Heidelberg Township, Lehigh County  
Figure 77: Poultry houses, Heidelberg Township, Lehigh County  
Figure 78: Poultry house, Heidelberg Township, Lehigh County  
Figure 79: Poultry house interior, Lynn Township, Lehigh County

**Machine Shed, 1910-1960**

With advancing mechanization, machine sheds became more common. Lehigh County machine sheds resembled similar buildings in other regions. That is, they were frame gabled buildings with large openings to admit machinery and sometimes integral corn cribs. Heavy mortise and tenon framing continued in Lehigh County well after other regions had switched to lighter balloon style frames.

Figure 80: Machine shed, Heidelberg Township, Lehigh County  
Figure 81: Machine shed, Heidelberg Township, Lehigh County  
Figure 82: Machine shed with gable end corn crib, Heidelberg Township, Lehigh County

**Privy, 1910-1960**

Though of course the privy was a standard on all Pennsylvania farms prior to 1910, most surviving privies date to the 20th century. Lehigh County is no exception.

Figure 83: Privy, Heidelberg Township, Lehigh County

**Spray shed, 1910-1960**

A spray shed is a small building where crop sprays and sometimes equipment are stored. It is often near water, or a cistern. In Lehigh County spraying was very important. Local farmers recall mixing sprays near ponds or at a creekside. The one building tentatively identified as a spray shed was located next to a farm pond.

Figure 84: Spray shed, Heidelberg Township, Lehigh County

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38 This text is taken from the “Milk House” entry in the field guide on the Pennsylvania Agricultural History Project website.
Silo, 1910-1960
Northwestern Lehigh County farms did not emphasize dairying to any great extent, but a few farms had silos. A silo is an airtight facility (usually vertical, but sometimes in a pit) which receives green material which then ferments in the anaerobic interior, providing year-round nutriment for dairy cows.

Figure 85: Silo, Lynn Township, Lehigh County
Figure 86: Silo, Lynn Township, Lehigh County

Combination Buildings, 1910-1960
As elsewhere, many farm buildings served multiple purposes. Here is just one example.

Figure 87: Combination structure, Lynn Township, Lehigh County

Cold Frame, 1910-1960
Cold frames were found at several sites. The cold frame is not technically a building, but it is included in this section because documented cold frames were always associated with a building. Home gardeners used them to get a head start with cool-weather crops like lettuce, or possibly to start warm-weather vegetable plants from seed. Usually they would be built onto a building wall, facing south if possible, to get additional warmth from masonry and the sun respectively.

Figure 88: Cold frame, Lynn Township, Lehigh County

Landscape Features, 1910-1960:
The most notable new agricultural landscape features to appear during this period was the farm pond. Oral histories and aerial photographs confirm that the main pond-building phase occurred after World War II. Farm ponds were widely popular in postwar Pennsylvania. Earth moving equipment was more effective and more accessible. Insurance companies reduced rates for farms with ponds. Interest rose in recreational uses such as fishing and swimming. And, in some regions, specialty crops involved high water use for irrigation or spraying. This was true, for example, in the Adams County fruit belt, and it was also true in northwestern Lehigh County. Irrigation was mentioned by several oral-history informants as becoming really important in the dry years of the 1960s.39 Water was often needed to mix sprays, and several local farmers mentioned using pond water for this purpose.

Figure 89: Farm pond, Heidelberg Township, Lehigh County

Another important landscape change was contour plowing and strip cropping. These erosion-control measures were stressed by the agricultural extension agent. In the potato regions, alternate strips of potatoes and alfalfa were recommended. Compare the 1938 aerial to the one just twenty years later to see the impact of contour plowing and strip cropping.

Figure 90: Aerial photo, Germansville vicinity, 1938.
Figure 91: Aerial photo, Germansville vicinity, 1958

Sometimes the new planting practices created new field boundaries, but more often the old boundaries were retained, and the interior appearance of the fields changed. It is not clear how crop rotation practices

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39 Robert Leiby interview; the Lehigh County Agricultural Extension Archives, Agent Report, 1946 mentions 25 new farm ponds built that year.
affected the landscape. A patchwork of small, irregularly shaped fields was common throughout the state. Permanent landscape changes, it seems, were not involved; but the color, texture, and height of crops in the rotation may have shaped a locally distinctive look, with fields of dark green, bushy potato or alfalfa plants low to the ground, while taller corn occupied less acreage than elsewhere.

**Bibliography: Lehigh County Potato Region**

Note: this bibliography is specifically for the Lehigh County Potato region. A more extensive general bibliography is available with the other Pennsylvania Agricultural History Project narratives online. [http://www.portal.state.pa.us/portal/server.pt/community/pennsylvania%27s_agricultural_history/2584](http://www.portal.state.pa.us/portal/server.pt/community/pennsylvania%27s_agricultural_history/2584)


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XIV. Lehigh County Potato Region, c1850-1910

Location
The Lehigh County Potato Historic Agricultural Region consists of several townships in northwestern Lehigh County, plus Albany Township in northeastern Berks County. The Lehigh County townships are Heidelberg, Lowhill, Lynn, North Whitehall, and Weisenberg. They extend from the southern edge of the Blue Mountain on the north, southward approximately to where the Great Valley becomes less hilly and the conurbation of Allentown:Bethlehem:Easton lies. Albany Township is just west of Lynn Township; it is bordered within a “V” formed where the Blue Mountain bends around to the east.

Climate, Soils, and Topography
Lehigh County falls within the climate region designated as “southeast” by Penn State geographer Brent Yarnal. Average temperatures are around 32° F in January to 77° F in July. The region has relatively hot summers and warmer winters than elsewhere in the state. Annual precipitation averages about 40–45 inches. The frost-free season is about 150 days.¹

Soils in this area tend to belong to the Trexler association. According to the 1959 county soil survey, these are moderately deep to deep, and well-drained. The parent rock is mostly shale.²

The region is hilly, with moderate to steep slopes. A number of creeks drain the area. The main ones are the Jordan, Ontelaunee, Mill, Kistler, Switzer, and Pine Creeks, and Stony Run. They drain to the Lehigh River eastward, and to the Schuylkill River southward.

Historical Farming Systems
Potatoes as one component in a diversified farming system, 1850-1910
Products, 1850-1910
By the mid-19th century, farms in northwestern Lehigh County averaged about ninety acres — among the smallest in the state, and well below the state average of 117 acres. Even so, farms in the region had more improved acres than statewide — 70 acres, as opposed to 55. Lehigh County’s percentage of improved acres was thus high — nearly 80 percent, as opposed to 47 percent statewide. By 1880, overall land use patterns in the region had changed little; the percentage of tilled land had edged up to about 83 percent, while woodland took up only 12 percent of farm land and pasture even less. The average Pennsylvania farm now had more improved acres than a typical Lehigh County farm, but still a smaller percentage of total acreage improved. Overall, the biggest change by 1880 was that Lehigh County farm size had decreased to just 53 acres, fourth smallest in the state. In just one generation, Lehigh County farm size shrank twice as fast as elsewhere in Pennsylvania. Farm families here were rapidly dividing up their farms and tinkering with their farming systems to make them work on smaller acreages. Though the farm values were around state

averages, falling populations in Heidelberg and Lowhill Townships suggest that even subdividing farms couldn’t prevent outmigration.3

There were several essential characteristics of Lehigh County farming during this period. Northwestern Lehigh County farm families raised the usual field crops – corn, oats, wheat, rye, potatoes, buckwheat, and hay. A first point to make is that on these small farms, total crop production was comparable to that on the average-sized Pennsylvania farm of 117 acres. Second, the particular crop and product mix was distinctive: rye and potatoes were proportionally more important than were the other crops, while wheat and corn were less important than elsewhere. Mid-century Lehigh County farms produced about 150 bushels of rye (statewide, the average farm reported only 38). By the late 19th century, rye production was diminishing everywhere, but Lehigh County still exceeded statewide averages. Meanwhile, potato raising became more popular everywhere, but more so in Lehigh County. In both 1850 and 1880, northwestern Lehigh County farms significantly exceeded the rest of the state in per-farm potato production. While the average Pennsylvania farm produced 47 bushels in 1850, for example, Lynn Township farms averaged 100 bushels. By 1880, even though farm size had dropped significantly, potato production was up: Lynn Township’s farms now averaged 185 bushels of potatoes, and Heidelberg’s nearly 200, still significantly above state averages. These numbers are small compared with later achievements, but for the period they stand out. Moreover, a few individuals were already experimenting with significantly larger acreages.4

Figure 2: Lehigh County Potatoes region farm crops, 1850

This emphasis reflected distinctive circumstances. One was the region’s ethnic makeup. Lehigh County was (and remains) one of the most “German” in Pennsylvania. One historian estimated that three-quarters of the county population was Pennsylvania German. And, northwestern Lehigh County is arguably even more “German” than the rest of the county.5 The Allentown Morning Call ran a popular dialect column for many years and local cultural pride is strong. Rye was related to Pennsylvania German cultural practices. Some rye went to distilleries, and rye was also useful as a cover crop. But the main use for rye was probably rye bread, which remained important to Pennsylvania German foodways for a long time. An 1835 report from the county noted: “we produce a great quantity of rye for sale and home consumption, for man and beast; for be it remembered that we eat rye bread in preference, even when we have both sorts on the table.” These preferences persisted; a family of eccentric bachelor brothers in Albany Township was reported in 1891 to have raised “mostly rye” on their 155-acre farm, threshing it entirely with flails.6

Soils and topography also help explain the increased interest in rye and potatoes. The land in northwestern Lehigh County is hilly and the soils are not quite as productive as are the limestone-based soils nearby. Already in the mid 1840s a local historian noted that Heidelberg Township’s gravelly soils produced “an abundant crop of rye.”7 As time went on, northwestern Lehigh County farm families recognized both the strengths and limitations of their soils, and adjusted accordingly to crops that were suited to conditions. Potatoes thrived in the well-drained, shaly soils here. Local residents also cut ample hay crops, between 10

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3 Crop and farm size information is from the US Census of Agriculture. Population information is from F. A. Davis, New Illustrated Atlas of Lehigh County, Pennsylvania… (Reading, PA, 1876), 9-10.
7 I. Daniel Rupp, History of Northampton, Lehigh… Counties (Harrisburg: 1845), 127.
and 13 tons on the average farm. Some observers believed that the incorporation of lime had helped substantially to preserve fertility and crop yields. Of Lowhill township, for example, atlas maker F. A. Davis remarked in 1876: "the soil is not naturally fertile, being chiefly white gravel; but the skill and industry of many of its farmers have rendered their lands quite productive. The application of lime has been found to be highly beneficial, resulting in generous harvests; while the use of different composts has amply repaid the intelligent cultivators of the Low Hill farms." It is not clear what Davis meant by "composts," but these could have been manure and straw mixes or cover crops.

Improving road and especially rail connections made it possible to send crops to the rapidly growing towns in the Lehigh River Valley and up into the developing coal country in the opposite direction. Some were even exported. It is notable that Lynn and Heidelberg Townships’ potato and hay production were higher than even other townships in northwestern Lehigh County in 1880; rail connections ran right through the center of these two townships and connected to the Lehigh Valley Railroad, which led south to Philadelphia and north to the anthracite region.

Clover seed was a valuable product on some northwestern Lehigh County farms. In 1850 the average Pennsylvania farm listed one bushel, while in northwestern Lehigh County the typical farm produced 1.8 bushels. Lynn Township had two clover mills in the mid-1840s to serve local demand for processing seed. The figures suggest that Lehigh County farm practices were progressive; clover was a key contributor in crop rotations as a nitrogen fixer. Demand in southeastern Pennsylvania markets was brisk, so clover seed was another cash crop.

Except for wheat, field crops and hay were fed to animals. On northwestern Lehigh County farms in the mid to late 19th century, livestock enterprises also varied slightly in proportions from typical profiles for the rest of the state, most conspicuously in that virtually no sheep were kept. Otherwise, Lehigh County farms nearly kept pace with the state in numbers of horses, swine, chickens, and dairy cattle per farm, and had fewer than average beef cattle than the average Pennsylvania farm. These numbers might suggest that Lehigh County farming was much more intensive than in the rest of the state, since the animals were kept and the crops raised on smaller farms; but these small farms had just as much improved farmland as the average, larger farm in the state. In other words, Lehigh County farm families were able to keep average number of livestock on below-average sized farms because they had more land cleared, not because they were farming more intensively acre for acre.

The animals on the typical northwestern Lehigh County farm served both household and commercial purposes. Horses worked in the fields, powered stationary machinery, and hauled wagons and passenger carriages. Swine provided meat for the family; in Pennsylvania German cuisine, pork still predominated, and lard was highly valued too. Most families probably also traded or sold some hogs. Poultry weren’t counted until the 1880 census, by which time the average flock in Lehigh County (three or four dozen birds) provided for family needs and some exchange in the local markets. Dairying became relatively more important over time. In northwestern Lehigh County, home buttermaking (not fluid milk dairying) took precedence. On the average northwestern Lehigh County farm at mid-century, buttermaking just sufficed for household use, but by the late 19th century, farm women were making modest surpluses.

9 Ann Bartholomew, “Agriculture in Lehigh County to 1920,” 81, 94-5.
The farm orchard was another central element in the agricultural economy. It supported important Pennsylvania German foodways by supplying apples for cider, vinegar, applejack, schnitz (sliced dried apples), and apple butter. Samuel Reitz, for example, advertised his farm in the 1876 *New Illustrated Atlas of Lehigh County*; he mentioned an “apple distillery” among his farm buildings. By the late 19th century, Heidelberg, Lynn, and Weisenberg Townships had substantially more apple trees than the average Pennsylvania farm. Like potatoes, fresh apples must have found an outlet to market along the rail lines.

The farm garden was ample, and from it came vegetables to supply the family. A typical Pennsylvania German garden yielded cabbage (for fresh consumption, slaw, and sauerkraut); turnips; parsnips; carrots; beets; onions; tomatoes; peppers; cucumbers; sweet corn; beans (dry and green); radishes; corn; peas; rhubarb; asparagus; lettuces; squashes; and various herbs and seasonings. The garden work was mainly done by women and children. Traditional Pennsylvania German garden design often divided the site into squares, separated by wood-plank walkways.

Cordwood, nuts, and logs from woodlots were other farm “products.” They were important for keeping the family warm and sometimes could provide food or income. For example, Charles Fritz bought six logs from a walnut tree in 1896 for $5.50 and sold the sawn lumber for $132.00. Woodlots were small in Lehigh County, so this resource was limited but lucrative.

Some farmers in the region combined farming with other occupations, often using resources on their lands. For example, the Hermany brothers of Jacksonville (Lynn Township) advertised a farm and saw and bone-milling business, declaring themselves "Manufacturers of bone-dust and dealers in Lumber." George M. Schellhammer had a tannery on his farm. Joseph Mosser had a farm and slate quarry. Like farming families elsewhere in the state, northwestern Lehigh County farm people pursued more than one occupation and developed non-farm resources on their land.

Reviewing this catalogue of farm products, we see that the Lehigh County potato region was beginning to take shape; farmers there gave potatoes a significant position in their cropping schemes, and correspondingly less to other field crops, particularly wheat and corn. Yet potatoes were still just one component, on a more or less equal footing with others in a complex, highly diversified crop and livestock system. Northwestern Lehigh County farms were not notably valuable or profitable; but neither were they hardscrabble affairs.

**Labor and Land Tenure, 1850-1910**

Family and neighborhood labor predominated in northwestern Lehigh County during this period. Evocative images made by turn of the century photographers give valuable clues. At least where potato harvest was concerned, everybody turned out, from grandparents on down. Wage workers were hired at peak seasons, such as haying time, but the census figures show that most farms around 1880 only hired labor for about 22 weeks each year.

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14 See more photographs in H. Winslow Fegley, *Farming, Always Farming*, Figures 211 through 216.
Farm work was divided very loosely along lines according to age and gender. As the potato harvest scenes above show, though, these lines were seldom hard and fast. Generally, men worked in the fields, planting, plowing, cultivating, and harvesting. Animal feeding was done by men, women, or children; poultry keeping was usually associated with women and children. Women and men milked cows. Women made butter and soft cheese. Butchering involved entire neighborhoods, with families visiting each others’ farms to do the work in turns. The same was true when it came time to make cider and applebutter and sauerkraut. At haying time also, everyone pitched in, and women also prepared meals for harvest workers. During this period, itinerant threshers replaced large threshing crews, so labor patterns in grain harvesting changed. Threshing day was still busy, but the whole process took much less time and fewer workers.

Farm tenancy rates were about the same in Lehigh County as across the state generally; about 80 percent of farms were owner occupied. Lowhill Township had a lower owner occupancy rate in 1880, but the other townships were at or above state averages. Most tenancy arrangements probably involved share cropping and were made between relatives.

Seasonality marked labor patterns here, as everywhere in 19th century rural Pennsylvania. Winter was a relatively quiet time, when people visited, attended Farmers’ Institutes, church and school events, and did indoor work. Of course, animals still had to be fed, but cows were not yet milked year-round and hens were less productive too. The pace accelerated when spring arrived. Milk production resumed when cows calved, and ploughing and planting took place. Early and mid summer brought haying and harvesting of other grains like oats. Fall probably had the most intense work pace, because the potato harvest, garden harvest, and orchard crop processing all took place then, followed soon after by butchering.

Not all farm work was done by hand. In 1850, farms in Lehigh County and the northwestern townships were significantly more mechanized than average.

**Buildings and landscapes, 1850-1910**

Northwestern Lehigh County agricultural building forms during this period were types that are found elsewhere in the state, such as the Pennsylvania forebay bank barn, springhouse, summer kitchen, and so forth. To some extent, construction materials and methods make the architectural patterns in northwestern Lehigh County distinctive. Most notably, slate roofs are very common, even on the smallest of outbuildings like corn cribs, milk houses, and even privies. This is because the Lehigh County “slate belt” directly adjoined the potato region, in some cases intruded right into it. Thus this durable, handsome, and long lasting roofing material was inexpensive and practical to use. Skilled workmen were available to install and maintain it. Second, traditional construction methods persisted longer than elsewhere. Machine sheds from the early 20th century not uncommonly are constructed with heavy posts and beams, pegged or mortised and tenoned. Finally, where houses are concerned, local people retained a preference for older styles and forms well after they had become old-fashioned elsewhere.

**Farm House, 1850-1910**

In 19th century rural Lehigh County, well-off farm families seem to have preferred the five-bay, double-pile house with central door on the eaves side. Except for one three-bay house and one four-over-four house, all the mid-19th century houses documented in field survey were five-bay center-door houses.¹⁵ In Lynn Township, for example, a fine five-bay stone house dates to the mid 19th century (Figure 5). It was

¹⁵ These were at sites 077-HE-002, 077-HE-003, 077-HE-011,077-HE-012, 077-LY-003, and 077-LY-005. At 077-HE-006, an earlier five-bay house was Victorianized in the late 19th century. At 077-HE-004, the proprietors built a five-bay house in the late 19th century.
modernized in the 20th century, but its cornice moulding, gable returns, rubblestone masonry, end chimneys, and paneled shutters remain.

Figure 5: Five bay center door house, Lynn Township, Lehigh County

The form remained popular well after it was fashionable elsewhere. In 1870, for example, a Heidelberg Township family erected a five bay house in brick. Pennsylvania German families were conservative; they stuck with cultural forms a long time.

Figure 6: Five bay center door house, Heidelberg Township, Lehigh County
Figure 7: Four-over-four house, Lynn Township, Lehigh County

Barns, 1850-1910

Lehigh County barns from this period represented just one type: the classic Pennsylvania barn. This famous type was by now well developed. The barn was built with its long side into a bank, and the diagnostic forebay (overshoot) projected out on the opposite eaves side. On the upper level, mows, threshing floors, and usually a granary provided for grain and hay storage. On the lower level, stalls and stables housed horses, cattle, and sometimes pigs. The Pennsylvania barn was very efficient and flexible, and that is why it was so popular. Though it was adopted by farm families from many cultural backgrounds, it was primarily associated with Pennsylvania Germans.

The Pennsylvania barn suited the diversified farming system very well. Its upper-level spaces provided flexible storage areas for hay, straw, and grain. Hay was usually piled loose in the outer mows, at the gable wall ends. Then, straw could be put in the next mow in from the end. Or, unthreshed grain in sheaves would be carefully stacked inside so it could stay dry while it awaited threshing. Threshing floors still were needed even in the machine threshing era; some grains did not withstand machine threshing well, so they continued to be threshed by hand. Later, as machinery improved, the floors were used for machinery storage. A tightly sealed granary, usually in the forebay, contained bins where threshed grain was stored. Hay and grains could then be dropped down to animals in the lower level through openings in the floor. Below, cattle and horses were housed. Humans and animals were kept separate by doors and aisles, yet feeding could be accomplished efficiently. Thus the Pennsylvania Barn ideally suited the typical 19th century Lehigh County farm operation.

Figure 8: Pennsylvania Barn, Heidelberg Township, Lehigh County
Figure 9: Barn bank side, Heidelberg Township, Lehigh County
Figure 10: Pennsylvania Barn, Heidelberg Township, Lehigh County
Figure 11: Interior of barn in photo above.
Figure 12: Stone and frame barn, Lynn Township, Lehigh County

Corn Crib, 1850-1910

One early corncrib was documented in field study. This c. 1850 example at site 077-HE-007 (Figures 13-15) has a heavy pegged timber frame, vertical slats, and steeply canted sides. Its form was popular throughout the 19th century, but survivals with heavy framing are rare.

Figure 13-15: Corncrib, Heidelberg Twp, Lehigh County
Butcher House, 1850-1910

In Lehigh County, the term “butcher house” is often used for a freestanding building with interior set-kettle or heavy cooking hearth. It is not just a synonym for a summer kitchen; some properties have both a summer kitchen and a butcher house. As its name implies, the butcher house served for the heavy work at butchering time. The carcass might be set out on a long plank inside to cool. Scrapple was made by boiling cut-up pieces from a hog carcass and adding corn meal and spices. Sausages too were made at butchering time. Likely soap was made and other heavy work performed in the butcher house as well. By contrast, the summer kitchen’s equipment was lighter—a free standing, portable stove—and designed more for everyday cooking. Lehigh County butcher houses tend to be made of frame; gabled; have ample windows for light; and have either a masonry set-kettle or a manufactured one of iron. In either case the set-kettle has at least one and usually more openings in which to set the kettle. Butcher houses are usually sited near the house, and sometimes are combined with summer kitchens or other buildings.16

Figure 16-17: Butcher house, Heidelberg Township, Lehigh County
Figure 18: Butcher house, Heidelberg Township, Lehigh County
Figure 19: Interior set kettle in the butcher house depicted above

Root Cellar, 1850-1910

Root cellars were serious business in Lehigh County. Not only were they important for family subsistence, but in potato country they could also serve to house the cash crop. Extant examples studied in field survey work tended to be relatively large and deep, and to be located near the house and summer kitchen. Stone steps led down to the cool interior, which often had a stone floor. Here, vegetables, potatoes, and dairy products could be kept at a constant temperature around 50-55 degrees F. After canning became popular, some farm women also stored their jars of chutney, jam, canned fruit, vegetables, and meat in the root cellar as well.

Figure 20: Root cellar, Heidelberg Township, Lehigh County
Figure 21: Root cellar, Heidelberg Township, Lehigh County

Summer Kitchen, 1850-1910

Detached kitchens had existed in the 18th century, but the phrase “summer kitchen” and the particular form appeared much later and reached a peak around 1900. Lehigh County summer kitchens follow this trend. Most date from the late 19th to the mid 20th century. The summer kitchen, as its name implies, came into popular use in the modern cookstove era. Cookstoves generated a lot of heat, so the summer kitchen helped keep the house cool. Perhaps as importantly, this period witnessed a great expansion in the rural family’s subsistence activities. Canning and sugar-based food preservation (jams, preserves, etc) joined the traditional pickling, smoking, and salting. A summer kitchen provided a specialized space in which these activities could take place.

Lehigh County summer kitchens generally are located very near the house. They are usually gabled structures, made of wood frame, with ample windows, a high level of finish, and chimney or stove vent.

Figure 22: Summer kitchen, Heidelberg Township, Lehigh County

16 In the North and West Branch Susquehanna region, field study noted butcher houses too. It would seem logical that these butcher houses would have the same function as the ones further east, since people migrated to the Susquehanna Valley from places like Lehigh County. However, some buildings called butcher houses in the North and West Branch region lack set-kettles or even a stove of any type. But in either case, the buildings were traditionally associated with butchering and accommodated a smaller or wider range of the butchering process. Where set-kettles were not present, the cooking may have been done in a kitchen or a temporary outdoor facility.
Smoke house, 1850-1910
Where Pennsylvania German customs were so strong, the smoke house was central to foodways. A few farm families still utilized an attic rauchkammer, but most properties also had a smoke house, either free standing or combined with another outbuilding. Smoke houses have a small, square-ish footprint; no windows; minimal vents if any; exterior access for ash removal; charred interiors; and hooks, bars, or pegs for hanging meats. The smoke house is usually in the house’s orbit, but on the periphery.

Figure 23. Smoke house added to summer kitchen, Lynn Township, Lehigh County

Spring House, 1850-1910
In the pre-refrigeration era, spring houses were important means of keeping perishables cool. Documented spring houses in Lehigh County were typically small, gabled structures built of stone and frame. The spring’s location determined the spring house’s siting, of course; but usually the spring house would not be too far from the house. Butter production was not high in Lehigh County, and the small size of spring houses there reflect production mainly for household use.

Figure 24: Spring house, Lynn Township, Lehigh County
Figure 25: Spring house with walled spring, Heidelberg Township, Lehigh County

Pig Sty, 1850-1910
In a county such as Lehigh where pigs were so important to the farm economy, pig sties were common landscape expressions. A pig sty is typically located at right angles to the barn, on the perimeter of the barnyard. It is gabled with a human door in one gable end, usually off center, indicating the location of an interior feed aisle. Small stalls line one side and lead out into the barnyard via narrow openings.

Figure 26: Pig sty, Heidelberg Township, Lehigh County
Figure 27: Pig sty, Lynn Township, Lehigh County

Landscape, 1850-1910
The Lehigh County potato region did not yet display landscape features specifically connected to potato culture. Farming had, however, combined with natural landscape features to give the overall farming region a distinctive look. Particularly in Lynn and Heidelberg Townships, the Blue Mountain running along the northern border formed an imposing backdrop. The farms by now had a rather wide-open character because so much land had been cleared. The photos of potato harvest suggest how wide the views were. Fields were small and form a patchwork of irregular shapes, demarcated by treelines, or not by any physical boundary. There would have been more fencing than now, but less than elsewhere at the same time, since this was not especially a livestock country. One prominent type of fence that has survived in places was the stone barnyard enclosure. These walls express the grain-and-livestock system well; they kept cattle confined so their manure could be collected and used. Farm orchards were very common. Available oral-history and aerial photographic evidence (from a later period, but still applicable since orchards are long-lived) suggests that they were usually situated close to the farmstead, rather than among the outer crop fields. Only remnants survive.

In a March 2010 email to Sally McMurry, agricultural extension agent Robert Leiby mentioned a house in Lynn Township which went up for sale after its elderly owners passed away, around 2002. When the house was readied for sale, its attic rauchkammer was found to have a dozen hams estimated at fifty years old.

Ann Bartholomew, “Agriculture in Lehigh County to 1920,” 91, offers a very good explanation of a pig sty interior layout and function.
II. Potatoes as a primary cash crop with diversified complements, 1910-1960

Products, 1910-1960

By 1927 Lehigh County farm size had risen to 62 acres after its late 19th century low. Northwestern Lehigh County was now attracting notice as a potato growing region. In September 1913 the *Kutztown Patriot* ran a story with the headline “Bucks and Lehigh Farmers in Potato Belt Harvesting Crop Exceeding One Million Bushels.” It described a “great potato belt” which “extends from Albany, Berks County, to Best station, Lehigh county, [sic] a distance of about 18 miles.” The article went on to note that at a string of stations along the Berks and Lehigh Railroad there were “shippers who make it a business to ship the potatoes and take the risk of quality and shrinkage.” Some farmers were harvesting two and three thousand bushels. The *Patriot* photographer snapped a photo of A. S. Greenawalt's harvest crew: “Mrs. Mahlon Loy, Minerva Miller, Helen Boyer, Mrs. Austin Stump, Mrs. James Berk, Mrs. John Miller, Mrs. Ed. Bachman, Miss Alma Bailey, Neda Berk, Effie Rauch, Oscar Lenhart and Amandus Bachman. Henry Berk is in charge of the team and Will. L. Reber, foreman is operating the potato digger.” A list of prominent growers gave their acreages, which ranged from 15 acres all the way up to 55. The reporter mentioned that many potatoes were shipped immediately after harvest, but the article also noted that “many farmers . . . have built ground cellars and store them there till late winter and then they sell them at advanced prices.”

Lehigh County had become the pre-eminent potato county in the state, and production was concentrated in these northwestern townships. Production topped out (during our period at least) at 3.2 million bushels in 1949. Lehigh had far more acres in potatoes—over 12,000—than any other county. Lehigh was not the state leader in yield, but nonetheless a striking statistic is the county’s increase in yields between 1940 and 1950, from just 118 bushels per acre to 258.

Several factors combined to spur development in the potato belt. Local historian Ann Bartholomew credits the invention of an effective horse-drawn potato planter and rising use of Bordeaux and other insect control measures. As well, she mentions that Dr. David D. Fritch of Macungie, the “Potato King of Lehigh,” used his control over the Keystone Roller Mill to promote rotations (potatoes/wheat/clover hay), use of certified Michigan seed potatoes, and use of commercial fertilizer. A decade or two later, the Agricultural Extension agent took credit for improvements. However, without ready markets in the booming Lehigh Valley and anthracite regions, few farmers would have bothered to develop potato culture. Between 1880 and 1910, for example, Lackawanna and Luzerne Counties nearly tripled in population, and Philadelphia and Lehigh County nearly doubled. Other potential markets were rapidly developing in neighboring New York State and New Jersey. The heavily immigrant and working class populations in these industrial communities needed inexpensive food supplies; potatoes suited the demand well. There was incentive aplenty for innovation and expansion in potato culture.

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Most potatoes grown in the early 20th century were “table” potatoes, destined to be baked, boiled, or otherwise prepared at home. (Today, most US grown potatoes are processed into fries and chips.) Potato varieties grown in Lehigh County included Russets, Bilboa, Irish Cobbler, White Smooth, Blanc, Vulcan, and Mercer.21 Renowned potato expert E. L. Nixon mentioned the Cobbler as “the most widely distributed, early potato grown,” and the Rural Russet as the overall favorite. Stevenson Fletcher saw a shift from "local sorts" to Russet, White Rural, and Cobbler, which in 1934 he estimated made up "over 90 percent of the potato crop of Pennsylvania." The Lehigh County agricultural extension agent report for 1931 mentioned the Green Mountain, New York State Cobbler, and Rural Russet, with the latter being the local favorite. In 1937 the home economics agent reported that her cooking demonstration participants voted the Chippewa and the White Rurals the best. General works on potato culture from the period list varieties by the dozen, giving the impression of great diversity. However, even this large list apparently had limited genetic diversity; and in any case only a few potato varieties achieved commercial importance. In the East, these were the ones already mentioned plus the Burbank and Green Mountain. The main division among potato varieties at this time was whether they were harvested early or late. Few sources specific to Lehigh County discuss varieties at any length. This suggests that variety was relatively unimportant, or that variety choice was settled and unremarked. In any case, we don’t find the kind of impassioned debates (at least not in printed sources) about potato varieties that, for instance, Adams County apple growers were having about the merits of their favorites.22

Around 1932 the USDA released an important new variety, the Katahdin. Within a few years this became the favorite in Lehigh County. Already in 1937 the extension agent thought it was the most popular, and by 1944 he estimated that sixty percent of the county’s potato acres were planted with Katahdins. The Katahdin was a good keeper with dependable productivity. Another popular variety, the Kennebec, was introduced in 1948. Its thin skin made it vulnerable to bruising but if handled carefully it stored well. The significance of these two varieties lies partly in their development by government sponsored researchers; the earlier varieties had been developed privately and through informal channels. The impact of the agricultural establishment was increasing. It is also important to note the traits for which the Katahdin was known: keeping quality and resistance to stresses such as drought. As potatoes became a larger scale enterprise in Lehigh County, storage became more important. Farmers wanted to be able to hold their crop and sell it over a long period, to benefit from rising prices in the winter months. Doubtless the Katahdin's hardiness also recommended it now that growers were expanding their acreage.23

At about the same time, the agricultural extension agent began to promote certified seed potatoes as a means of reducing problems from the myriad diseases that attack the potato. Certified seed potatoes were guaranteed free of certain diseases. They were generally grown in other Pennsylvania counties (especially Somerset and Potter) or in other states, notably Maine and Michigan. Certified seed potatoes did contribute

Potato growing in the early 20th century involved complex processes. For example, rotations were very important. In the 1920s the agricultural extension agent thought that rotations were being shortened to just two years, alternating clover and potatoes. More typically rotations were three years and alternated wheat, clover or alfalfa hay, and potatoes. In the 1930s Penn State agricultural economist Emil Rauchenstein noted that in Lehigh County, “much less corn is grown than in other sections, as potatoes take the place of corn in the rotation.”

The 1927 census figures seem to reflect this practice. Hay, potatoes, and wheat took up roughly equal acreage (nine to fifteen each, depending on the township), with corn and oats occupying markedly fewer acres (three to six). According to 2010 county agricultural extension agent Robert Leiby, these rotations would begin with winter wheat sown in the fall after the potato harvest. The wheat was overseeded with clover or other legumes, which later could be harvested as hay. The wheat was mainly sold as grain, but straw could be valuable too.

The rotations were important because of the particular requirements posed by the potato, which was both a demanding and susceptible plant; a high maintenance crop, so to speak. Arthur W. Gilbert, author of a 1917 treatise on The Potato, explained that rotations helped to avoid disease, they promoted economic diversity, they helped with weed and pest control, and they replaced organic matter. Potato growers could vary their methods for restoring organic matter. They could use livestock manure; but they also had the option to use green manure, cover crops, catch crops, lime, and artificial fertilizer in varying combinations. Nixon wryly remarked that “potato growers, generally, are pretty well sold on the idea of commercial fertilizer, and with the sales forces of many companies working at top speed they are likely to stay sold.” Among Pennsylvania’s elite “400 bushel club” members, most used all of these methods. In other words, the most successful growers combined liming, crop rotations, manure, and artificial fertilizer to maintain soil fertility and provide optimum growing conditions.

Because blight and insect infestations were so damaging, spraying became a common practice as Lehigh County shifted its focus toward potatoes. The most often mentioned spray mix in the early 20th century was Bordeaux, which was a mixture of copper sulphate, hydrated lime, and water. Paris Green, a “toxic double salt of copper arsenate and copper acetate,” was another potent anti-insect spray. 400- bushel club members averaged seven spray applications in 1923, and twelve in 1929. After World War II, new petroleum-based sprays and fertilizers helped to boost productivity dramatically.

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25 Ann Bartholomew, “Agriculture in Lehigh County to 1920,” 95-7; Emil Rauchenstein and F. P. Weaver, “Types of Farming in Pennsylvania,” Pennsylvania Agricultural Experiment Station Bulletin # 305 (April 1934), 57; E. L. Nixon, Principles of Potato Production, 89-90. In March 2010 the Lehigh County agricultural extension agent, Robert Leiby, noted that current philosophies held that three year rotations are best.
28 Dickey, “400 Bushel Club.”
Lehigh County potato growers increasingly operated within a wider context of declining consumption and increasing competition. United States per-capita consumption was 3.8 bushels in 1913 and only 2.8 bushels in 1934. J. B. R. Dickey offered this colorful explanation for the trend:

. . . . it was not so long ago that potatoes appeared on the farmer's and working man's table nearly, if not quite, three times a day. After the season for home-grown vegetables was past potatoes were about the only thing of the kind available. Since then habits of diet have changed to a certain extent (no doubt for the better so far as health is concerned) in nearly all households. The cereal breakfast food has helped to crowd the fried potatoes off the breakfast table. Southern grown vegetables are now available nearly all winter in every town of any size, and at rather reasonable prices. They are being bought and eaten by nearly all classes, and since we eat only about so much we are cutting down on something else, with potatoes probably taking the largest share of the cut . . . . Another factor has been the female fear of superfluous flesh, and the universal placing of white potatoes in the class of the most fattening of foods . . . .

To these factors, Dickey added the general trend toward more sedentary occupations and the rise of the canning industry. Yet despite national trends, Lehigh County farmers seemed to do reasonably well in marketing their wares. According to a 1932 study of “Potato Marketing in Pennsylvania,” seventy percent of the Lehigh County crop was sold at the farm and hauled away by the buyer, and that “many” potatoes were “shipped to market each year by rail.” This report was based on survey data. Historic photographs taken at places like Kempton, Wanamakers, and Lynnport show farmers with wagonloads of potatoes waiting to offload at the local railhead. Quite a few potato farmers “huckstered,” or drove a wagon to market produce straight to the consumer, door to door. Machine grading, packaging in smaller quantities, and roguing to improve quality were marketing strategies designed to improve the product and its image.

Figure 33: Farmers with loaded potato wagons, 1918

Another important marketing strategy was to hold potatoes back, and not take them to market straight from the field when supplies were greatest and thus prices lowest. To pursue this strategy, farmers needed storage and so many potato cellars and other storage spaces appeared during this period. They are discussed under “Buildings and Landscapes.”

Potatoes were the main source of income and “mortgage lifter” in Lehigh County. Yet even during this era, when Lehigh County potato growing expanded both in absolute and relative terms, potatoes still took their place within an overall farming system. As we have seen, the other crops in the typical rotation were legumes (usually clover) and wheat. Smaller quantities of corn and oats rounded out the crop mix. Rye, formerly important, had fallen into insignificance. Where livestock were concerned, swine and poultry appeared more prominently than on the average Pennsylvania farm, while cattle were less important. Fruit trees still provided for family needs and the occasional surplus.

Several factors likely account for the nature of the Lehigh County potato farming system. In some ways it was similar to Lancaster County, where a high-value, high intensity money crop is grown along with other

31 See for example, Lehigh County Agricultural Extension Archives, Agent Report, 1918.
crops and livestock. But while Lancaster County farmers stall-fed beef animals as a way to generate fertilizer for their tobacco crop, Lehigh County farmers stressed crop rotations and commercial fertilizer for the potato crop. Their soils were probably less adapted to the main feed crops for beef animals. Poultry worked well because they could be sold at the same local markets where Lehigh County farmers huckstered other produce. Labor demands also enter the picture; dairy farming brought high labor demands, and these didn’t mesh well with potato culture. Swine were important to local markets and foodways, and their care could be fitted in more easily with the potato growing routine.

Garden crops, fruit, and family meat preparation were very important components of the Lehigh County farm system, even when families in other places were beginning to scale down their subsistence activities in favor of purchased food. Even today, Pennsylvania German cultural practices are still deep rooted in northwestern Lehigh County, and the Pennsylvania German dialect is still spoken. Local people still prepare favorite seasonal foods such as Fastnacht donuts at the beginning of Lent; in early spring, churches hold fund raiser dinners serving such culturally significant dishes as ham and dandelions, or pig stomach. Sauerkraut, scrapple, pickles, hand made noodles—the list of home-processed traditional foods is long. Canning merely added to the variety. So the typical northwestern Lehigh County garden was large, and produced cabbages, tomatoes, sweet corn, beans, cucumbers, and many other vegetables that went into these traditional dishes.

**Labor and Land Tenure, 1910-1960**

As before, labor for farming in the potato region came primarily from family and neighbors. Farms might have a hired hand during part or all of the year, usually a local man. For laboring families, the Depression years were very stressful; people found scattered jobs husking corn, working on road projects, selling strawberries and raspberries, shoveling snow, and working for the WPA. Mary Stump Snyder, born in Albany Township (Berk County) in 1915, remembered hand mowing hay in areas too wet to take a machine mower; picking potatoes; chopping, husking, and threshing grain for wages. Children were assigned jobs like feeding chickens and pigs, helping out in the garden, blacking stoves, washing kerosene chimneys, and weeding wheat fields. At potato harvest time, schools were let out so students could help pick potatoes. The list of pickers quoted in the opening to this section shows that women comprised a good portion of pickers. By the 1960s, a few growers hired migrant workers from Puerto Rico.32

Lehigh County farms continued to be well equipped with machinery. They had more tractors than the average Pennsylvania farm in 1927. Even so, far fewer than half the farms had them. But the range of horse-powered equipment was expanding. In the potato region, spray rigs, potato digging equipment, planters, hay rakes and forks, seed potato cutters, potato graders, and plows were much used. Farmers here seemed to have a marked penchant for creative improvisation. If their equipment was inadequate, they invented new machines. For example, Albany Township, Berks County, inventor Albert E. Trexler invented a commercially successful seed potato cutter.33 Rather than spend money for equipment, some would make their own. Donald Lichtenwalner, for example, improvised a ventilation and chute system for his potato storage cellar.34 These talents extended also to building techniques. Traditional and new construction methods often are blended seamlessly in local buildings. For example, at one site a gambrel roof was constructed using both mortise and tenon joints and iron straps. In general, post and beam

34 Lichtenwalner interview, March 2010.
construction persisted far longer here than elsewhere, and farm people stuck with older architectural styles long after they had passed from favor elsewhere. Their traditionalism was not merely reflexive; it seems to have been rooted in a deep cultural pride and a conviction that Pennsylvania German lifeways were worth preserving.

Figure 34: Lehigh County farm technology, 1950

Farm tenancy in Lehigh County was not far from statewide averages. A 1939 report shows that in the potato townships, the percentage of land rented ranged from under ten to around forty.\(^{35}\) As before, share tenancy probably dominated. Overall, in the potato regions tenancy was not a major factor shaping the landscape.

Buildings and landscapes, 1910-1960

Houses, 1910-1960

Few new houses appeared during this period on northwestern Lehigh County farms. This followed patterns common in most of the state, as farm families invested in the farm side of their building plant, if they had resources to invest. Two houses documented from the period show different approaches to house building. One continued an older form, even adding ornament that was old-fashioned for the day. The other, a “foursquare” house, showed that newer popular forms were reaching into Lehigh County.

One feature peculiar to farmhouses in the region was cellar storage of potatoes. Potato harvests were getting so big that farm people squirreled the tubers away in any dark, cool spot they could find. An oral history published in the *Albany Township Historical Society Newsletter* was accompanied by a photograph of a 19th century stone house that was renovated in the 1930s, adding a sleeping porch and enclosed potato cellar across the front eaves.\(^ {36}\) Field survey workers did not obtain access to any house cellars historically linked to potato storage, but in interviews Mr. Stanley Billig, Mr. Carl Wertman, and Mr. Robert Leiby all mentioned that their families had at one time or another used house cellars for potato storage. Mr. Wertman and Mr. Billig mentioned equipment or specially built facilities for getting potatoes in and out of the cellar. At Site 077-LY-004 there is an earth mound outside the cellar bulkhead, built up when dirt was shaken from potatoes before putting them into the cellar. (This was difficult to capture on film so no image is included here.) Extra large cellar bulkheads may indicate that potatoes were stored in a house cellar.

Figure 35: House, Heidelberg Township, Lehigh County
Figure 36: House, Lynn Township, Lehigh County

Barns, 1910-1960

Few new barns were built during this period, but significant alterations to existing barns were made as farming changed. The traditional Pennsylvania forebay barn was frequently adapted to accommodate potatoes and sometimes also poultry.

Pennsylvania barn adaptations for potatoes were frequent and carried definite architectural markers. The lower level of the Pennsylvania bank barn could be altered to serve as potato storage. Field evidence of such alterations is ample and flows from the potato’s requirements. First, potatoes require dark conditions

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36 Albany Township Historical Society *Newsletter*, Spring 2011, not paginated.
to inhibit sprouting. A lower-level bay altered for potato storage, therefore, will have any windows or other openings closed up. Second, potatoes require high humidity to minimize shrinkage; but they spoil if the moisture condenses. Therefore, the spaces are closed tight, but the crosswise walls in the former stable area are often lined with boards spaced an inch or two from the masonry, to provide air space and prevent condensation. Burlap-covered walls and openings are another clue that an area was adapted for potatoes. Occasionally ceiling-mounted fans help keep proper humidity conditions as well. Third, to facilitate loading and unloading, small Dutch doors give way to large hinged doors that admitted machinery and wagons. Fourth, sometimes potatoes were loaded from above, so hatches were cut into the upper level floor and removable chutes inserted. Fifth, sometimes bins were installed, to keep varieties separate or for ease of handling. Sixth, potato cellars (unlike livestock areas) will have no traces of whitewashing. Potato bays documented in field study often were interior bays; animals in end bays on either side helped to keep the potatoes from freezing during the winter.

Figure 37: Pennsylvania barn forebay area, Heidelberg Township, Lehigh County
Figure 38: Pennsylvania barn with potato alterations, Heidelberg Township, Lehigh County
Figure 39: Potato bay converted from machinery bay; opposite side from photo above.
Figure 40: Barn forebay with potato alterations, Heidelberg Township, Lehigh County
Figure 41: Same barn as above, different view
Figure 42: Lower level Pennsylvania forebay barn bay, Lynn Township, Lehigh County

Pennsylvania barns were sometimes also altered for poultry housing during this period. Commonly these changes involved inserting multiple windows in a wall.

Figure 43: Pennsylvania barn with poultry windows, Lynn Township, Lehigh County.

**Potato Cellar, 1910-1960**
Lehigh County farm families built many specialized potato cellars during these years. The defining marks of a purpose-built potato cellar are several. These cellars have a lower story of masonry, usually concrete block but sometimes stone. The lower story is usually encased in earth or built into earth. Some of the cellars only have a roof above ground, but others have a full story above ground, usually built of wood frame. These two-story cellars have two-level access; a ramp leads to a door on the upper level, while the lower level entry doors open to ground level. In the two-story cellars, the upper level is used for machine storage. Its floor is pierced with numerous small hatches, which would be opened at harvest time. The lower level often would be divided into bins, and it would have large access doors and wood lined block walls. Later potato cellars often have electric powered ventilation systems and occasionally heaters as well.

Figure 44: Potato barn, Heidelberg Township, Lehigh County
Figures 45 & 46: Potato barn, Heidelberg Township, Lehigh County
Figure 47: Potato barn, Heidelberg Township, Lehigh County
Figure 48: Potato barn, Lynn Township, Lehigh County
Figure 49: Potato barn interior, Lynn Township, Lehigh County
Figure 50: Potato barn interior, Lynn Township, Lehigh County
Figure 51: Potato barn interior, Lynn Township, Lehigh County
Figure 52: Potato cellar interior, Heidelberg Township, Lehigh County
Figure 53: Potato barn, Lynn Township, Lehigh County
Figure 54: Potato storage, Heidelberg Township, Lehigh County
**Huckster Truck Garage, 1910-1960**

Occasionally a specialized building housed the huckster truck. One was documented in field survey work, and another was described to field workers, but not visited. The building documented has many features of a garage. However, it had a full second story with entrance door to the upper level in the banked eaves side directly opening to the farm field. It also was situated directly on the roadway rather than at the end of a driveway near the house. Mr. Donald Breininger remembers that the upper story was used for farm implement storage. Currently there is a relatively small door. This door may have replaced a larger one. It is possible also that loading of farm goods was facilitated by bringing in potatoes from the second level and loading them down into the wagon or truck bed.

![Figure 55: Huckster truck garage, Weisenberg Township, Lehigh County](image)

![Figure 56: Upper level entry of huckster truck garage in photo above](image)

Mr. Breininger wrote: “When auto travel became popular this building was erected to house the auto and huckster truck. The 2nd floor was farm implement storage. Originally there were two sliding doors to the road, at that time a dirt road. The one door was closed completely and the other replaced with the current door. The side door was added much later because of the increased traffic. The windows were also added. The similar building on our farm in the same neighborhood was built in 1919.”

**Corn Crib, 1910-1960**

Though corn was a minor crop, it still needed to be stored. Corn cribs in the area often had canted sides, even those built quite late.

![Figure 57: Corn crib and bins, Heidelberg Township, Lehigh County](image)

![Figure 58: Corn crib, Heidelberg Township, Lehigh County](image)

![Figure 59: Cylindrical corncrib, Heidelberg Township, Lehigh County](image)

![Figure 60: Corn bin for loose corn, Heidelberg Township, Lehigh County](image)

![Figure 61: Corn crib, Lynn Township, Lehigh County](image)

![Figure 62: Corn crib, Lynn Township, Lehigh County](image)

![Figure 63: Corn crib, Lynn Township, Lehigh County](image)

**Butcher House, 1910-1960**

Some new butcher houses were built during this period, and existing ones were still used frequently. One butcher house from the 20th century was incorporated into a machine shed.

![Figure 64: Machine shed-butcher house, Lynn Township, Lehigh County](image)

![Figure 65: Butcher house with interior smoke house, Heidelberg Township, Lehigh County](image)

**Root Cellar, 1910-1960**

It is difficult to date root cellars with any accuracy. Whether or not they were built during the period, root cellars continued in active use throughout this period.

**Summer Kitchen, 1910-1960**

Most summer kitchens documented in field survey predated 1910, but as with butcher houses and root cellars, they continued in use.

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37 Donald Breininger, Weisenberg-Lowhill Township Historical Association, email to Sally McMurry June 7, 2010
Smoke House, 1910-1960
Rural people in northwestern Lehigh County continued to build new smoke houses well into the 20th century. Several oral history informants now in their seventies and eighties recalled smoking meats when they were children and young adults.

Figure 66 & 67: Smoke house interior and exterior, Heidelberg Township, Lehigh County

Figure 68: Smoke house showing door for ash removal, Lynn Township, Lehigh County

Granary, 1910-1960
An interesting appearance in the mid-20th century was the freestanding granary. This was unexpected, because so many Pennsylvania bank barns have interior granaries. The freestanding granaries were mainly built after about 1930. They were sited on a road or farm lane. They were usually gabled, made of tight boarded wood frame, elevated on concrete blocks, and contained interior bins. Field workers questioned local farmers and the county extension agent about why freestanding granaries would appear in this time and place, but no consensus emerged. It seems possible that their appearance may have had something to do with the disappearance of horse farming (thus it was no longer necessarily efficient to put grain in the barn), and/or with innovations in threshing technology or even marketing practices. It does not seem likely that grain was pushed out of the barn by potatoes, since grain would always have been stored on the upper level.

Figure 69: Granary and corn crib, Heidelberg Township, Lehigh County

Figure 70: Granary interior, Heidelberg Township, Lehigh County

Figure 71: Granary, Lynn Township, Lehigh County

Figure 72: Granary, Lynn Township, Lehigh County

Garage, 1910-1960
With the arrival of the auto, the garage also appeared. Close to ninety percent of farm families in the Lehigh County potato belt owned autos in 1927, and Lowhill and Lynn Township families averaged more than one. Garages were usually simple gabled structures.

Figure 73: Garage, Lynn Township, Lehigh County

Milk House, 1910-1960
Though dairying was relatively unimportant in northwestern Lehigh County, many farms had six or a dozen cows. Even small dairies would be required to have a milk house. Field survey documented several milk houses on Lehigh County potato farms. A milk house is a small structure used expressly for the purpose of isolating fresh milk from the smells, dust, and microbes of the barn environment. The milk house is a 20th century phenomenon. It would be sited conveniently near the roadside or on a farm lane for easy pickup of goods. The milk house was a small (typically ten or twelve feet on a side) structure with a square or rectangular footprint. Construction materials were often masonry, including concrete block or rock face concrete, but sometimes frame. Most milk houses have gabled roofs, but some have a shed roof or pyramid roof. Milk houses provided a place to store and cool fluid milk before it was transported to market; to store milk cans not in use; and to wash and dry containers (and sometimes other equipment like separators). The milk houses should be interpreted as a symbol of the expanded role of the state farming
system. By the early 20th century, municipalities had begun to regulate in the name of public health. The milk house also represents a shift in the work of dairying from women to men.  

Figure 74: Milk house, Heidelberg Township, Lehigh County
Figure 75: Milk house, Lynn Township, Lehigh County

Poultry House, 1910-1960
As poultry became more important on northwestern Lehigh County farms, separate poultry housing appeared. The poultry houses documented in field work tended to be relatively small; one or two stories; built of frame; and usually sited near the house, reflecting that women and children still were deeply involved in poultry work. Some poultry buildings had broader facilities and normally also housed laying hens. A few buildings survive with interior nest boxes, roosts, and even feeder apparatus still intact. The poultry buildings were well lighted and had small entry holes near the base.

Figure 76: Poultry house, Heidelberg Township, Lehigh County
Figure 77: Poultry houses, Heidelberg Township, Lehigh County
Figure 78: Poultry house, Heidelberg Township, Lehigh County
Figure 79: Poultry house interior, Lynn Township, Lehigh County

Machine Shed, 1910-1960
With advancing mechanization, machine sheds became more common. Lehigh County machine sheds resembled similar buildings in other regions. That is, they were frame gabled buildings with large openings to admit machinery and sometimes integral corn cribs. Heavy mortise and tenon framing continued in Lehigh County well after other regions had switched to lighter balloon style frames.

Figure 80: Machine shed, Heidelberg Township, Lehigh County
Figure 81: Machine shed, Heidelberg Township, Lehigh County
Figure 82: Machine shed with gable end corn crib, Heidelberg Township, Lehigh County

Privy, 1910-1960
Though of course the privy was a standard on all Pennsylvania farms prior to 1910, most surviving privies date to the 20th century. Lehigh County is no exception.

Figure 83: Privy, Heidelberg Township, Lehigh County

Spray shed, 1910-1960
A spray shed is a small building where crop sprays and sometimes equipment are stored. It is often near water, or a cistern. In Lehigh County spraying was very important. Local farmers recall mixing sprays near ponds or at a creekside. The one building tentatively identified as a spray shed was located next to a farm pond.

Figure 84: Spray shed, Heidelberg Township, Lehigh County

38 This text is taken from the “Milk House” entry in the field guide on the Pennsylvania Agricultural History Project website.
Silo, 1910-1960
Northwestern Lehigh County farms did not emphasize dairying to any great extent, but a few farms had silos. A silo is an airtight facility (usually vertical, but sometimes in a pit) which receives green material which then ferments in the anaerobic interior, providing year-round nutriment for dairy cows.

Figure 85: Silo, Lynn Township, Lehigh County
Figure 86: Silo, Lynn Township, Lehigh County

Combination Buildings, 1910-1960
As elsewhere, many farm buildings served multiple purposes. Here is just one example.

Figure 87: Combination structure, Lynn Township, Lehigh County

Cold Frame, 1910-1960
Cold frames were found at several sites. The cold frame is not technically a building, but it is included in this section because documented cold frames were always associated with a building. Home gardeners used them to get a head start with cool-weather crops like lettuce, or possibly to start warm-weather vegetable plants from seed. Usually they would be built onto a building wall, facing south if possible, to get additional warmth from masonry and the sun respectively.

Figure 88: Cold frame, Lynn Township, Lehigh County

Landscape Features, 1910-1960:
The most notable new agricultural landscape features to appear during this period was the farm pond. Oral histories and aerial photographs confirm that the main pond-building phase occurred after World War II. Farm ponds were widely popular in postwar Pennsylvania. Earth moving equipment was more effective and more accessible. Insurance companies reduced rates for farms with ponds. Interest rose in recreational uses such as fishing and swimming. And, in some regions, specialty crops involved high water use for irrigation or spraying. This was true, for example, in the Adams County fruit belt, and it was also true in northwestern Lehigh County. Irrigation was mentioned by several oral-history informants as becoming really important in the dry years of the 1960s. Water was often needed to mix sprays, and several local farmers mentioned using pond water for this purpose.

Figure 89: Farm pond, Heidelberg Township, Lehigh County

Another important landscape change was contour plowing and strip cropping. These erosion-control measures were stressed by the agricultural extension agent. In the potato regions, alternate strips of potatoes and alfalfa were recommended. Compare the 1938 aerial to the one just twenty years later to see the impact of contour plowing and strip cropping.

Figure 90: Aerial photo, Germansville vicinity, 1938.
Figure 91: Aerial photo, Germansville vicinity, 1958

Sometimes the new planting practices created new field boundaries, but more often the old boundaries were retained, and the interior appearance of the fields changed. It is not clear how crop rotation practices

39 Robert Leiby interview; the Lehigh County Agricultural Extension Archives, Agent Report, 1946 mentions 25 new farm ponds built that year.
affected the landscape. A patchwork of small, irregularly shaped fields was common throughout the state. Permanent landscape changes, it seems, were not involved; but the color, texture, and height of crops in the rotation may have shaped a locally distinctive look, with fields of dark green, bushy potato or alfalfa plants low to the ground, while taller corn occupied less acreage than elsewhere.

**Bibliography: Lehigh County Potato Region**

Note: this bibliography is specifically for the Lehigh County Potato region. A more extensive general bibliography is available with the other Pennsylvania Agricultural History Project narratives online.

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Figures XIV: Lehigh County Potato Region

1: Lehigh County Potato Region. The heavy slanted hatching roughly in the center of the image is northwestern Lehigh County. Albany Township in Berks County is immediately across the county line to the southwest. It is not hatched because potatoes were its second most prominent type of farming. (Emil Rauchenstein and F. P. Weaver, “Types of Farming in Pennsylvania,” Pennsylvania State College Agricultural Experiment Station Bulletin # 305, 1934, page 46.)
2. Lehigh County Potato Region farm crops, 1850.

<table>
<thead>
<tr>
<th>Northwestern Lehigh County Farm Crops, 1850</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bushels of buckwheat per farm</td>
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<tr>
<td>Bushels of potatoes per farm</td>
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<tr>
<td>Bushels of oats per farm</td>
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<tr>
<td>Bushels of corn per farm</td>
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<tr>
<td>Bushels of rye per farm</td>
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<tr>
<td>Bushels of wheat per farm</td>
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</tbody>
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3. Potato harvest on the William Hoffman farm, Lehigh County, about 1900. Assuming most of these people were working on the harvest, we may conclude that the labor force was mixed by both gender and age. Whelan, Frank, et al. *Looking Back A Pictorial History of the Lehigh Valley and Surrounding Counties, 1850 to 1920* (Allentown, PA: The Morning Call, 1998), 85.

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7. Four-over-four house, Lynn Township, Lehigh County, c.1875. Site 077-LY-007.


11. Interior, upper level of the barn depicted above. It features traditional post and beam construction, and a canted queen-post design to permit a hay track to move unimpeded across the gable peak. The double horizontals are often seen on Pennsylvania German barns. This barn is rather late but still shows a preference for traditional construction methods; the posts and beams are a little smaller than would be found in earlier barns, and they are more regular, but they are organized the same way they would have been earlier. Site 077-HE-007.
12. Stone and frame barn, Lynn Township, Lehigh County c.1840-60. Site 077-LY-004. The barn has fine workmanship in its masonry gable wall with decorative brick ventilators. Though the “hex signs” on the forebay are not original, they do represent a form of barn decoration that was very common in this region.
XIV. Lehigh County Potato Region, c1850-1910


20. Root cellar, Heidelberg Township, Lehigh County, c.1880. Site 077-HE-007. The entryway has been rebuilt.

22. Summer kitchen, Heidelberg Township, Lehigh County, c.1900. Site 077-HE-005.

23. Smoke house added to summer kitchen, Lynn Township, Lehigh County, c.1915. Site 077-LY-003.

26. Pig sty, Heidelberg Township, Lehigh County, c.1900. Site 077-HE-004. This building has been altered but clearly has the form and siting of a pig sty.
27. Pig sty, Lynn Township, Lehigh County, c.1900-1930. This gable end view shows the typical human door leading to the feeding alley.

Figure 28: Barn enclosure, Lynn Township, Lehigh County, c.1900. Site 077-LY-003.

30. Lehigh County farm Crops 1927

![Lehigh County Farm Crops, 1927](image-url)
31. Lehigh County Potato Production 1850-1950

![Lehigh County, PA Potato Production 1850-1950](chart1.png)

32. Lehigh County per Farm Potato Production 1850-1950

![Lehigh County, PA Per Farm Potato Production 1850-1950](chart2.png)
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39. Potato bay converted from barn machinery bay. This is opposite side from the photo above (38).

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62. Corn Crib, Lynn Township, Lehigh County, c.1950. Site 077-LY-002. This crib has the older style canted sides, but is built of modern materials including light wood frame and woven wire mesh sides. It is up on concrete blocks.

64. Machine shed-butcher house, Lynn Township, Lehigh County, c.1925-40. Site 077-LY-006 This interesting building, c.1925-40, is a machine shed combined with a lower-level butcher house.
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88. Cold frame, Lynn Township, Lehigh County, c.1940-60. Site 077-LY-005. The frame would originally have been entirely covered with glass, which could probably be tilted partially open to admit cool air.

![Cold frame](image1)

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XV. York-Adams Diversified Field Crops, Cannery Crops, and Livestock, c 1750-1960

York and eastern Adams Counties developed historic agricultural patterns that rendered the region distinct. Bounded by the Susquehanna River, the South Mountain, and the Mason-Dixon line, the region was geographically well defined. Varied soils, the nature and location of markets, hilly topography, and cultural proclivities combined to shape a farming system focused on small farms with greater emphasis than elsewhere on field crops and truck or cannery crops. Over time the principal livestock enterprise was poultry raising. Culturally the region was dominated by Pennsylvania Germans.

Unless otherwise noted, the statistics cited in the narrative come from the U.S. Census of Agriculture published summaries.

Location
The region consists of the eastern townships of Adams County—primarily Reading, Straban, Cumberland, Mount Joy, Germany, Union, Mount Pleasant, Oxford, Conewago, Berwick, and Hamilton Townships—and all of York County.

Figure 1: York-Adams region map.

Climate, Soils, and Topography

Figure 2: Map showing the “York Valley” limestone belt.

The region falls within the “southeast” climate region as designated by geographer Brent Yarnal. Precipitation averages about forty inches annually and the mean annual temperature is around 55 degrees Fahrenheit. Summers are relatively long for Pennsylvania and the growing season is typically around 160 days. The York-Adams region straddles the Piedmont and Ridge and Valley topographic regions. Terrain is rolling and ridged. The parent rock of the two regions is different—in the Triassic lowland it is “weak sedimentary” rock while in the Piedmont it is various metamorphic rocks and includes limestone. Soil types in the region vary considerably. All the dominant soils in the region are alfisols. Some important soil groups include Chester, Glenelg, Lewisberry-Steinsburg, and Edgemont. A narrow strip of limestone soils runs from southwest to northeast across the center of the county. About a third of the farmland in York county is considered “prime.”

Historical Farming Systems
Four historical systems characterized farming in the region. After settlement came a period of diversified small scale production that lasted from the mid-eighteenth century until about 1830. Between about 1830 and 1885, highly mechanized small farms combined livestock and crop production for new, mainly local and regional markets. Between about 1885 and 1940, the system reoriented to emphasize cannery crops, orchard products, and poultry farming. Between 1940 and 1960, more specialized, capital intensive and larger scale farming was accompanied by rapid loss of farms and greater reliance on off-farm income.

Diversified Small Scale Production, c. 1750-1830

Products, c. 1750-1830
York County was created in 1749 and originally contained the county which in 1800 became Adams. European settlement took place between about 1730 and 1760, but even by 1790 population densities were significantly lower west of the Susquehanna than across the river to the east. Scots-Irish, English, and German speaking settlers mingled in the region, with the Scots-Irish predominating in Adams County and the Germans in the center of the region. Various religious groups came, including Quakers and Mennonites, but Episcopalian, Presbyterian, German Reformed, and Lutheran congregations were more numerous. Slowly Germans came to comprise a larger portion of the rural population. By the mid eighteenth century, towns such as Hanover, York, and Hunterstown were established, and by the late eighteenth century the two counties were tied by roads to Baltimore, Lancaster (thence to Philadelphia), and Carlisle.²

In the early nineteenth century, York had overlapping economic relationships with the major cities of Philadelphia and Baltimore. Historian Jo N. Hays has demonstrated that York supplied Baltimore with raw materials, and purchased finished goods from Philadelphia: “Money made in Baltimore bought Philadelphia goods.” For a time, Baltimore was more accessible than was Philadelphia to York County farmers, and its rise was partly due to the wheat trade with the Pennsylvania and Maryland hinterlands. Yet over time Baltimore could not compete with Philadelphia’s position as a manufacturing center and Atlantic port entrepot.³

Most scholarly analyses include York and Adams Counties in their discussion of southeastern Pennsylvania in the colonial and early national periods. Colonial southeastern Pennsylvania has attracted considerable attention from scholars, and a body of secondary work has accumulated which serves well to identify important agricultural trends for the colonial and revolutionary war period. The literature diverges somewhat in historiographical interpretation, with recent work

modifying earlier conclusions. The following discussion draws from Pennsylvania Agricultural History Project narratives regarding the Lancaster Plain and southeastern Pennsylvania east of the Susquehanna. Though York County shared much with these two more developed regions, there were significant differences. Most important was that York County had a less developed transport infrastructure and was settled later. Whiskey, forest products, and highly diversified products for local consumption were still prominent in York County, whereas the counties closer to Philadelphia had begun to raise more wheat for milling, and to produce more items for the Atlantic trade network.

Geographer James T. Lemon’s account of *The Best Poor Man’s Country* (1972) is still the place to begin for analysis of colonial southeastern Pennsylvania. Lemon’s primary source base was vast, and included contemporary accounts, family papers, tax records, probate records, real estate records, and published materials. His account has held up quite well except for a few points which will be discussed below. He gave most of his attention to counties east of the Susquehanna, but did include York and Adams Counties in his overall analysis.

Agriculture in southeastern Pennsylvania took shape amid constant flux in population movement and makeup, land tenure arrangements, and economic development. Land prices rose, and the average size of land holdings dropped between 1730 and 1760. The tenant class grew. Most people were engaged in agriculture.

Farming in southeastern Pennsylvania was conducted along the lines of what Lemon called “general mixed farming and extensive use of the land.” By “extensive,” Lemon meant that land was cropped “superficially,” without much in the way of fertilizer or sophisticated techniques. The cleared area was very small, but rather than husband it intensively to get the most from it, farmers simply cleared more to increase production. Fallow land, woodlot, and meadow (hay lands, often mown from whatever plants took root without deliberate seeding) took up a relatively large proportion of cleared land. Soil was “rested” through fallows rather than replenished through rotations, liming, and fertilizers. Scholars agree that in general, productivity was stagnant or even negative throughout the eighteenth century. Livestock were few and usually found their own forage, roaming unfenced. Orchard and gardens rounded out the typical farmstead land-use organization.4

Historians have often connected extensive farming with small-scale self-sufficing or non-market agriculture. However, colonial Pennsylvania’s farms were rarely as self-sufficient as period observers such as Hector St. John de Crevecoeur claimed. Indeed, the often-made distinction between subsistence and market farming does not work well at all in the colonial Pennsylvania context. For one thing, likely the most self-sufficient farms were also the largest. More

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importantly, very early on, Pennsylvania farming families participated in the global commodities trade. Around 1730, historian Brooke Hunter notes, in Europe population growth, war, and crop failures stimulated an “explosive growth in demand” for grain, and Pennsylvania farmers were well positioned to respond. They raised wheat to sell to Philadelphia millers, who in turn exported flour. Pennsylvania-produced foodstuffs were sent along the coastwise trade from New England to the Carolinas, and overseas as far as China. A network of roads, supplemented by waterways such as the Schuylkill, connected the rural hinterland to Philadelphia.\(^5\) York County farmers were within Philadelphia’s trading area as defined by scholar John Walzer, but they stood in a different relationship to the city than those areas east of the river. For one thing, goods had to be ferried across the river before the Wrightsville bridge was built in 1814. Some York County farm products made it to Philadelphia, but York County farm products also made their way to the Baltimore region. Flour was shipped there, and another important strategy was to convert wheat, rye, or corn to whiskey, a higher-priced concentrated product. Grist millers often had distilleries too. The U. S. Census tallied 559 distilleries in York and Adams Counties in 1810.\(^6\)

There are few quantitative records to suggest what grains were raised in York County, and in what proportions. Farm sale advertisements in the Pennsylvania Gazette for the 1770-1790 period often contain references to good land for wheat and grain. York County folk artist Lewis Miller made reference to various small grains in his comical sketches. He depicted “old Mrs. Schreck laying in the Oats” after “drinking to much Rum.” He drew a picture of “the Old Brew house” and note that “the [sic] made Good Beer,” which would require barley. A local historian mentions wheat, barley, spelt, rye, buckwheat, millet, oats, and corn as colonial-era crops in York County. He thought that “spelt and barley held sway in York County” till around 1830 when they gave way to red or blue stem wheat.\(^7\)

Grain contributed to economic development because it stimulated industry (mills and distilleries) and transport infrastructure. However, viewed from the perspective of the individual farm, grain was by no means the only farm product. Wheat yields were low (as little as 10 bushels per acre), and Lemon estimates that a 125-acre farm in 1760 would have only eight acres planted in wheat,

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and a few acres each in the other grains. Lemon uses evidence from wills, journals, travelers’ accounts, and other sources to show that besides wheat, crops included rye, barley, oats, buckwheat, Indian corn, potatoes, turnips, cabbage, apples, peaches, cherries, flax, flax seed, hemp, and hay. Thus grain production was but one element in most farm families’ diversified market and subsistence strategies. Lewis Miller’s wonderful early nineteenth sketch books offer a vivid picture of York County agricultural production in these years. Miller’s images reveal a highly diversified system with a remarkable variety of crops, livestock, and processed products. Miller chronicled his enjoyment of sweet potatoes, watermelons, apples, potatoes, sauerkraut, peaches, “heart Cherrys,” pumpkins, cucumbers, strawberries, and beans. Probably a more typical everyday meal consisted of “[corn]meal, mush and milk.” Miller depicted Conrad Kissinger with his hands in the “Apple Butter pot’s.” He told a comical illustrated story of a dog devouring a sausage from a hot frying pan, and he showed cider making.8

Orchards were established soon after settlement; a 1783 ad in the Pennsylvania Gazette for a York County farm mentioned “a good apple and peach orchard, with many other kinds of fruit trees.”9 Fiber plants were important, especially hemp and flax; according to local historian Prowell, flax succeeded hemp around 1830.10 Pork, beef, mutton, eggs, wool, and butter were typical animal products. Farmers raised small numbers of cattle, sheep, swine, poultry, and bees. They gathered nuts and berries, and made maple sugar, lumber, cordwood, and potash from their woodlots.

Animals mostly grazed freely in the early period, but by the late eighteenth century in York County, their grazing was being supplemented by hay deliberately cultivated from meadows which sometimes were irrigated with ditches. York County livestock included (in Lewis Miller’s words) “Horses, cows, Sheep – hogs, chickens - And Turkeys.” Miller in 1802 drew “old Mrs. Hausman Killing a Hog and a beef for me...” Large hogs were celebrated and much admired. Dairy cows were kept for milk and butter; Miller in 1812 shows Peter Hurtz “Giving his cow a bucket full of molasses...” Miller, ever fond of exposing his neighbors’ foibles, drew a scene of the marketmaster exposing fraudulently labeled butter. Fraud or not, he revealed a thriving market trade in butter. Geese were raised for feathers and other fowl for meat and eggs. Some

8 Lemon, Best Poor Man's Country, 179-182; Miller, Sketches and Chronicles
9 Miller, Sketches and Chronicles, plates on pages 55, 73, 75, 57, 58, 82, and 84 respectively. His spellings are given verbatim. Pennsylvania Gazette, November 12, 1783, obtained through Accessible Archives.
farm people kept beehives for honey. Finally, another source of protein was fish from the river and its tributaries.  

Baltimore and Philadelphia were important, but closer markets may have been still more so. Michael Kennedy, in a well-researched 2000 article, has modified some of Lemon’s arguments about local markets in colonial Pennsylvania. Lemon, as a historical geographer, assumed that central places (i.e. towns) were necessary to the creation of local markets for farm produce; he was preoccupied with testing von Thünen’s famous hypothesis about how distance from a central place determines the nature of agricultural production. Because of this perspective, Lemon’s work left unanswered questions. There were few such population centers in mid 18th century Pennsylvania; indeed, Lemon himself noted that the colonists preferred dispersed settlement. At the same time, the percentage of non-farmers – i.e. consumers -- was growing, and clearly farmers were marketing products. So, where did they sell their wares if not in towns? Kennedy has solved this puzzle convincingly; he shows that the central place function was served not by towns but by stores located at ironworks and mills. These stores were liberally and widely distributed, and virtually every southeastern Pennsylvania household was situated near at least one. Kennedy explains not only where the markets were located physically, but also links them to the growing population of landless consumers.

Kennedy also adds to the list of products marketed. Beans, onions, wood, veal, parsnips, venison, cucumbers, molasses, greens, peas, leather, limestone, tallow, wax, straw, hops, hides, and feathers were raw farm products mentioned in mill and ironwork store records. Others included processed items such as stockings, clothing, linen, baskets, soap, thread, cheese, vinegar, shingles, charcoal, and candles. In all, Kennedy enumerated 118 different farm products traded at these outlets. Kennedy concludes that “many more Pennsylvanians produced more crops for markets than previously assumed.” His work is persuasive because, unlike Lemon, he is able to document actual sales rather than needing to rely on extrapolation as Lemon often did. Kennedy also makes other important observations. His estimate for average farm acreage is significantly lower than Lemon’s (88 vs. about 125 across the region); and he contends that given their limited space, a typical farm family would have less diversified production than Lemon assumed. In other words, all southeastern Pennsylvania farms were diversified, but they didn’t all produce the same broad mix. It was the collective total that created the overall diversification.  

It is important to keep in mind Kennedy’s observation that even though colonial Pennsylvania farms collectively produced an astonishing variety of items, typically on an individual farm

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11 Pennsylvania Gazette, November 12, 1873, obtained through Accessible Archives; Lewis Miller, Sketches and Chronicles, 75, 33, 47, 65, 88, 94, 98, 75, 91 respectively.  
12 Michael V. Kennedy, "Cash for His Turnups": Agricultural Production for Local Markets in Colonial Pennsylvania, 1725-1783," Agricultural History 74 No. 3 (Summer, 2000), 587-608. Quote is from page 606.
agriculture took place on a quite modest scale. In the first instance, clearing took a long while, and well into the eighteenth century most southeastern Pennsylvania farms still had large uncleared spaces. Farm families might actually be tilling perhaps only half of the total. Lemon estimates that on a farm of 125 acres, about 46 would be cleared and planted with small grains, fiber plants, vegetables, and fruit. Advertisements from the *Pennsylvania Gazette* describing York County farms for sale mentioned small acreages cleared. For example, an October 5, 1769 ad in the *Pennsylvania Gazette* listed a York County farm with “250 acres, 60 acres cleared.”

**Labor and Land Tenure, c. 1750-1830**

Labor and land tenure were intertwined during this period. Tenancy was a pervasive institution in southeastern Pennsylvania during the colonial period. Figures have not been separated out for York County, but tenancy was probably a factor in York County as elsewhere.13

Below the owners and tenants were others whose poverty and low status often meant they could not even belong to the ranks of “taxables.” Farm workers were often “bound” or “unfree” in some way: some were family members, and others were un-free redemptioners, indentured servants, cottager tenants, or (infrequently) slaves. In York County, for example, a 1773 ad in the *Pennsylvania Gazette* requested information leading to the capture of two indentured servant men in their early twenties, one from the north of England and the other Irish.14

Much farm work did not even involve raising crops or livestock at this early time. Early settlers took advantage of Indian clearances and “deer pastures,” but agrarian families and hired workers still had to apply much energy to clearing, plowing, and fencing before any planting could take place. Clearing generally involved felling massive trees and cutting them into logs, making potash or lumber, and pulling stumps – all done without major mechanical aids.15 Breaking land was done with rudimentary equipment as well. Early fencing laws required that crops be fenced in, and probably most fencing was the “worm” type, with split rails stacked in a zigzag pattern. Again, making the fence and erecting it was almost all done by hand. The clearing process continued long into the 19th century.

By the late eighteenth century, laborers were beginning to spend a some time making meadows. A few York County advertisements referred to farm meadow acreage, both actual and potential. Robert Bucher, in an article on “Meadow Irrigation in Pennsylvania,” explained how this was


14 *Pennsylvania Gazette*, September 8, 1773. Obtained through Accessible Archives.

done. Meadows occupied low lying areas along streams. Using the stream waters, farm people dug irrigation ditches, made dams, and cut outlets into the ditches at intervals. They diverted water from a stream along a ridge and let the water run back down along the slope by gravity. Bathing the grasses in water increased the productivity of these meadows and thus of the farm animals that ate the resultant hay. At haying time, the dam was shut and the meadow allowed to dry out before the hay was made. These works required large outlays of labor in initial construction, and then also they demanded continual maintenance. As well, often animals had to be fenced out of the meadow area.\(^{16}\)

Once cultivating and livestock raising got underway, men and women worked together in complementary tasks. Michael Kennedy, Joan Jensen, and Lucy Simler have persuasively documented that women performed a very large portion of agricultural labor, not only in tasks traditionally associated with women (spinning, dairying, needlework, cooking, poultry keeping, gardening, food preservation, baking) but field work as well. At haying time, for example, the men cut the grass, while women followed and raked it. An 1828 document described “as many as a hundred reapers, both men and women, with the sickle, worked in one field as a gay, lively company” in West Manchester Township. Miller shows man and wife dividing piles of potatoes to peel, and the woman grating cabbage and the man stamping in their cellar. Women and men worked together in other tasks such as rye harvest, flax pulling, and apple gathering.\(^{17}\)

As the accounts above suggest, not only did men and women work together, but neighbors exchanged work continually. Huskings, snitzing, apple butter making, butchering, haying, and many other tasks were accomplished communally.

Whatever the work, it was generally accomplished with simple hand tools. John Gibson’s *History of York County* characterizes the colonial period as an “era of experiment.” Oxen were the typical draft animals and equipment was minimal. Plow, scythe, hoe, and sickle were important hand tools. One county historian says the grain cradle replaced the German sickle around 1805, but that the German sickle continued to be used for cutting rye. Other jobs were facilitated by tools such as flax brakes, spinning wheels, cider presses, and the like. By the early 19\(^{th}\) century, farm technology was beginning to change; the cast-iron plow became more widely used, for example.\(^{18}\)

**Buildings and landscapes, c. 1750-1830**

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Houses, c.1750-1830

The earliest dwellings in the region would have been small, one or two room, single story log houses. Even as late as the 1798 Direct Tax, these small structures abounded, but were joined by more substantial log houses, and a few fine stone or brick farm houses. In Davidsburg, the Historic American Buildings Survey documented a modest stone and log house dating to the late 1760s. Lewis Miller’s drawings depict several of these types, including the one-room log cabin and the center-chimney house, executed in log. Local architectural historian Joseph Kindig has described some early rural York County dwellings. These mainly Germanic style dwellings had signature architectural features: asymmetrical fenestration, double attic, roof “kick,” two or three room ground floor plan, vaulted cellar, and five plate stove heating, and heavy, simple interior trim. A few fachwerk, or half-timbered, buildings survive. The larger dwellings have tended to survive disproportionately. The local historic district architectural survey notes what it calls “English” influenced, “Moravian” style, “Georgian” style houses, and Germanic three-room plan houses. By the late eighteenth century, fine “Georgian” five-bay, center hall two story houses were appearing. As time went on, architecture blended various cultural repertoires subtly.19

Figure 3: Kleiser log house, Davidsburg, York County.
Figure 4: Stone three-bay house, Franklin Township, Adams County.
Figure 5: Stone three-bay house, Huntington Township, Adams County.
Figure 6: Stone five-bay house, Latimore Township, Adams County.
Figure 7: Stone banked house, Codorus Township, York County.

Barns, c. 1750-1830

Farms in this period had relatively small cleared acreages, and the livestock grazed in forests and open pastures. Large barns were therefore uncommon. The 1798 Direct Tax enumerators made a special point of distinguishing the few “bank barns” from the “log barns,” suggesting that most barns were unbanked and built of log.20 Those that can be documented either in the field or through archival sources were small, usually built on one level, and most often built of log. Reflecting the varied cultural repertoires of settlers, early barns drew from different building traditions. The York County historic district survey, for example, identifies what they call an English style “tithing” barn of “I” configuration – a three-part barn with large entrance in the center eaves side. Other early barns in the county did have forebays, but were quite small. The classic Pennsylvania forebay barn began to be more common in York County in the early nineteenth century.21

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19 1798 Direct Tax manuscripts for Chanceford Township; Joseph Kindig, Architecture in York County (Historical Society of York County, 1988); York County Board of Commissioners, Historic Districts, York County, Pennsylvania (York, PA, 1975), 18, 21, 65-66.  
20 See for example the entries for Chanceford Township in York County.  
21 Prowell, History of York County, 96, says no big barns before the Revolution; when they appeared, many were thatched with rye straw. Historic Districts, York County, n.p., shows a picture of a c 1810 one with stone ends and
Figure 8: Log crib in a Pennsylvania forebay barn, Codorus Township, York County.

Figure 9: Ground barn, Dover, York County.

Outbuildings, c. 1750-1830
Outbuildings were not plentiful in this period, but the demands of the farm economy did result in the appearance of some types that would later become further developed. Advertisements in the Pennsylvania Gazette, for example, mention “kitchen, barn and stable, a good stone springhouse, wash and meat house”; smoke house; “stabling and cow house,” and “smithshop.” Field study has documented a few extant outbuildings that may date from the period. Another building which appears occasionally in the Direct Tax lists is the distillery or still house. Historians have noted that many farms had stills between 1810 and 1840. No still houses were firmly documented in field survey work, but folklorist Amos Long noted that other buildings could be used for distilling. A source of running water and a heat source were needed. Architectural historian Nancy Van Dolsen documented two still houses in neighboring Cumberland County, both dating c. 1800-1825. They were banked, built of stone and were rectangular with a large length:width ratio, measuring about 12 by 20-24 feet. A stream ran through a channel in the lower level floor and there were stone troughs there also. On the upper level were “...a gable end door, just slit openings for light, and a fireplace.”

Spring houses could be, and were, used for distilling. In particular, it would seem that springhouses with an upper level fireplace would be well suited to distilling.

Figure 10: Log kitchen, Codorus Township, York County.

In the Direct Tax records and into the early nineteenth century, a separate “kitchen” was sometimes mentioned. This small building would have been used for cooking, baking, and washing. The term “summer kitchen” had not come into common use, nor had the cookstove appeared along with its possibilities for an elaborated diet. So one basic difference between the colonial and early national “kitchen” and the later “summer kitchen” was the presence of a fireplace in the former. It seems that the earlier “kitchen” was more likely to have been used year-round than its 19th-century descendant. It may have supplemented kitchen facilities in large dwellings, or supplied primary kitchen facilities for small dwellings. Quite a few small dwellings listed in the 1798 Direct Tax were accompanied by kitchens.

added forebay. See also York County, a Window on the Past (York, PA, 1975), unpaginated photos and short descriptions of early log barns.

22 Email communication, November 6, 2010.

Figure 11: Log kitchen, Latimore Township, Adams County.

Springhouse: The springhouse was a key site for dairy work. It was constructed of masonry or frame over a spring or over a running stream, and it was often banked. Springhouses could be a single story, but often had a second story that served for storage, dairy processing, or sometimes even residential quarters. The point of the springhouse was to provide a cool space and fresh water. Stone-lined channels or tanks were carefully engineered to take full advantage of running or spring water. These would enable the dairy-women to cool milk and other perishable food items. Shelves were arranged so that milk pans could be set on them, and cream could rise. Churning, salting, working of butter could also take place in or near the springhouse. Their location is often given away by willow trees.  

Figure 12: Springhouse, Lower Chanceford Township, York County.
Figure 13: Springhouse, Fairview Township, York County.

Smokehouse: This small outbuilding was central to Pennsylvania German foodways, since it was the place where meat, mainly pork, was cured.

Figure 14: Smoke house, Butler Township, Adams County.

Landscape features, c. 1750-1830
Advertisements for farms in this period demonstrate that cleared acreage was small and woodlots were large. Small farmsteads stood in the middle of small clearings, surrounded mainly by woodland. Fencing must have been minimal – perhaps some paling around the house or “worm” fencing. Mainly, crops were fenced in, and livestock roamed freely. Except for the occasional property line marked with hedgerow or treeline, this landscape has largely disappeared.

Small farms, mechanization, and new markets, c. 1830-1885

Several important trends combined to reshape the region’s agricultural profile in these years. Farm size declined significantly, but cultivated acreage increased. New markets stimulated a new farm system focused on combining cash crops with livestock raising. Mechanization took off. Overall, the system in these years developed into a rich, elaborate, highly diverse and intricate mix which balanced cash trade, home production, and barter. The farm landscape

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24 In York County, early spring houses were documented by the Pennsylvania Historic Resources Survey at sites 101597; 45721; and 45797. Some of these buildings are no longer extant, but images are on file at the Bureau for Historic Preservation in Harrisburg.

evolved correspondingly, and many houses, barns, smoke houses, summer kitchens, and other buildings date from the nineteenth century.

After about 1830, the economic relationships among York County, Philadelphia, and Baltimore shifted. According to Jo N. Hays, transport innovations and the rapid industrialization of Philadelphia, combined with its access to British ports, solidified Philadelphia’s hold on the southeastern Pennsylvania hinterland. Baltimore declined as an economic factor in York and Adams Counties’ histories from this point (though strong cultural and social ties remained). Another important development was a mini-industrialization process in York city itself. Various iron manufacturing businesses, including locomotives and agricultural implements, were established there, thus creating non-farming markets and significant wealth.26

Products, c. 1830-1885:

During the nineteenth century, the product mix in the region was shaped by several factors. Most notably, farm size in the region declined much faster than in Pennsylvania as a whole. Farm size everywhere in the state declined, but the drop occurred more drastically in some areas than in others. So, for example, in 1850 York County farms were seventeenth from the bottom in terms of average farm size; by 1880 they were seventh from the bottom (always excluding Philadelphia) at just around seventy acres. One plausible way to interpret this shift is to infer that farming families in the region were more apt than others to choose a strategy of subdividing farms and developing them, rather than moving on to seek fresh lands. This may be linked to Pennsylvania Germans’ cultural tendencies to value family ties and stability. However, the good soil quality and rising local markets also made it feasible to develop and subdivide, regardless of ethnic affinities. For even though farms in the region were small, their improved acreage exceeded or equaled the state average. In other words, a very high percentage of farmland was under cultivation rather than in wood or pasture.

A second important trend was the rise of domestic markets, and of transport links to those markets. A rail link between Baltimore and York opened in 1838. Soon afterward goods could be shipped by rail across the river towards Lancaster and Philadelphia, and in 1851 rail lines went north along the river to Carlisle and Harrisburg. Lines also extended into eastern Adams county, linking up with the major North-South line at York. These outlets allowed farming families to amplify the diversified product mix developed in the previous period. Crop farming still predominated, but it was now complemented by livestock raising, resulting in a varied mix of marketable products.27

27 For photos of York city markets, see Georg Sheets, Made in York, page 83 and 87
A typical York or eastern Adams County farm in 1850 produced at or above state levels in field crops. Generally, wheat, corn (maize), and hay outputs were higher than average, while oats were grown in rotations and for horse feed; and buckwheat, potatoes, and rye raised in small quantities. Fiber production (flax, wool, hemp) declined as cotton goods became more widely available. Instead of going to the distillery, wheat and corn more often went either to flour mills, to urban markets, or to livestock feed. Hay content and quality changed. Timothy and other “tame” grasses were introduced, and upland meadows came to be favored over the labor intensive irrigated lowlands. These new grasses produced more nutritious feed. Overall, while farms were getting smaller, crops got bigger. The increase was due to two factors. One was simply greater cultivated acreage obtained through clearing.28 The second was rotations. Rather than allow land to recoup fertility through fallows, new practices involved careful rotation of grain and grass, augmented by manure and sometimes lime. Probably rotations helped at least to stabilize per-acre yields, if not improve them; and they also put more land under cultivation. According to “official sources,” York County ranked second only to Lancaster for wheat yield per acre, and fourth in the state for corn, in 1882.29 Manure was obtained by confining livestock (as opposed to letting them graze freely in woods and pastures), and grain and hay in turn were fed to livestock, creating a self-sustaining cycle.

Figure 15: York County livestock per farm, based on 1850 census.

Tobacco appeared as a cash crop in York County around the mid 19th century. Poor quality tobacco had been grown for awhile, but a local historian attributes the introduction of better quality strains to a York County man who brought in new seed around 1840. Tobacco was grown along the Susquehanna River shoreline, then it was packed in York, Wrightsville, and Columbia. About 1850 a York County merchant introduced Connecticut seed leaf and that took hold. Since 1865, said a local history, “it has been grown extensively in the shale soil in the southeastern section of the county... Fawn, Lower Chanceford, Chanceford and Windsor Townships...” By 1880, when U. S. Census of Agriculture published a special report on the crop, York County was second to Lancaster in Pennsylvania tobacco acreage, with 4,500, and in production, with 5.7 million pounds. Lancaster was far ahead with 29 million pounds, but the tobacco industry in York County was significant enough to stimulate cigar factories in Hanover, Red Lion, Dallastown, York, and other towns. York County tobacco production continued to increase until around 1910, but thereafter it dropped off steeply while Lancaster County production surged.30

28 It is difficult to compare 1850 and 1880 in this respect, because of differing definitions of “improved” land. But see Kuan-I Chen, “Agricultural Production in Pennsylvania, 1840 to 1950,” Ph.D. thesis, Pennsylvania State University, Agricultural Economics/Rural Sociology, 1954, who shows with census figures that clearing accounted for most of the production increases at least until the twentieth century.

29 Agriculture of Pennsylvania, 1882, chart XI.

30 Prowell, History of York County, 631-2. Gibson, History of York County, 356, mentions Connecticut Narrow Leaf, Connecticut Broad Leaf, Hoover Leaf, Glessner, etc as used in York County. He gives a detailed description
In York and Adams Counties, typical farm livestock were found: horses, oxen, dairy cows, beef cattle, swine, and sheep. York and Adams had far fewer sheep than elsewhere, and significantly more swine. Otherwise, the numbers did not vary too much from state averages. In pockets, livestock specialties appear to have been important. One historian, for example, says that around 1870 fattening cattle became “a very important business. Thousands of them are sold annually in the town of Hanover and shipped to Baltimore and Philadelphia. In the fertile lands round York, and in many sections of the county, farmers find the fattening of cattle a profitable business.”

It is quite possible that cattle feeding and tobacco farming went together. This was a prevalent strategy in Lancaster County, for the labor requirements and manure generated made cattle feeding a good ally for labor intensive, nutrient-hungry tobacco. However, stock farming was also popular in Adams County, though little tobacco was grown there. The Adams County atlas for 1872 contained a directory in which “Farmer and Stock Raiser” was a very common listing.

Poultry were kept for meat and eggs. Dairy production was somewhat lower than the state average, but even so, farms in the region normally produced a butter surplus for sale. Considering their small size, York-Adams farms did well in dairy production.

As before, farms produced a great variety of items that often do not show formally in the farm census. The apple orchard typically had fifty to one hundred trees; in fact, the York Imperial apple, long a staple in the state, originated here. The fruits went into apple butter, cider, schnitz, vinegar, and sauce. A large vegetable patch provided edibles like cabbage, carrots, greens, turnips, rutabagas, radishes, onions, squashes, peppers, corn, beans, beets, broccoli, cucumbers, tomatoes, and celery. These all had to be processed or stored in one way or another. Pears, cherries, and peaches were also grown. Raspberries, strawberries, gooseberries, asparagus, and rhubarb were also popular. The farm wife kept busy making pickles, sauerkraut, preserves, and jams, as well as drying beans, apples, and corn. In short, the family’s dietary variety probably increased during the nineteenth century, and with it the work required to sustain it.

Also as before, nearly every farm product could have multiple uses and destinations. To be sure, cash markets were increasingly important, but most products could be sold or channeled to family sustenance, barter, or livestock feed. Hay and oats, for example, could be traded to neighbors, sold to urban markets, or fed on the farm. The wheat crop, taken to the miller, might be turned into flour, a portion of which was kept for the family and the remainder sold.
meal was still a popular human food, but corn was fed to animals and ultimately reached cash markets in the form of pork.

**Labor and Land Tenure, c. 1830-1885**

Family and neighbors still supplied the most labor. This meant everyone; observers continued to note that women and girls worked in the fields.  

About the same time, the transition from bound to free labor was completed. Wage workers, hired in an open labor market, were more in evidence. These extra farmhands helped provide the labor that enabled farmers to put more of their acreage into production. In York County, male farm hands could command $10-15 a month and board except during harvest and haying time, when they made a dollar a day. Female “domestics” made far less.

No hard quantitative figures on tenancy are available until 1880, when 27% of farms in York and Adams County were tenanted. This was slightly higher than the state average of 21%. Kinship-based share tenancy was likely the predominant form. Pennsylvania German families commonly practiced kinship-based share tenancy, which derived from an Old World custom called the “Altenteil,” or “old people’s part.” Younger family members worked land in return for a share of the crops, often splitting the shares with a widowed mother or with a father who had retired from active farming. Patriarchal control characterized the system: as father, uncle, or father-in-law, the landowner exerted considerable control over the tenant.

Industrialization affected farm labor patterns significantly during the nineteenth century. This was a period of farm mechanization which gradually reduced the demands on human power and released workers for nonagricultural pursuits. York City and Hanover were home to several important agricultural implement manufacturers, so mechanization in the countryside proceeded relatively early; despite their small size, both York and Adams Counties had mechanization levels well above the state average in 1850. Historians noted threshing machines, reapers, grain drills, and cast iron plows. These implements were mainly used in grain culture and harvest and so attracted attention. However, many other machines appeared which saved labor, from hand

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36 Prowell, *History of York County,* 97-8, says threshing machines were regarded with distrust by laborers. He also noted that the Hussey Reaper was manufactured in Hanover. Gibson, *History of York County,* 346, notes the c. 1825 introduction of the cast iron plow and c. 1855 when the reaper “came into common use” and thrashing machine “almost universally used.”
cranked apple corer/peelers to fodder cutters to fanning machines. It is possible that in the aggregate, the impact of these smaller tools was as great as that of the reaper, which after all was used just a few weeks out of the year and on only one or two crops.

**Buildings and Landscapes, c. 1830-1885**

**Houses, c. 1830-1885**

The 19th century saw a remarkable flowering of house construction in the region. Frame and brick tended to be the preferred materials. Period ornament appears sparingly and was often behind the times style-wise, but the important story lies in forms. For example, substantial two and a half or three-story banked houses became popular. These typically boasted a full walk-in lower level with large kitchen facilities. The lower two stories frequently were sheltered by a double-decked porch, which had its own formal front door which might or might not be accessible from outside. The three-bay house is a common form for the period. Generally smaller than average, it reflected the small scale of farming in York County.

**Figure 16**: Three-level, four-bay, double pile house, Codorus Township, York County.

**Figure 17**: Four bay, three level house, Codorus Township, York County.

Probably more common was the form often called the “Pennsylvania farmhouse” -- the two-room deep, three-, four- or five-bay house of roughly square foot print, usually double-pile, and with an entry on the eaves side.\(^{38}\) In the five-bay version, this entry was central, but in others it might be a side entry. The center chimney had given way to the gable end chimney. Many of these houses have date stones; see for example the house in Figure 16.\(^{39}\) The four-bay version is sometimes called a “four over four,” because it had four openings on each story, lined up.

The four-bay, two-door farm house was quite common in York and Adams Counties; in the Adams County township of Mount Joy, for example, in a survey of nearly 200 houses, about a third were four-bay houses, and of these, half had two doors. Some scholars have used the term “four-over-four” to describe this type.\(^{40}\) The Benner farm house in Adams County, c. 1870, exhibits a four-bay, two-door exterior eaves side (Figures 18 and 19). The floor plan shows that

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\(^{39}\) This was not an exclusively Pennsylvania German practice, but it was common in the Pennsylvania culture area.

\(^{40}\) Some scholars use the term “four-over-four” to refer to a house with four *rooms* on each floor, regardless of exterior appearance. Barry Rauhauser, on the other hand, in “The Development of the Pennsylvania Farmhouse Type in Manchester Township, York County, Pennsylvania” (master’s thesis, University of Delaware, 2002), uses the term four-over-four to refer to the number of exterior bays on the main elevation.
each door provides direct access to a front room. Two rooms are equipped with fireplaces, and two are not.  

Figure 18: Floor Plan, Benner farm house, Spangler/Benner Farm, Mount Joy Township, Adams County.

Figure 19: Spangler/Benner house front elevation.

Barry Rauhauser’s survey of four-bay houses in Manchester Township, York County, suggests that the façade is just as important as interior organization. He was not able to link the four-bay façade to any specific plan type. Rauhauser links the rise in the type’s popularity to the historical context, particularly town-country interaction, industrialization, and nation building. The four-bay house both resembled and looked different from its predecessors. Rauhauser argues that the four-bay house was simultaneously ethnically neutral, innovative, and traditional.

Figure 20: Four over four house, Codorus Township, York County.

Figure 21: Four over four, double door house, Latimore Township, Adams County.

Figure 22: Four-over four, double pile Pennsylvania Farmhouse, Reading Township, Adams County.

The four-bay, two-door house is common, but not the only type to appear in the heavily Pennsylvania German areas. A superficially Georgian-style exterior, with center door flanked by two bays on either side, and with two windows on the gable end, was quite popular throughout the nineteenth century. As with the four-bay houses, however, the exterior may not always predict the interior.

Figure 23: Five-bay, center door house, Mount Joy Township, Adams County.

Figure 24: Three-bay, double pile house, Tyrone Township, Adams County.

The “Pennsylvania Farmhouse” label applied to these dwellings is apt, for they were definitely sites of substantial farm production, especially the ones with large walk-in or basement kitchens or vaulted storage cellars. Many may have housed farm laborers as well.

Another type documented in the region is the single-pile, three or four bay house with center door. These are members of the “I” folk house family and have affinities with types that are common further south. They well suited the modest scale of agriculture in the region.

Figure 25: I house, Latimore Township, Adams County.

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41 Spangler/Benner Farm, Mount Joy Township, Adams County, Pennsylvania Historic Resources Key Number 097742.
42 See Henry Glassie, Folk Housing in Middle Virginia (Knoxville : University of Tennessee Press, 1979,c1975).
It should be noted that some farms had more than one house. The Sinking Springs National Register district in York County, for example, has a “manor” farm with several entire subsidiary farms, one of which had two houses built at different times. At least one site with two houses was documented in field study. (Site 133-LW-001) Farm tenancy and household structure probably explain this. Often multiple generations lived on a single farm, but they didn’t always share the same house.43

**Barns, c.1830-1885:**
(NB: the following text appears also in other narratives, for example the Lancaster Plain document; the extent to which it applies to York and Adams Counties is outlined here.) During this period, the Pennsylvania Barn became common in York and Adams Counties. This famous type has as its main diagnostic feature the projecting 7-8 foot forebay, or overshoot. The barn is banked, and organized such that the upper level consists of central threshing floor(s), flanked by mows for hay, straw, or unthreshed grain; and one or more granaries (sometimes in the forebay, sometimes next to a mow on the bank side). The Pennsylvania Barn almost always has a gable roof. On the lower level, stable and stalls (organized crosswise to the roof ridge, separated by alleyways for humans) housed horses, milk cows, beef cattle, and sometimes sheep or hogs.

The Pennsylvania Barn was a highly flexible form. It ranged in size from just twenty feet long to over a hundred. It could also accommodate features such as an "outshoot" or "outshed" that would extend back from the bank side; multiple threshing floors and haymows; a root cellar; a corncrib/machinery shed extension; a machinery bay on the lower level; or a 'horse power' on the bank side, or sometimes in the basement. The forebay might project unsupported, or it might have supporting endwalls or posts. Nomenclature for these various features varies, too. But, it is important to remember that in order to considered a Pennsylvania Barn, a barn must have these essential features: a projecting forebay and banked construction, almost invariably with the eaves side in the bank.

The Pennsylvania Barn exemplified and facilitated the new grain-and-livestock agriculture. That is why it appeared when it did. Historian Steven Stoll has compared the Pennsylvania Barn to a cow – taking in raw materials and producing milk, meat, and manure. Indeed, the barn promoted productivity and its stable level and yard functioned to collect the valuable manure (generated with feed stored in the upper levels) and to combine it with straw to make it the perfect dressing for crop fields. A local historian wrote that “straw, grain, corn stalks, and refuse from the stables” were “trampled under the feet of fattening cattle during the winter. The barn-yards were cleaned once a year... and this refuse was spread over the fields and plowed under the soil.... the

43 McMurry, “The Pennsylvania Barn as a Collective Resource.”
farmer who had a large barn-yard full of manure to haul out, after harvest, was looked upon as a model.”

With its rational, centralized organization and gravity-fed multi-level arrangement, the Pennsylvania Barn also represented a response to an increased need for labor efficiency. Provision for horses reflected mechanization.

Figure 26: Pennsylvania forebay bank barn, Codorus Township, York County.
Figure 27: Pennsylvania forebay bank barn, Codorus Township, York County.

The Pennsylvania Barn was definitely the most prominent type in the region, but it was not the only type. The barns preserved within the Gettysburg Battlefield National Park grounds in Adams County show a snapshot of barn variety in 1863. In addition to grand Pennsylvania forebay bank barns such as the Eisenhower Farm Two barn, there were “double log” (i.e., double crib log) barns at the Slyder and Bushman properties, neither of which conformed to standard Pennsylvania banked forebay form. The Lydia Leister barn, c. 1848, was a log and frame “English” style threshing barn. Field survey work in 2009 and 2010 confirmed that forms other than the standard Pennsylvania bank barn were a significant minority in the region.

Figure 28: Ground barn with forebay, Mount Pleasant Township, Adams County.
Figure 29: Ground barn with partial forebay, Reading Township, Adams County.
Figure 30: Weikert barn, Gettysburg National Military Park, Adams County.
Figure 31: Pennsylvania forebay barn with ramp in the gable end, Reading Township, Adams County.

**Tobacco Barn, c. 1830-1885**
Tobacco was an important product in concentrated areas during this period, so a few tobacco barns survive. Atlas maps show tobacco sheds and directories from the 1870s list a few “tobacco farmers.” The National Register-listed Bixler farmstead in East Manchester Township, York County, has a 19th century tobacco barn with vertical slats.

Figure 32: Gemmill tobacco barn, East Hopewell Township, York County, c. 1880.

**Springhouses, c. 1830-1885:**

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44 Huber, “Two Hundred Years of Farming in Lancaster County,” 99. See also *New England Farmer* September 25, 1829 page 80 (American Periodicals Series online)
45 See for example the business listings for Lower Windsor and Fairview Townships in *Atlas of York County Pennsylvania,* “by and under the direction of” Beach Nichols, published by Pomeroy, Whitman and Co, Philadelphia, 1876.
Springhouses were quite common in the area. Springs often determined a farm site, and care was taken to protect the family’s water source. As well, springhouses provided work space for cooling milk and separating it, then for butter making and storage. Springhouses often had two levels, sometimes appearing in combination with living quarters or a summer kitchen.

**Figure 33:** Stone spring house, Butler Township, Adams County.

**Smokehouses, c. 1830-1885:**
The hog was central to Pennsylvania German foodways. Not only was fresh pork relished, but smoked pork products, especially ham and bacon, appeared in many a Pennsylvania German dish. The smokehouse was therefore a common sight on York and Adams County farmsteads. It was usually located within the house’s orbit. Smokehouses could be frame, but probably more were brick or stone. The smokehouse was a small building with a roughly square footprint and gable or pyramid roof, and only a few small openings. Inside, hooks and nails provided a place to hang the meat, and charring confirms the building’s purpose.

**Figure 34:** Board-and-batten smokehouse with pyramid roof, Codorus Township, York County.

**Summer Kitchen, c. 1830-1885:**
Throughout Pennsylvania in the late nineteenth century, farm families elaborated and diversified their diets. Of course rural people had long possessed numerous and subtle skills relating to food preparation and processing; but now newly available supplies and technologies reworked the possibilities. Orchards matured, garden patches expanded, products from far away became available, and to the old staples of corn mush, meat, and sauerkraut, farm families added more cakes, pies, preserves; made more poultry dishes; and slowly shifted away from pork to beef. There were several key ingredients to this change. One was the cookstove. Reliable, affordable coal-burning cookstoves were now far more widely available, just as the wood supply for traditional outdoor ovens diminished. As the cookstove replaced the open hearth and the outdoor bake oven, two important consequences followed. Cookstoves generated intense heat in the farm kitchen, so summertime cooking became difficult. Second, food preparation changed. More separate dishes could be prepared simultaneously. Expectations rose for dietary variety.

To accommodate the intensified subsistence activity, and to get the hot summertime cooking out of the house kitchen, more summer kitchens appeared. The free-standing kitchen was not a new building type, but it became more common in this period and its use was likely more seasonal than in the past. The typical York and Adams County summer kitchen would be a small detached building, usually gabled and made of frame. It would have ample windows for light, at least one door for access, a stove, and sometimes a set-kettle for heavy work. It was usually very close to the main kitchen. Sometimes a decorative cupola with dinner bell sat on the roof ridge. The summer kitchen facilitated increasingly complex and demanding women's productive work.
work was productive because it resulted in tangible articles to consume, sell, or trade. The summer kitchen's siting near the main house reflects its preeminence as primarily a women's space.

**Figure 35**: Summer kitchen, Butler Township, Adams County.
**Figure 36**: Frame summer kitchen, Reading Township, Adams County.
**Figure 37**: Summer kitchen, Codorus Township, York County.
**Figure 38**: Two story summer kitchen, Codorus Township, York County.

**Granary, c. 1830-1885:**
Since so many Pennsylvania forebay barns had interior granaries, freestanding granaries are not often seen in the field. However, since York and Adams Counties did produce large amounts of small grains, the occasional freestanding granary appears. These buildings are tightly clad, with no openings except for a pass door in the gable end; they are elevated above the ground for further protection against vermin; and they usually have interior bins.

**Figure 39**: Combination granary and poultry house, Reading Township, Adams County.

**Bake House, c. 1830-1885:**
Several extant bake houses were documented in field study. Some were attached to summer kitchens and some were freestanding. These small buildings are reminders of the importance of subsistence activity well into the nineteenth century.

**Figure 40**: Outdoor bake oven, Codorus Township, York County.
**Figure 41**: Outdoor bake oven, Fawn Township, York County.

**Pigsty, c. 1830-1885:**
Swine were very important in the livestock strategies of York and Adams County farms. Not only was pork important as a food, but hogs worked well as livestock on these small acreages. The family would slaughter a few and sell the remainder. So, pigsties are common outbuildings in the region. A few may date to the late nineteenth century, though most are younger.

**Figure 42**: Pigsty, Codorus Township, York County.

**Corn crib, c. 1830-1885:**
Since corn was an important crop in the region, storage for it was needed. No freestanding corn cribs dating securely to the nineteenth century could be documented in field study. However, some nineteenth-century barns had a shed-roof machinery storage addition with integral corn crib.
Agricultural Resources of Pennsylvania, c1700-1960
XV. York-Adams Diversified Field Crops, Cannery Crops, and Livestock, c 1750-1960

Figure 43: Pennsylvania forebay bank barn with shed roof machine shed/corn crib addition, Straban Township, Adams County.

Machine Shed, c. 1830-1885:
Early machine sheds are similarly uncommon. Rising mechanization in the nineteenth century brought with it storage requirements. A Pennsylvania forebay bank barn often sufficed; machinery was stored on the threshing floor and under the forebay. Occasionally a dedicated machinery bay would appear, integrated into the barn fabric or added to a gable end. See the 1875 example (Figure 43) above.

Figure 44: Pennsylvania barn with shed-roof machine shed/corn crib, Tyrone Township, Adams County.
Figure 45: Pennsylvania forebay bank barn with integral machinery bay, Tyrone Township, Adams County.

Landscape Features, c. 1830-1885
Little evidence remains today of nineteenth-century landscape features. We may infer that the typical farm landscape was shaped by many and small crop fields; some pasture; and small woodlots. Fencing would include “worm” fences, post and rail, and picket fencing, usually in a hierarchy as one moved closer in to the farmstead.46

Diversified Small Scale Farming, Poultry Raising, and Cannery Crops, c. 1885-1940
Rapid urbanization and industrialization presented challenges and opportunities for farmers in the region during this period. Both within and outside the region, markets developed along with the growth of cities. Towns in York and eastern Adams Counties became minor industrial centers, with diverse enterprises such as shoe manufacturing, food processing, and textile manufacture. These towns offered markets, and also off-farm employment. Farm size hit its low about 1910, around 63 acres, but rural population declines had begun even before that. Two agricultural depressions in the period—one in the late nineteenth century and the Great Depression of 1920-40—winnowed the number of farms and forced surviving farm families to make adjustments.

Products, c. 1885-1940:
The 1924 Adams County agricultural extension report mentioned a display of "1700 different diversified products raised on the Lupp farm." While it is hard to conceive quite this much diversification, farming in the region still was quite varied. During this period, Adams and York County farms continued with a small scale, diversified crop and livestock system. Subtle changes in proportions reflected new trends. For example, oats production declined as horses

46 See Sheets, page 141, for a good late 19th century farm photo from the Historical Society of York County.
gave way to mechanized farm work. Yet more mules appeared; this interesting trend may have emerged because the auto replaced the horse for human transport, and the mule was regarded as a superior farm draft animal to the horse. The general trend in crop patterns was upward for corn and wheat acreage; flat for potato acreage; slightly downward for hay acreage; and more pronounced declines for oats, rye, and tobacco. Experiments with soybeans began in the 1920s, and acreage increased slightly. Wheat still went to local mills and beyond. Corn was mainly fed to animals, but there were some high producing commercial distilleries (for example Foust Distillery in Glen Rock) in the county up until Prohibition. Thus according to the 1910 agricultural census, York County farms were sixth in total acreage of rye, and second in yield per acre (among large producers).47

Figure 46: York County farm crops, 1927.
Figure 47: Adams County livestock, 1927.

In crop production, the most important new development was the rise of truck farming and cannery crop production. Indeed, by the late 1920s the region was labeled the “York County poultry, dairy, and canning crops” region. Canneries were among the new industrial concerns located in the region. A 1915 Pennsylvania Department of Agriculture report listed over twenty-five establishments in York and Adams counties, mostly in small towns like Stewartstown, Delta, and East Berlin.48 The 1930 federal census showed that vegetable crop acreage in York County alone had doubled since 1920, from 4,000 acres to over 8,000, second only to Bucks County. And the 1930 Adams County agricultural extension agent report noted that “the canning crop industry holds an important place in Adams County Agriculture [sic] as there are numerous canning plants distributed throughout the county." Tomatoes, snap beans, sweet corn, cabbage, and other vegetables were grown for the canneries and some also sold fresh. Cannery crop acreage was distributed in different ways. Some of the canning companies owned extensive acreage and contracted for cannery crops to supply their businesses, sometimes distributing seeds or seedlings. In both counties, patches of cannery crops were grown on regular-sized farms; and in a few cases, very small farms had truck patches.49 These crops were labor-intensive, but offered high per-acre returns. For example, a York County farm family, the Andersons, pursued a variation on the theme by growing and marketing small fruit plants and berries, principally strawberries and raspberries. Howard Anderson recalled that "jobbers, with their own conveyance, would call at the house to pick up berries to be taken to various markets." But

47 Atlas of York County Pennsylvania, "by and under the direction of" Beach Nichols, published by Pomeroy, Whitman and Co, Philadelphia 1876, see especially Heidelburg Township, where distilleries are shown. Sheets, Made in York, 148.
49 Adams County Agricultural Extension Archives, County Agent Report, 1917; Sheets, Made in York, 141.
better prices were obtained when family members took them to market at York or Harrisburg. As a boy Anderson went door to door in the city selling berries.\(^\text{50}\)

Livestock numbers show a more consistent pattern from the previous period than do crops. Swine continued to be important; the numbers fluctuated considerably but over time the per-farm output of swine was high. Swine keeping fit in well with corn culture; often the corn was “hogged off” in the fall. Farms kept fewer horses. The number of milk cows per farm stayed relatively steady, even declining slightly in Adams County. Beef cattle numbers were modest in both counties, though Adams experienced a slight rise in the early 1920s. The agricultural extension agent regarded beef cattle as important in Adams County; in 1931 he noted that “a large percentage of our farmers feed steers.” Adams County farmers obtained their steers locally, sticking with "plain cattle… placed by local dealers.”\(^\text{51}\) Sheep, never important, disappeared altogether.

**Figure 48:** Chart showing average number of livestock per farm, 1860-1923.

The big news in the livestock realm was the sharp increase in poultry numbers. From an average position in 1880, York County farms dramatically increased their poultry production, so that by 1927 York County farms on average kept about 200 hens, as opposed to 78 statewide. York was second only to Lancaster County in total poultry production in 1910, and by 1940 had moved into first place in the state. Adams, though a much smaller county, still ranked fairly high as well. Poultry housing figured prominently in the Adams County agricultural extension reports from the 1920s onward.

Poultry production fit well with conditions in the region. The small farms could sustain chicken pasture, housing, and feed needs. The burgeoning cities in the region and on the eastern seaboard were within increasingly easy reach, especially as the auto and truck and their road system appeared.

Dairying was certainly practiced in the region during this period, but it was on a small scale and in the larger context was relatively unimportant. According to the 1912 soil survey, it was carried on “almost entirely as an adjunct of general farming.”\(^\text{52}\) The average farm in the region had only 3.5 milk cows, so even considering gains in productivity, there still wasn’t a lot of milk coming from farms in the region. The 1927 agricultural census manuscripts show that almost all farms kept milk cows, but that a small minority of farms had ten or more. Doubtless they

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\(^{51}\) Adams County Agricultural Extension Archives, County Agent Report, 1925, 1923, 1931, 1924.

accounted for most dairy production in the region. Fluid milk replaced farm-made butter production in this period, and the labor formerly used for buttermaking (mostly performed by women) was probably shifted over to poultry raising, washing milk equipment, and truck farming.

It is hard to tell how many farmers were using purchased fertilizers during this period, but advertisements in local directories were numerous. C. H. Dempwolf's York Bone Mills in 1877 advertised “Pure Ground Bone, Pure Bone Super-Phosphates,” and "crushed oyster shells for poultry." Perhaps the small numbers of cattle were insufficient to produce enough manure for the farm crops. 53

Orchards were quite important in the region. Of course, just to the west the Adams County fruit belt was taking off, but in York and eastern Adams, fruit production occupied a strong place, if not at the same specialized level. Apples, peaches, pears, and cherries were grown. An intensive pursuit that occupied relatively few acres, orcharding also fit well with small scale farming in this era before national competition forced small growers out.

Family subsistence production continued to play an important role in farm strategies. Most families (6,900 out of 7,650 in York County in 1930) still had a large garden, and put up food by canning, drying, pickling, root storage, smoking, and making preserves. The York County extension agent in 1933 noted that “a few [grape] vines are to be found on almost every farm...” Families usually butchered swine and a steer or two for home consumption. Howard Anderson’s family grew or raised nearly everything they ate. 54

**Labor and Land Tenure, c. 1885-1940:**

By far farm labor continued to be drawn from family members and neighbors. Even vegetable growers used mainly family labor with a few day laborers at peak times. 55 York County resident Howard Anderson recalled of his youth in the 1920s: "the women fed the poultry and gathered the eggs. The men cleaned the stables and poultry houses as well as provided bedding and feed for the livestock. The women always did the milking... household chores for the women included soap making, rug hooking, butter churning, making shmierkase, quilting, and clothes

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53 *Authentic General Directory of the Boroughs of York, Hanover and Wrightsville, York County, Pa., for 1877...* York, PA: Herman, Miller and Thomas, 1877, 81.
making. They also made the most proficient berry pickers and often worked along with the men in the fields -- planting, caring for crops, and helping with the harvest." 56

“Part-time” farming attracted more attention during this period. Farm families had historically often practiced artisan trades or other skills along with agriculture, but the rise of industrial wage employment off the farm transformed the way they combined farming work with other work. It is not certain what percentage of Pennsylvania farms could be classified as “part-time,” because those figures were not systematically tabulated until later. (By 1950, the US Census reported classified 15.5 percent of the state’s farms as “part-time.”) However, a 1936-8 study of “Part-Time Farming in Six Industrial Areas in Pennsylvania” included the York-Adams region in its survey. The study, undertaken by Pennsylvania State College researchers, identified and interviewed part-time farming families. The report presented some noteworthy findings. For example, three-quarters of the York-Adams part-time farmers commuted to their off-farm employment by car, travelling on average about five and a half miles. Those employed off the farm had held their present job, on average, for ten years, and had been farming for twelve. This suggests that part-time farming combined with industrial employment was not a temporary strategy but a long-term, settled way of life. The farms the interviewed subjects worked were small – only sixteen acres on average, two thirds of which was in crops. However, given the availability of off-farm employment and the fact that by 1950 over half of all farm operators in the county worked off the farm at some point in the year, it seems probable that part-time farming was not confined to people with small holdings but was a widespread practice among farm owners in the region. 57

The study examined the household division of labor on part-time farms, and found some significant results. York-Adams part-time farming families invested 262 days of labor a year in the farm; the father performed less than half of this work, while the majority fell to the mother and children. The only area where women did significantly less than the male household head was in field crop production. The farming enterprise contributed significant cash income and also subsistence. Even so, the farm income accounted for less than twenty percent of family income.

The York-Adams part-time farm profiled in this study, despite their small size, did produce corn, potatoes, oats, wheat, and hay. Orchard products and small fruits were important. Just under forty percent had a cow or horse, while sixty percent fattened hogs. The most notable figure was the size of poultry flocks: even these tiny farms averaged 100 birds.

Farm tenancy in the region declined during this period. In York County, for example, the tenancy rate dropped from 29% in 1920 to 19% in 1930. Kinship-based share tenancy continued to be the dominant form of tenancy.

**Buildings and Landscapes, c. 1885-1940**

**Houses, c. 1885-1940**

Few new houses were built during this period of economic stress. Farm families did begin to invest in improvements like electricity, running water, and heating. Even so, around 1930 just 40 percent of York County farms had telephones, less than a quarter had running water, and a third had electricity, so these improvements were slow in coming. In general both counties lagged behind the state regarding all farm improvements except the automobile, where they were ahead.

**Barns, c. 1885-1940**

![Figure 49: Farmstead complex, intersection of Buffalo Valley and Greenmount Church Roads, Codorus Township, York County.](image)

The Pennsylvania forebay bank barn continued to be popular in the region into the twentieth century. But farm people continued using other forms and also began to experiment with new types. As before, small barns and barns that were not banked seem to have been more common here than in other agricultural regions such as the Central Limestone Valleys or the Lancaster Plain. A plausible explanation for this distinctive pattern is that farms in the York-Adams region were not only small (so were farms in the Lancaster Plain), but they had less optimal soil resources and topography. Moreover, crops took precedence over livestock farming in York-Adams. Thus the Pennsylvania forebay bank barn, which ideally suited a relatively large producing crop and livestock system, wasn't always the most appropriate choice in York-Adams. Small or large ground barns would fit well on these farms.

For example, the barn at site 133-CO-002 (Figure 51) fit many functions into a small space. The gable end forebay protected doors for livestock entry. On the eaves side large sliding doors probably led to a threshing floor. Inside there were stables and a single hay mow, as well as a loft area which also had poultry quarters. It is not known how large the farm when this barn was built, but we do know that by the mid 20th century the owner had a small acreage, raised cannery crops, and worked at a local feed mill. Another ground barn (Figure 52) in eastern Adams County similarly packed a small forebay, machinery entrance, and hay loft into a small, unbanked barn.

At site 001-LA-012 (Figure 53), a much larger ground barn probably dates to the late nineteenth or early twentieth century, with later alterations. An eaves side door leads directly from the road...
into the central floor. On either side, dairy stanchions were installed in the 1940s. Hay was stored in an upper loft. By the 1940s this farm was a small dairy.

Others experimented with variations on the standard Pennsylvania bank barn. For example, several barns were documented which had an eaves-side forebay, but the upper level ramp was built to the gable end rather than on the upper eaves side. Site 133-CO-004 (Figure 52) is an example. Topographical considerations do not appear to have played a role in the decision to situate the ramp on the gable end. Without access to the upper level, it is difficult to conjecture about the functional advantages a gable-end ramp might offer.

Figure 50: Ground barn, eastern Adams County, c. 1900.
Figure 51: Small ground barn with forebay in gable end, Codorus Township, York County.
Figure 52: Forebay barn with gable-end ramp, Codorus Township, York County.
Figure 53: Large ground barn, Latimore Township, Adams County.
Figure 54: Pennsylvania forebay barn adapted for poultry housing, Codorus Township, York County.
Figure 55: Pennsylvania forebay barn adapted for poultry housing, Codorus Township, York County.
Figure 56: Stable barn, Reading Township, Adams County.

With the poultry boom, some barns were adapted for poultry housing. This is forcefully demonstrated at sites 133-CO-003 and 133-CO-008 (Figures 54 and 55). In both cases, Pennsylvania bank barns were practically honeycombed with small openings.

Finally, newer, modern forms appeared. For example, at site 001-RE-002 (Figure 56) a barn had most features of the early twentieth century "stable barn." The barn had no forebay, and its basement level was constructed of rock face concrete block, pierced with many windows, and entered via a central gable end door, thus indicating a lengthwise central aisle. Probably dairy stanchions were arranged along this aisle. The barn also had a gambrel roof, affording extra hay space. The one holdover from the Pennsylvania barn form was the large eave-side ramp to the upper level.

**Smokehouse, c. 1885-1940**
Farm subsistence work continued to be very important, especially considering that for many of these years agricultural depression prevailed. New smokehouses continued to be built, sometimes with updated materials like concrete block.

Figure 57: Smokehouse, Codorus Township, York County.
Figure 58: Smokehouse, Mount Joy Township, Adams County.
Summer Kitchen, c. 1885-1940
The same was true for summer kitchens as for smoke houses and other buildings that accommodated subsistence activity. Besides the general elaboration of rural people’s subsistence base, another important change in the late nineteenth and early twentieth centuries was in the increased availability of cheap sugar, produced on Caribbean and Latin American sugar plantations, and later US possessions in Puerto Rico and the Phillipines. Consumption rose and the repertoire of jams, jellies, preserves, cakes, and puddings expanded. At least some of the processing, especially for items requiring cooking, would be done in the summer kitchen.

Figure 59: Summer kitchen, Codorus Township, York County.

Root Cellar, c. 1885-1940
The root cellar was another important space. Here cabbages, carrots, and other crops could be stored in a constant 50-55 degrees.

Figure 60: Root cellar, Codorus Township, York County.

Pigsty, c. 1885-1940
The region still emphasized hogs, so pigsties continued to be built. Hog farming did not expand in scale, so though the buildings were new, they were not necessarily large.

Figure 61: Pigsty, Codorus Township, York County.

Corn Crib, c. 1885-1940
With the expansion of the corn crop came more dedicated storage facilities. Corn cribs documented from this period typically were not free standing, but instead were combined with other outbuildings, most often with a machine shed.

Figure 62: Combination building containing a privy, corncrib, and granary, Codorus Township, York County.
Figure 63: Combination machine shed and corncrib, Codorus Township, York County.
Figure 64: Metal “Buckeye” Co. Corncrib, Lower Windsor Township, York County.

Machine Shed, c. 1885-1940
As farming mechanized, the barn was inadequate for machine storage and so more machine sheds appeared. The most commonly documented machinery storage for this period was the drive-through corn crib; see Figure 63, above.

Granary, c. 1885-1940

58 William Woys Weaver, Sauerkraut Yankees (Mechanicsburg, PA: Stackpole Books), 116, 150.
As before, occasionally a freestanding granary appeared. The one in Figure 65 was on a farm whose barn was a very small ground barn, so it would not have had an interior granary.

Figure 65: Granary, Codorus Township, York County.

Privy, c. 1885-1940

As we have seen, few farms in the region had running water and therefore the outdoor privy was ubiquitous. One regionally distinctive practice was to combine pigsties with privies for humans.

Figure 66: Privy situated next to pigsty, Codorus Township, York County.

Poultry House, c. 1885-1940

The importance of poultry in this period is demonstrated through numerous poultry houses on York and Adams County farms. Though in the aggregate the two counties accounted for a huge output, the total was achieved through multiplicity of small-scale operations. So, while poultry houses for the period were substantial, they were not enormous multistory buildings. Construction material would almost always be frame. Early 20th century poultry houses share some characteristic features. Usually they had either a shed roof or a gable roof. Windows across one eaves side afforded the light essential to chicken health. Small, hinged access doors, and ramps, allowed fowl to move in and out. Access doors for humans were placed either in the eaves side or in the gable end. Siting was usually between house and barn, especially for earlier structures; over time, poultry housing moved further from the house as men became more involved in the poultry business. It is important to note that farm families often improvised poultry housing, most notably by converting other buildings, usually by adding levels for nesting and perching, and cutting windows into previously solid walls.

The type of housing depended on the purpose. From the exterior, it is hard to tell a house intended for laying hens (layer house) from one where the occupants were destined to become meat (broiler house), so here, both types are treated together as generic “poultry houses.” Inside, a layer house would have perches and nesting boxes, but a broiler house would dispense with the nesting boxes, and thus be able to crowd more birds in the same square foot area. In some cases, poultry housing was deliberately designed to be portable, so that the buildings could be rotated to clean sites periodically, thus reducing disease problems.

Figure 67: Shed roof poultry house, Codorus Township, York County.
Figure 68: Two-story poultry house, Codorus Township, York County.
Figure 69: Movable poultry houses on skids, Butler Township, Adams County.
Figure 70: Shed roof poultry house, West Manheim Township, York County.

Roadside Stand, c. 1885-1940

**Garage, c. 1885-1940**

With the auto came the garage. Often existing buildings might be adapted, but a few were purpose-built.

*Figure 71*: Garage, Straban Township, Adams County.

**Milk House, c. 1885-1940**

The milk house was a major new form on the early twentieth-century dairy farm. It wasn’t a big building, but is an important reminder of the new role of the state and the agricultural establishment in agriculture. The state (meaning the government at any level) influenced the construction of milk houses in the first place, because during the Progressive and New Deal eras, legislatures and municipalities passed sanitary codes that required inspection not only of milk, but of dairy herds and milk production facilities. New York City pioneered in these efforts, and also seems to have been more effective at enforcement than other areas. In Pennsylvania, according to Stevenson Fletcher, a very few municipalities had inspection laws starting in the late 19th and early 20th centuries; however, enforcement was patchy. The first statewide dairy inspection law was passed in 1929, with a revision in 1933. This law provided for inspection of farm sanitary conditions, including facilities for sterilizing dairy equipment and milk houses for isolating milk. It is not clear how well these were enforced. These regulations were a facet of the assault that was launched on bovine tuberculosis and other diseases in this period, aiming at ensuring a fresh, uncontaminated milk supply. In order to market milk, increasingly farm producers had to comply with regulations that required them to install easily cleaned surfaces (like concrete) in barns, remove milk storage areas from dirt and odors (by building milk houses), cool milk, sterilize equipment, and the like. In Pennsylvania, these regulations took effect earliest in the Northern Tier, because New York City, where most milk went from there, passed quite stringent inspection standards by the 1920s. Other regions, including York-Adams, were affected later. The milk house was one product of the new laws. In turn, its form and construction were influenced significantly by the agricultural establishment (meaning the complex that included state departments of agriculture, the land-grant university and extension apparatus, and agribusinesses). This new element in the farm landscape, therefore, illustrates the growing influence of the “agricultural establishment” on everyday farming practices and

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59 Page 181.
landscapes. Agricultural extension agents regularly disseminated plans for milk houses. Likely, for every farmer who followed a plan exactly there were more who either copied his building, or who adapted the basic guidelines using available materials and expertise. The overall result was a new level of homogeneity and standardization.

Milk houses provided a place to store and cool fluid milk before it was transported to market; to store milk cans not in use; and to wash containers (and sometimes other equipment like separators). Plans offered by the USDA for farm milk houses typically gave dimensions ranging about 10 by 13 feet up to around 12 by 20 feet. Interior plans for a 10 by 13 milk house with ell (capacity 20 to 30 head market milk) show a two-room plan with door leading to a wash room; milk room to one side, which contained a cooling tank and led to raised loading/unloading platforms and sunning racks, mounted on the outside. The ell contained a boiler room with its fuel supply, and back door. Larger milk houses had the same basic three spaces, only larger, and sometimes equipped with testers and separators. One (#1337) had a churn, butter worker, ripening vat, and refrigerator, and another (#1339) had quarters for workers. Another small, 12 by 14, one-room milk house (#1341, see illustration) was designed for “butter making by hand” for 20 cows. It contained the same basic spaces, but not divided. The very smallest, at 7 by 9, had a concrete foundation with a sunken vat for cooling cans of milk. All of these plans had sloping floors with drains, and provision for ventilation and light.

In York and Adams Counties, milk houses are relatively rare, reflecting the less important position of dairying during this period. Those that were documented for the period tend to be small and accommodate the minimum requirements.

Figure 72: Milk house, Reading Township, Adams County.

Silo, c. 1885-1940

Dairying was not followed on a wide or large scale in this region and so silos are relatively scarce. The 1927 census figures show that the ratio of silos to farms was only 0.14 (ie 14 silos for every 100 farms) in the two counties. In 1931, the York County agricultural extension agent noted that in a survey of farm accounting procedures, almost all the farms had dairy or beef cattle, but few of them had silos.

A silo is an airtight structure that holds fresh organic matter (moisture content 50-65 percent) destined for winter animal feed. It is filled with shredded or chopped grass, corn, or sometimes

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62 Plans referred to are from Farm Building and Equipment Plans and Information Series. See text box for publication details. Pennsylvania Circular 107 says the boiler would be needed where “the herd is large and milk is to retailed.”

63 Pennsylvania Circular 107 says an 8 by 8 house would “do for a dairy of 10 cows.”

64 See also the map for 1927 at the Pennsylvania Agricultural History Project website.
other plant material, which ferments into a highly nutritious feed. Silage feed resulted in significant productivity increases for dairy cows, and also permitted marginal farms to carry more animals. Ensilage was first publicized in the US in the late 19th century when the results of experiments in Europe became known. However, it did not become widespread until dairying was taken up more seriously.

Silos can be constructed horizontally in pits, or vertically. Most silos of the first half of the twentieth century were vertical. Early silos were sometimes placed inside the barn, rectangular in shape, and of wood construction. These were quickly supplanted by round vertical silos located outside the barn, usually in a spot that would permit efficient filling (usually from holes in the top) and unloading (either from a tier of successive doors from which silage was thrown down an exterior chute, which contained a ladder for access to the doors, or from the bottom). Early silos were unloaded by hand, from the top. The land-grant establishment published many “how-to” brochures aimed at helping farmers build their own silos of wood or concrete. Because masonry is more durable and cleaner, it became the norm. Commercial organizations marketed many types of silos too. Some sold special curved brick; others made tiles; still others advertised systems depending on interlocking rings of poured concrete. Cement staves became popular after about 1910. Galvanized iron was mentioned by Hall in 1929. A 1918 Pennsylvania State College circular (# 72) mentioned wood stave, hollow tile block, poured concrete rings, concrete staves, concrete blocks, metal, and bricks as silo construction materials. Alan Noble, in *Wood, Brick, and Stone*, argues for a sequence in roof types, from gable to cone to hip to dome to hemisphere.

*Figure 73:* Concrete stave and tile silos, Straban Township, Adams County.

**Landscape Features, c. 1885-1940**

Since farms were small and crops were dominant, the primary feature in the rural landscape would be a small patchwork of crop fields. Fencing, though not absent, would be less important than in areas where livestock took a more central role, and the same would be true for pasture. Barbed wire fencing appeared during this period and quickly became the favored type. Clearing had proceeded very thoroughly, so York and Adams County farm woodlots were relatively small. Orchards and truck farm patches appear clearly on aerial photographs but are mostly gone today. The 1912 soil survey pointed out that cherry and apple trees were often planted along a roadside or fencerow, “in order that greater space may be devoted to field crops.” The farmhouse grounds landscaping often included specimen trees, hedges, or ornamental fencing.

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67 See Alan Noble, *Wood, Brick, and Stone*...
The 1937 aerial below shows many small irregularly shaped crop fields, and shocks of grain are visible because the photo was taken in late fall. Woodlots tend to be concentrated on ridges. In some instances treelines separate fields. A few examples of contour strips are visible in the lower portion of the photograph.

**Figure 74**: Farm lane, wood post and barbed wire fence, and treeline, Butler Township, Adams County.

**Figure 75**: Crop field and treeline, Latimore Township, Adams County.

**Figure 76**: Farmstead with crop fields, treeline, and farm lane, Codorus Township, York County.

**Figure 77**: Aerial photograph, Abbotstown vicinity, York County, 1938.

**Figure 78**: Aerial photograph, Sticks Road vicinity, York County, 1937.

### Poultry production, fossil fuel power, and off-farm labor, 1940-1960

Introduction: During and after World War II, agriculture changed dramatically. York and Adams Counties experienced the same general trends that were occurring everywhere. Pressure to specialize and expand mounted as a vicious cost-price squeeze caught farmers between high costs and low prices for farm commodities. Capital inputs and costs rose rapidly, as the fossil-fuel revolution consolidated. Competition came from all over the nation and even the world. York-Adams farm families responded by moving into more specialized production and supporting the farm through off-farm employment.

Farm size began to creep up after hitting an early twentieth century low. Farm numbers dropped steadily as well. The entire food system assumed its modern shape during these years; industrialized production, irrigated farming in the far West, and nationwide distribution altered the competitive landscape for small farms. The so-called “agricultural establishment” — the complex of land-grant institutions, national farm organizations, and large agribusinesses -- exerted a large influence on agriculture, encouraging specialization, large capital investments, and large scale. Farming method, tools, buildings, and even landscapes became more standardized nationwide. These developments had a significant impact in Pennsylvania.

### Products, 1940-1960:

The York County agricultural extension agent in 1959 noted a definite trend toward specialization. Diversification, he said, characterized the county as a whole, but no longer “on every farm but diversified farm to farm...” Without the manuscript census returns, it is hard to tell how accurate his statement was, but aggregate figures, field observation, and general histories suggest that farm diversification did slowly give way to specialization. For example, the 1950 census classified 23% of York County farms as “general” farms. While this was still a

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69 York County Agricultural Extension Archives, County Agent Report, 1959.
substantial proportion, the remaining 77% were specialized within the Census bureau’s definitions.

**Figure 79**: York County farm types, 1950.

The traditional strength of crop farming continued. York County led the state in grain corn acreage in 1950 while Adams reported the second-highest per-acre yield. From the early 1940s onward the agricultural extension agents led the push for hybrid corn. Hybrids increased yields, but also increased costs and fostered dependence on suppliers. The two counties were also high in wheat acreage in 1950. New varieties of wheat were sought which wouldn’t shatter under modern combine machinery. As oats acreage declined, corn and wheat took up the extra acreage. Hay continued to be a substantial crop in the region, though overall acreages were on the decline.

Livestock enterprises featured poultry and pigs, with beef and dairy cattle in a secondary position, relative to statewide trends. York was second to Lancaster in chickens and eggs in 1950, but Adams added over 500,000 chickens, so together the two counties comprised a very important poultry area. The Adams County agricultural extension agent declared in 1949: "income from the poultry industry effects [sic] more farms than any other farm enterprise in Adams County." He further noted that most flocks had fewer than 500 birds, and that poultry and eggs "are marketed to a large extent through hucksters who call at the farm at regular intervals." There was also one egg cooperative.  

**Figure 80**: U. S. Census of Agriculture, Special Poultry Report, 1940.

York was ranked first in Pennsylvania in total numbers of swine in 1950, even surpassing Lancaster County (total numbers were steeply down from 1880, though). The traditional importance of the pig continued into the mid twentieth century.

The Adams County agricultural extension agent in 1954 wrote that the dairy "contributes a large share of the farm income of Adams County." Mostly milk went to the Philadelphia area. The city exerted pressure on methods and processes, as for example when distributors demanded farmer cooperation in eradicating brucellosis. Dairy output for the two counties was healthy in 1950 but not among the very top leaders statewide.

The Adams County agricultural extension agent in 1946 reported that "Beef cattle feeding is of primary importance here. This helps to utilize our pasture land and fits into the farm program well where the chief crops are potatoes, vegetable crops or fruit.... Most feeder stock is

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70 Adams County Agricultural Extension Archives, County Agent Report, 1949.
71 Adams County Agricultural Extension Archives, County Agent Report, 1954.
purchased through the Lancaster Stock Yards and marketed there when finished."\textsuperscript{72} 1950 census figures do suggest that York and Adams farmers were fattening steers to some extent, because their total number of cattle was much larger than the number of milk cows.

York County was one of only four in the state with over 100,000 bearing apple trees in 1950, and Adams was first. So the two combined really anchored the state’s apple producing capacity. In addition, York ranked fourth and Adams second in peach tree numbers. And as before, York County ranked high in value of vegetables produced.

The crop and livestock synthesis of the last century was now being challenged. Specialization disrupted the system in which crop rotations and livestock manures constituted a self-perpetuating cycle. Purchased feed increasingly substituted for farm-grown feed. Yields were high, but so were farm expenses, and nutrients were being imported from the Midwest and other regions. Soon, manure would not be an asset but rather a waste disposal problem. Groundwater quality and watershed health would become major environmental issues in the late twentieth century; some argue that changing agricultural practices played a major role in creating these problems. Machinery and equipment purchases soared during this period as well. Purchased fossil fuel based fertilizers and pesticides also helped to increase yields, but they too threatened soil health and contributed to environmental problems. Interestingly, some of these issues were even anticipated by the York County agricultural extension agent as early as the 1950s.\textsuperscript{73} In 1959 he raised concerns about pesticides and hormones with respect to the milk supply.

Subsistence activity probably declined during this period. Gardening was still popular, and many families still did their own butchering. However, events and trends militated against the old ways. The rise of the supermarket, off-farm employment for women, refrigerators and freezers – all these factors contributed to a decline in traditional food growing and preservation.

**Labor and Land Tenure, 1940-1960:**
Labor was a burning problem. Wartime mobilization brought serious labor shortages; the agricultural extension agent reports are filled with accounts of how the agents scrambled to figure out how to meet farm labor needs. Not only was the military taking young men, but, the agent complained, nearby war industries offered “abnormal” wages even for the unskilled, and drew workers away from the farms. York and Adams County officials used a combination of strategies to meet the need. Agricultural draft deferments succeeded for awhile, but they became more difficult to arrange. Then farm organizers turned to migrant labor, prisoners of war, conscientious objectors, women, and children. The War Food Administration set up several

\textsuperscript{72} Adams County Agricultural Extension Archives, County Agent Report, 1946.
\textsuperscript{73} York County Agricultural Extension Archives, County Agent Report, 1959.
camps for Jamaican laborers harvesting cannery crops. “Colored” workers conflicted with locals, and eventually segregated groups were created.\textsuperscript{74}

After the war, industrial employment still drew labor off the farm. Wages were high and farm operators responded by mechanizing and streamlining their farms.

A very important aspect of the rural economy during this period was off-farm labor. In 1950 nearly half of farm operators in York-Adams worked off the farm, and many of those worked more than one hundred days per year. Moreover, for a third of all farm households, off-farm income exceeded farm income. These statistics may under-count the impact of off-farm labor, because they tally employment by farm operators, and usually this means the male household head. Yet, women’s employment was increasing during the postwar years and ultimately would come to play a very big role in supporting household income. All in all, there was an unmistakable trend for households to supplement farm income with off-farm employment. The figures were almost exactly at state averages, so York-Adams wasn’t exceptional in this regard. It was just one more way in which the wider economy began to exert a bigger impact on farming patterns.

\textit{Buildings and landscapes, 1940-1960}

The general trend in farmstead buildings was away from very small subsistence structures such as smokehouses. Building trends in this period included new standardized forms built with industrially produced materials and sometimes to published plans; alterations to barns to accommodate more animals and to meet legislative requirements; and new storage space for machinery, crops, and vehicles.

\textit{Barn, 1940-1960}

Not many new barns appeared during this period. Those that were newly built tended to break from tradition, drawing from plans and designs distributed through the agricultural establishment. The stable barn at site 001-HU-006 (Figure 81) is a good example. Its “rainbow” style roof was accomplished with new techniques of laminating and bending wood. The large upper-level space was unobstructed, allowing for much greater hay storage volume than with older style framing and roofing systems. The large doors also admitted larger equipment. Below, a stable area served only to house cattle. The siding also was mass-produced wood paneling. At site 001-LA-006 (Figure 82), a gambrel roof stable barn had a full ground floor made of concrete block, with ample windows (required by dairy regulations) and center aisle. On the upper level the gambrel roof offered extra hay storage volume. A large stable barn in York County on Gerbrick Road has an eaves-side hay door with hood. This was a popular device for hay loading and storage. Alterations to existing barns included such strategies as enclosing and/or extending the forebay (see below, site 001-ST-002, Figure 84), and adding free-

\textsuperscript{74} Adams and York County Agricultural Extension Archives, County Agent Reports, 1942-1946.
stall accommodations (Figure 85). Free stall shelters came into favor after research showed that cattle actually did better over all when they were able to move about within a large, open-sided space that did not have a concrete floor. Not coincidentally, these buildings were much less expensive than a conventional barn.

Figure 81: Rainbow roof barn, Huntington Township, Adams County.
Figure 82: Stable barn, Latimore Township, Adams County.
Figure 83: Rainbow roof stable barn, Gerbrick Road, York County.
Figure 84: Pennsylvania forebay bank barn with forebay side extended and enclosed, Straban Township, Adams County.
Figure 85: Barn with ell addition, several free stall shed additions, and two independent free stall barns, Adams County.

Worker Housing, 1940-1960

Figure 86: Worker housing, Hopewell Township, York County.

Corn Crib, 1940-1960
Postwar corn cribs followed both traditional and newer forms. At site 001-BU-004 (Figure 87), for example, a newer type appeared: the wire mesh cylinder with metal conical roof. These were mass manufactured. At site 001-BU-006 (Figure 88) a drive-through machine shed with flanking corn cribs followed a much older form, but its side slats are much more uniformly manufactured, suggesting a mid or even late twentieth century date. At site 001-MJ-003 (Figure 89), a popular twentieth century type of corn crib is shown. This one is quite long and narrow, with a shed roof; it is elevated above ground level. Again, its mass manufactured, narrow and regular slats suggest a mid twentieth century date. And finally at site 133-CO-004 (Figure 90) there is an unusual example – a corn crib combined with a shallow pitched rainbow-roof drive-through machine shed.

Figure 87: Corn crib, Butler Township, Adams County.
Figure 88: Drive-through machinery shed and corn cribs, Butler Township, Adams County.
Figure 89: Shed roof wood slatted corn crib, Mount Joy Township, Adams County.
Figure 90: Drive through machine shed and corn crib, Codorus Township, York County.

Silo, 1940-1960
Most silos in the region probably were erected after 1940. The most common type is the concrete stave silo (see site 001-HU-005, Figure 91). Poured concrete was also popular. At site 001-LA-012 (Figure 92) an unusual above-ground horizontal silo was built around 1950.

Figure 91: Concrete stave silos, Huntington Township, Adams County.
The immense aggregate poultry production in the two counties was achieved, it seems, through many modestly scaled individual farm operations. The massive, long, low chicken houses that today characterize the poultry business had not yet appeared in the region. More typical was one- or two-story housing. Often a farm would have several of these small to medium sized poultry houses. Almost all the housing was for chickens, but at site 133-CO-006 (Figure 93), there was a shed-roof turkey house. The other four examples shown below all were chicken houses. They show variations on the two-story poultry house executed in frame and concrete block. One, at site 001-TY-001 (Figure 98), has an integral corncrib built with special hollow concrete block. Siting varied for these buildings. Two were sited on farm ponds. Two were on the edge of the farm barn yard, and one was next to the vegetable garden.

Machinery storage became more common. The advent of pole construction made it inexpensive to erect open-sided metal pole barns for machinery, but frame machine sheds continued to be popular.

After the war, there was a boom in farm pond construction. This was due to several factors. Earth moving equipment became more widely available; insurance companies offered discounts for farm properties with access to water for fire fighting; and interest rose in recreational uses. The York County agricultural extension agent, for example, noted that carefully sited ponds
offered fire protection not just for one farm but often for others, and sometimes even for villages. He cited fishing, boating, swimming, and ice skating as recreational benefits. See the photos for “poultry housing,” sites 001-RE-001 and 001-TY-001 (Figures 95 and 98).75

**Strip Cropping and Contour Plowing, 1940-1960**

Already in the 1930s aerial photographs suggest that farmers in the region were beginning to use strip cropping and contour plowing. These are erosion control measures. Strip cropping alternates crops of different textures and water holding capacity in long, narrow strips. Contour plowing plants crops along the contour of a slope, rather than against it. The two techniques are most often used together. The combination of techniques works to capture rainwater and retain it in the soil, instead of letting it run off and take valuable topsoil along with it. The practice was heavily promoted during the New Deal and became more widespread after the war. The York County extension agent in 1954 wrote that a cannery company owning 800 acres had begun to institute “erosion procedures.”76

Figure 104: Aerial photograph, York County, Abbotstown vicinity, 1957.

**Orchard, 1940-1960**

Already by about 1950, orchards were on the decline in York and eastern Adams County. They can still be seen on the aerials for 1957-62, but very few remain now.

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Figure 1: York-Adams region map. Map graphics by Aislynn Herbst.

Figure 2: Map showing the “York Valley” limestone belt. From Jo N. Hays, “Overlapping Hinterlands: York, Philadelphia, and Baltimore, 1800-1850,” Pennsylvania Magazine of History and Biography Vol.
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Figure 3: Kleiser log house, Davidsburg, York County, late 1760s. Joseph Kindig characterizes this building as an “early settler’s house.” Historic American Buildings Survey.

Figure 4: Stone three-bay house, Franklin Township, Adams County, early nineteenth century. Site 001-FR-005.
Figure 5: Stone three-bay house, Huntington Township, Adams County, early 19th century. Site 001-HU-007. This house has evidence of a former pent roof across the front eaves.
Figure 6: Stone five-bay house, Latimore Township, Adams County, c.1815. Site 001-LA-005.
Figure 7: Stone banked house, Codorus Township, York County, c.1830. Site 133-CO-001; also documented as the Jacob Meckley Farm, Pennsylvania Historic Resource Survey Form Key # 094313.
Figure 8: Log crib in a Pennsylvania forebay barn, Codorus Township, York County, c.1820-40. Pierceville Run Historic Agricultural District.
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Figure 9: Ground barn, Dover, York County, date unknown, but possibly c. 1830. Historic American Buildings Survey.

Figure 10: Log kitchen, Codorus Township, York County, c.1820. Pennsylvania Historic Resource Survey Form Key #094285.
Figure 11: Log kitchen, Latimore Township, Adams County, early 19th century. A large beehive oven protrudes from the end nearest the house. Site 001-LA-005.
Figure 12: Springhouse, Lower Chanceford Township, York County, early 19th century. Pennsylvania HRF site Number 45655. Photograph courtesy of Jeremy Ammerman.
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Figure 13: Springhouse, Fairview Township, York County, early 19th century. Photograph courtesy of Jeremy Ammerman.
Figure 14: Smoke house, Butler Township, Adams County, c.1840-60. Site 001-BU-006. This building probably falls a little outside the period, but it represents the type well.
Figure 15: York County livestock per farm, based on 1850 census.
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Figure 16: Three-level, four-bay, double pile house with off-center entry and double decked porch, Codorus Township, York County, 1882. Site 133-CO-001.
Figure 17: Four bay, three level house with walk in lower level and double decked porch, Codorus Township, York County, c.1850. Site 133-CO-003.
Figure 18: Floor Plan, Benner farm house, Spangler/Benner Farm, Mount Joy Township, Adams County, c.1870. Pennsylvania Historic Resources Survey Form, Key # 097742.

Figure 19: Spangler/Benner house front elevation.
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Figure 20: Four over four house, Codorus Township, York County, c.1850, modified c.1875. Site 133-CO-007.

Figure 21: Four over four, double door house, Latimore Township, Adams County, c.1850. Site 001-LA-006.
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Figure 22: Four-over four, double pile Pennsylvania Farmhouse with single off-center door, Reading Township, Adams County, c.1850. Site 001-RE-005.
Figure 23: Five-bay, center door house with Italianate trim, Mount Joy Township, Adams County, c.1870. Site 001-MJ-003.
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Figure 24: Three-bay, double pile house with center entrance, Tyrone Township, Adams County, c.1850. Site 001-TY-003.

Figure 25: I house, Latimore Township, Adams County, c.1880. Site 001-LA-013.
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Figure 26: Pennsylvania forebay bank barn, Codorus Township, York County, c.1875. Site 133-CO-005-002.

Figure 27: Pennsylvania forebay bank barn, Codorus Township, York County, c.1875-1890.
Site 133-CO-006.
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Figure 28: Ground barn with forebay, Mount Pleasant Township, Adams County, c.1875-1890. Site 001-MP-002.

Figure 29: Ground barn with partial forebay, Reading Township, Adams County, c.1880-1900. Site 001-RE-006.

Figure 31: Pennsylvania forebay barn with ramp in the gable end, Reading Township, Adams County, c.1875-1890. Site 001-RE-004.
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Figure 32: Gemmill tobacco barn, East Hopewell Township, York County, c.1880.

Figure 33: Stone spring house, Butler Township, Adams County, mid to late 19th century.
Site 001-BU-004.
Figure 34: Board-and-batten smoke house with pyramid roof, Codorus Township, York County, late nineteenth century. Site 133-CO-003.
Figure 35: Summer kitchen, Butler Township, Adams County, late nineteenth century. Site 001-BU-006.
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Figure 36: Frame summer kitchen, Reading Township, Adams County, mid to late nineteenth century. Site 001-RE-001.

Figure 37: Summer kitchen, Codorus Township, York County, c.1860. Site 133-CO-006.
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Figure 38: Two story summer kitchen, Codorus Township, York County, c.1890-1910. Site 133-CO-005.
Figure 39: Combination granary and poultry house, Reading Township, Adams County, late nineteenth century. Site 001-RE-001.
Figure 40: Outdoor bake oven, Codorus Township, York County, mid to late 19th century. Site 133-CO-003.
Figure 41: Outdoor bake oven, Fawn Township, York county, mid to late 19th century. Photograph courtesy of Jeremy Ammerman.
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Figure 42: Pigsty, Codorus Township, York County. This building may date as early as about 1890, though renovations have occurred that make it difficult to determine for sure. Site 133-CO-005.
Figure 43: Pennsylvania forebay bank barn with shed roof machine shed/corn crib addition, Straban Township, Adams County, 1875. Site 001-ST-002.
Figure 44: Pennsylvania barn with shed-roof machine shed/corn crib, Tyrone Township, Adams County, c.1870-90. Site 01-TY-001.

Figure 45: Pennsylvania forebay bank barn with integral machinery bay, Tyrone Township, Adams County, c.1880. Site 001-TY-003.
Figure 46: York County farm crops, 1927. Though farms were significantly smaller than average overall, the crop acreage was larger than average.
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Figure 47: Adams County livestock, 1927. The prominence of poultry and swine is clear.
Figure 48: Chart showing average number of livestock per farm in York County, 1860-1923. From Paul L. Edinger, “The Trend of Agriculture in Adams, Cumberland, Franklin, and York Counties, Pennsylvania.” MS Thesis, Cornell University, 1924.
Agricultural Resources of Pennsylvania, c1700-1960

XV. York-Adams Diversified Field Crops, Cannery Crops, and Livestock, c1750-1960

Figure 49: Farmstead complex, intersection of Buffalo Valley and Greenmount Church Roads, Codorus Township, York County. This complex nicely portrays the region’s agricultural history. In the background is a substantial Pennsylvania forebay barn. A pigpen sits with its gable end facing. Three small poultry houses complete the assemblage.

Figure 50: Ground barn, eastern Adams County, c.1900.
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Figure 51: Small ground barn with forebay in the gable end, Codorus Township, York County, c.1890. Site 133-CO-002.

Figure 52: Forebay barn with gable-end ramp, Codorus Township, York County, c.1890-1900.
Site 133-CO-004.
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XV. York-Adams Diversified Field Crops, Cannery Crops, and Livestock, c1750-1960

Figure 53: Large ground barn, Latimore Township, Adams County, c.1890-1950. Site 001-LA-012.
Figure 54: Pennsylvania forebay barn adapted for poultry housing, Codorus Township, York County, original construction c.1850, altered in the twentieth century. Site 133-CO-003.
Figure 55: Pennsylvania forebay barn adapted for poultry housing, Codorus Township, York County, original construction c.1860, altered for poultry in the twentieth century. Site 133-CO-008.

Figure 56: Stable barn, Reading Township, Adams County, c.1930. Site 001-RE-002.
Agricultural Resources of Pennsylvania, c1700-1960

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104: Aerial photograph, York County, Abbotstown vicinity, 1957. Note the many strip cropping and contour plowing areas. Penn Pilot.
XVI. Lancaster Plain Historic Agricultural Region, c.1730-1960

Location
The Lancaster Plain is a belt about 20 miles wide (at its widest point) and extending nearly forty miles east-to-west across the northern two-thirds of Lancaster County. It is fairly well defined by natural boundaries: mountain ridges to the north (Furnace Hills), east (Ephrata Mountain and Welsh Mountain), and southeast (Mine Ridge); the Susquehanna River on its entire western periphery; and the Piedmont Upland, on its south. The city of Lancaster is located within it, as are other towns such as Columbia, Lititz, Ephrata, and Marietta.

Figure 1: Map of physiographic regions of Lancaster County, showing the Lancaster Plain.

Townships which lie entirely or partly in the Lancaster Plain include:

- Caernarvon
- Conestoga
- Earl East
- Donegal
- East Earl
- East Hempfield
- East Lampeter
- Lancaster
- Leacock
- Manheim
- Manor
- Paradise
- Penn
- Pequea
- Rapho
- Salisbury
- Strasburg
- Upper Leacock
- Warwick
- West Earl
- West Lampeter

Climate, Soils, and Topography
Lancaster County has some of the best agricultural conditions in the United States. The Plain has a relatively long growing season – 150 to 173 days. Its soils are prime agricultural soils in the Duffield, Edgemont, and Berks series, underlain mainly by limestone parent rock. Rainfall averages about 42 inches. Elevations are from 300 to 500 feet except along the river valleys where they are lower. The principal stream is the Conestoga River. Topography is very gently rolling with most slopes well under 12%.  

Overview
This narrative divides Lancaster Plain agricultural history into four broad periods. During the first, from about 1730 to about 1780, Lancaster Plain farm families got established and developed highly diverse production for diverse uses, but mainly focusing on crops. Between the end of the eighteenth century and the end of the Civil War, Lancaster farmers reworked the colonial-era system into a crop-and-livestock regime. Between the Civil War and about 1920, tobacco was introduced into the system, and greater emphasis was placed on poultry and dairy enterprises. Between 1920 and 1960, agricultural competition forced more Lancaster Plain farmers to make

\footnote{Joseph Glass, “Agricultural Regions of Lancaster County, Pennsylvania,” MS Thesis, Department of Geography, Penn State University, 1959, maps p 20, 22, 27, 50, 51.}
adjustments; tobacco declined, while dairy, poultry, and truck farming enterprises rose. Cash inputs increased dramatically and horse farming declined. Overall, Lancaster Plain agriculture remained small scale, highly diversified, and intensive.

Throughout nearly the entire period, farming on the Lancaster Plain was more intensive and mechanized than virtually anywhere in the state. Labor was supplied by family; by bound and later wage laborers; and by tenants, a very numerous group. The Plain Sect presence in agriculture was negligible until well into the twentieth century, and even then Plain Sect farm families were a minority. Culturally, the most notable group was the mainstream Pennsylvania Germans.

![Figure 2: Lancaster County number of farms, 1850-1960.](image)

![Figure 3: Lancaster County average farm size, c.1800-1960.](image)

### Historical Farming Systems

**Diverse Production for Diverse Uses, c. 1730 to about 1780**

**Products, c 1730-1780**

This context is more heavily based on secondary sources than other narratives in this series, but primary material still informs the analysis to some extent. Colonial southeastern Pennsylvania has attracted considerable attention from scholars, and a body of secondary work has accumulated which will serve well to identify important agricultural trends for the colonial and revolutionary war period. The literature diverges somewhat in historiographical interpretation, with recent work modifying earlier conclusions.

In addition, a Multiple Property Documentation Form for Lancaster County agriculture was completed in the early 1990s, and appeared in published form in 1994 as *Foundations in a Fertile Soil*, by David Schneider. The present narrative therefore builds on this work, though it differs somewhat in periodization, approach, and findings. The main difference is that this study employs an integrated “farming systems” approach, taking into account labor systems and land tenure as well as production for diverse use rather than focusing on commodity production.

Geographer James T. Lemon’s account of *The Best Poor Man’s Country* (1972) is still the place to begin for analysis of colonial Lancaster County. Lemon’s primary source base was vast, and included contemporary accounts, family papers, tax records, probate records, real estate records, and published materials. His account has held up quite well except for a few points which will be discussed below.

Land purchases were made in 1718 for the area that now includes Lancaster County; Lancaster County was created in 1729. Even then it was sparsely populated except for a few settlements south of the present Lancaster City and Warwick Township, near Lititz. But by about 1760, settlement was well along and the population in southeastern Pennsylvania (Lancaster, Chester, Berks, Bucks, Philadelphia) had exceeded 100,000. The Lancaster Plain, Lemon notes, “contained the richest
medley” of immigrant groups, including Huguenots, German Dunkers, Welsh Anglicans, and Mennonites, as well as English, Germans, and Scots Irish people representing mainstream Protestant denominations. Over time, it became more heavily German-speaking; Lemon estimates that by about 1780, two-thirds of the entire county’s population was German-speaking. In 1754 Governor Pownall described the land around Pequea: “a rich landscape – farms surrounded with apple and pear trees. The farmers, proprietors, not tenants. On every farm a lime kiln, and the land adapted for the best kind of wheat. On inquiry, the finest farms are all owned by Switzers.”

By about 1740, agriculture in the Lancaster Plain was taking shape amid constant flux in population movement and makeup, land tenure arrangements, and economic development. Land prices rose, and the average size of land holdings dropped between 1730 and 1760. The tenant class grew, to about a third of taxables.

Farming in southeastern Pennsylvania was conducted along the lines of what Lemon calls “general mixed farming and extensive use of the land.” He wrote: “Farmers used their land to produce a wide range of crops and livestock for home use and for sale.” By “extensive,” Lemon meant that land was cropped “superficially,” without high inputs of fertilizer and sophisticated techniques. Fallow land, woodlot, and meadow (hay lands, often cut from whatever plants took root without deliberate seeding) took up a relatively large proportion of land. Soil was “rested” through fallows. Livestock were few. Orchard, cropland, and gardens took more attention.

Historians have often connected extensive farming with self-sufficing or non-market agriculture. However, colonial Pennsylvania’s farms were rarely as self-sufficient as period observers such as Hector St. John de Crevecoeur claimed. Indeed, the often-made distinction between subsistence and market farming does not work well at all in the colonial Pennsylvania context. From the start, Pennsylvania farming families participated in the global commodities trade, sending products across the Atlantic and to the Caribbean. Around 1730, historian Brooke Hunter notes, population growth, war, and crop failures in Europe stimulated an “explosive growth in demand” for grain, and Pennsylvania farmers were well positioned to respond. They raised grain to sell to Philadelphia millers, who in turn exported flour. The burgeoning West Indies plantation economy soaked up all sorts of provisions including flour and meat. Pennsylvania-produced foodstuffs were also sent along the coastwise trade from New England to the Carolinas. A road connected Lancaster to Philadelphia as early as 1733, so it is clear that Lancaster farmers contributed agricultural products to those sent out from Philadelphia. The famed Conestoga draft horse and Conestoga wagon originated in Lancaster County.


Although the wheat crop has received the most attention, market strategies were highly diversified. Lemon noted a variety of farm products, evidence for which appeared in wills, journals, travellers’ accounts, and other sources. Crops included wheat, rye, barley, oats, buckwheat, Indian corn, potatoes, turnips, cabbage, apples, peaches, cherries, flax, flax seed, hemp (for which the township of Hempfield was named), and hay. Pork, beef, mutton, eggs, wool, and butter were typical animal products. Fruit and grain were processed into cider and liquor. Farmers raised and sold cattle, sheep, swine, horses, poultry, and bees. They gathered nuts and berries, and made maple sugar from their woodlots. The Lancaster County MPDF mentions spelt as an early grain (citing 19th century county histories), and foodways writers also frequently mention this European grain, but standard histories do not mention it at all.

Michael Kennedy, in a well-researched 2000 article, has modified some of Lemon’s arguments about local markets in colonial Pennsylvania. Lemon, as a historical geographer, assumed that central places (ie towns) were necessary to the creation of local markets for farm produce; he was preoccupied with testing von Thienen’s famous hypothesis about how distance from a central place determines the nature of agricultural production. Because of this perspective, Lemon’s work left unanswered questions. There were few such population centers in mid 18th century Pennsylvania; indeed, Lemon himself noted that the colonists preferred dispersed settlement. At the same time, the percentage of non-farmers – ie consumers -- was growing, and clearly farmers were marketing products. So, where did they sell their wares if not in towns? Kennedy has solved this puzzle convincingly; he shows that the central place function was served not by towns but by stores located at ironworks and mills. These stores were liberally distributed and virtually every southeastern Pennsylvania household was situated near at least one. Kennedy explains not only where the markets were located physically, but also links them to the growing population of landless consumers.

Kennedy also adds to the list of products marketed. Beans, onions, wood, veal, parsnips, venison, cucumbers, molasses, greens, peas, leather, limestone, tallow, wax, straw, hops, hides, and feathers

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6 Levi Huber, “Two Hundred Years of Farming in Lancaster County,” Journal of the Lancaster County Historical Society 34 (1930), 97-110. A search of the digitized Pennsylvania Gazette turned up but one mention, of a mill in Northampton County that advertised stones for grinding spelt. March 20, 1766. Obtained through Accessible Archives.
were raw farm products mentioned in mill and ironwork store records. Others included processed items such as stockings, clothing, linen, baskets, soap, thread, cheese, vinegar, shingles, charcoal, and candles. In all, Kennedy enumerated 118 different farm products traded at these outlets. Kennedy concludes that “many more Pennsylvanians produced more crops for markets than previously assumed.” His work is persuasive because, unlike Lemon, he is able to document actual sales rather than needing to rely on extrapolation as Lemon often did. Kennedy also makes other important observations. His estimate for average farm acreage is significantly lower than Lemon’s (88 vs about 125 across the region); and he contends that given their limited space, a typical farm family would have less diversified production than Lemon assumed. In other words, all Lancaster Plain farms were diversified, but they didn’t all produce the same mix. It was the collective total that created the overall diversification.  

For understanding the landscape, it is important to keep in mind Kennedy’s observation that even though colonial Pennsylvania farms collectively produced an astonishing variety of items, typically on an individual farm agriculture took place on a quite modest scale. Arthur Lord’s work is consistent with Kennedy’s. Lord used Lancaster County tax records to estimate that in the mid 18th century, only about 40 acres of a typical farm in Lancaster County was cleared, out of a total acreage of 135. Of the cleared acreage, only about 9-10 acres were sown in grain, and in those fields, wheat shared space with oats, rye, barley, and buckwheat. Meadow provided hay, and most farms had fallow land, pasture, gardens, orchards, and woodlot. Animals were few in number (2.6 horses, 4.5 cattle, and 5 sheep on average), and they often grazed in woodland. Just enough were kept as could be fed through the winter. Indeed, Lord found that the average number of cattle listed in Lancaster County tax records actually was smaller in 1772 than in 1758.

When Lancaster County is under discussion, inevitably the question arises about whether cultural background influenced agriculture. More precisely, were Germans truly more knowledgeable about land choices (taking up the good limestone land) and more careful about agricultural practices than were their “English” or “Scots-Irish” neighbors? Over the years, countless local histories and advertising blurbs have played infinite variations on this motif. Of course, this is not only because contemporary observers voiced definite opinions about whether the Germans were good or bad farmers; it is also because an image of thrifty, productive Pennsylvania German farms has exerted a long-standing hold over popular notions of Lancaster County. This image was cultivated not only by mainstream Pennsylvania Germans, but also by twentieth-century tourism promoters who commodified Amish culture (a tiny subgroup) and conflated it with Pennsylvania German culture. 

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7 Michael V. Kennedy, "Cash for His Turnups": Agricultural Production for Local Markets in Colonial Pennsylvania, 1725-1783, "Agricultural History," 74, No. 3 (Summer, 2000), 587-608. Quote is from page 606.
8 Arthur Lord, "The Pre-Revolutionary Agriculture of Lancaster County Pennsylvania," Proceedings of the Lancaster County Historical Society, Hilarymas 1975, 23-42. We see here that Lord’s, Kennedy’s, and Lemon’s estimate of average farm size diverge significantly. The discrepancies reflect different geographic areas covered by the three, and also the difficulties created by fragmentary and ambiguous source materials.
more generally. The whole question has become laden with preconceptions, ethnic pride, and romantic overlay.  

James Lemon and Arthur C. Lord have addressed the issue for the colonial period. (Others have tackled it for the revolutionary and early national period, and they will be discussed later.) Lemon argued strenuously that there was no correlation between agricultural practices and national origin in the colonial period. Some histories made a link between European practices and German farming in the New World, arguing that because people from Germany knew about rotations and stall feeding, that they must have brought those practices here and used them on the Lancaster Plain. But Lemon noted that initially, people from all groups abandoned European-style nucleated settlements and adopted New World crops like maize, not to mention an “extensive” agriculture. He found no evidence that German farms were either more productive or different in their crop mix from English farms. Lord thought that Germans perhaps favored cattle and English people sheep, but beyond that he was forced to admit that “a greater difference was expected between the Anglo and Germanic farmers than was found in the data.” For the colonial period at least, the weight of evidence seems to be against substantial ethnic differences in agricultural practices. Circumstances differed too much from settled European circumstances in these early years for farmers to be able to invest in European-style labor intensive agriculture.

Labor and Land Tenure, 1730-1780

For most of the eighteen century, agrarian families applied their energies to the basic tasks of making a farm: clearing, plowing, fencing, and planting. Farm labor was overwhelmingly performed by hand, and many workers were needed. Farm workers were typically “bound” or “unfree” in some way: some were family members, and others were un-free redemptioners, indentured servants, cottager tenants, or (infrequently) slaves. Women contributed significantly to the agricultural economy. Michael Kennedy persuasively documents that women performed a very large portion of agricultural labor, not only in tasks traditionally allocated to women (spinning, dairying, needlework) but field work as well. So it appears that there was no hard and fast gender division of labor.


Tenancy was a pervasive institution in southeastern Pennsylvania during the colonial period. Lemon estimated that "... in 1760 and 1782 about thirty percent of Lancaster’s and Chester’s married taxpayers were landless, and about the same number of farmers fell into the tenant category, possibly half of them sharecroppers." These figures pertain only to taxables, not representing even all household heads.13 Access to land was far from broad.

A nineteenth-century county history described one sort of tenancy arrangement. The author noted that many redemptioners "seemed to claim a kind of patronage from their masters, and usually contrived to get a small house with a garden and potato patch. Their rent was so many days’ work in harvest, or other farmer’s work: many of them were tradesmen – weavers, shoemakers; and were paid for their work in grain, etc. Harvest wages were half a bushel of wheat; raising grain was not the principal object with the farmers, for there was not a market for it: hops and hemp were the sources of profit. Many of these persons were Germans..."14

Buildings and Landscapes, 1730-1780

Farm House, 1730-1780

As late as 1798, poorly lighted one story log buildings, typically measuring 30 by 24 feet, made up three-quarters of the county’s housing stock. We may therefore be reasonably confident that the typical mid 18th century house was at least as small and primitive.15 These modest dwellings have all but vanished from the landscape, leaving much grander and less representative extant buildings. Among these the three-room “Continental” house has received the most attention from scholars, though other types were built and do survive. Here the discussion focuses mainly on these houses as agriculturally productive spaces; their cultural and architectural significance is very well covered in other places.

Figure 4: Dohner farm house, East Lampeter Township, Lancaster County.

Surviving “Continental” houses share some distinguishing features: the central roof-ridge chimney, asymmetrically arranged openings, steep roof pitch, banked construction, and three- or four-room interior plan. The main entrance led to the “küche” or kitchen, a long narrow room with a large walk-in hearth; another door led out the other end. In the adjoining “stube” or stove room, a five-
plate stove backed up onto the hearth wall and was vented out the central chimney. Behind the “stube” an unheated “kammer” served as the primary bedroom. Few buildings were ethnically ‘pure’ in the Pennsylvania context; the Frederick White House, for example, has both “Germanic” and “Huguenot” characteristics.16

These imposing early and mid 18th century buildings served multiple agricultural purposes. Many had attic granaries where the most valuable farm product was stored before marketing.17 The attic could also be organized to provide a smoke chamber -- an enclosed space surrounding an outlet built into the chimney where smoke could be released to cure meat. Moving downward, many productive activities took place in the “küche” or kitchen, especially food preservation. Finally, another major productive space often found in large Lancaster County houses of the period was the vaulted cellar. This large underground space afforded ample facilities for cool storage and dairy processing.

Figure 5: Vaulted cellar, Benedict Eshleman House, Conestoga Township, Lancaster County.

Ancillary houses, 1730-1780
The 1798 Direct Tax records list many small log tenant houses on properties that also had larger houses. For example, in Conestoga Township, Conrad Brown lived in an 18 by 20 log house on property owned by Henry Dietrich. Dietrich, the landlord, owned 199 acres and lived in a two story limestone house with 12 lights worth $650. While we can’t assume that the identical buildings were present fifty years earlier, secondary research confirms that tenant housing was often provided, and that there was a hierarchy. It is difficult to confirm any extant tenant houses in the Lancaster Plain from this period.

Barns, 1730-1780
Since oxen and cattle could subsist on hay stacked outdoors and by grazing, few farmers needed much storage space for fodder. Small corn cribs and occasionally granaries accommodated the crops.18 The need for centralized barn space was minimal. Even as late as 1798, a third of Hempfield Township men explicitly identified as “farmers” lacked barns. Most barns were log, and most were small to moderate in size, roughly 300 to 1000 square feet.19 Roofs were sometimes

16 Lancaster County Architecture, 1700-1850.
thatched. Typical Pre-Revolutionary barn forms were relatively simple. One type, the "Grundscheier," or ground barn, was a tripartite, ground-level barn with stable, threshing floor, and mow arranged crosswise to the roof ridge, and with access gained through eaves-side doors. These were made of log, frame, or stone. Nicholas Hollinger Barn in Conoy Township, c 1779, is one example.20

The distinguished student of the Pennsylvania Barn, Robert Ensminger, has suggested that the classic “Sweitzer” barn form (a two-level banked barn, recognized by its asymmetrical gable-end profile with the projecting forebay) was first developed in the Conestoga region on the Lancaster Plain; some of the earliest extant examples, one dating to 1739 (the Herman barn, a log Sweitzer), and 1754 (the Isaac Long barn, Figure 6), are located there. These barns anticipated developments to come and the type will be discussed more fully in the next section.

Figure 6: Isaac Long Barn, Manheim Township, Lancaster County.

Outbuildings, c 1730-1780:
Few outbuildings have been definitely documented to this period. There is a combination smokehouse/summer kitchen c 1780 on the Haldeman property, described in Historic Preservation Bureau files at URL http://www.arch.state.pa.us/pdfs/H001083_01B.pdf.

Landscape Features, c 1730-1780
Few colonial landscape features will have survived. Documentary evidence (such as travellers’ accounts or advertisements) suggest that Lancaster Plain farms had a patchwork of small cropfields; meadow; pasture; fallow land; woodlot; and sometimes irrigated plots as well. Irrigation was mentioned more than once in historical sources and in numerous real estate advertisements. A “Swiss” farm between Lancaster and Wright’s ferry had irrigation works described thus: the method of watering meadows by cutting troughs in the side of the hill for the springs to run in. – the water would run over the sides and water the whole of the ground.”21 Real estate ads commonly touted “well watered meadows” and noted that more could be “made,” thus emphasizing that these fields were created, not natural. 22

Diversified Production, Intensification, and Livestock Raising, c. 1780-1865

Products, c. 1780-1865
After independence and into the 19th century, the region’s agricultural production began to shift away from the system Lemon described. The essential change was a shift from an extensive, mainly crop-based system to a more intensive crop-and-livestock system. Intensive crop farming in this instance meant rotations, with less or no fallow land, use of clover and lime, and continual

21 Pownall’s description was quoted in Mombert, An Authentic History of Lancaster County, 371.
22 See for example an ad in the Pennsylvania Gazette for September 15, 1784. There are many more instances. Obtained through Accessible Archives.
replenishment with manure in a continual, self-renewing cycle. The precise timing and nature of this shift are very difficult to ascertain, for local tax assessment records ceased systematically to collect agricultural data late in the 18th century, and the federal government did not begin its agricultural census effort until 1840. So there is a half-century gap in quantitative data. The available qualitative documentation is ambiguous for the late 18th century, but there is more plentiful and less equivocal data showing that farming systems had indeed changed by about 1840.23

Figure 7: Farm land use, 1850.
Figure 8: Lancaster County Farm Crops, 1850.
Figure 9: Lancaster County Farm Livestock, 1850.

A few Lancaster County farmers were probably turning to intensive crop and livestock husbandry in the late eighteenth century, but available evidence suggests that the practice was not yet widespread.24 Assessed livestock numbers actually fell from the 1750s to the 1780s. For a time, other options were probably more attractive. After the Revolutionary War, a resurgent demand for wheat, flour, and other foodstuffs stimulated Pennsylvania production for export, into the first decade of the new century. Since Lancaster Plain conditions lent themselves so well to crop production, farmers must have felt a strong compulsion to keep on growing wheat and corn crops while overseas demand for grain was so strong.

Yet other forces in the late eighteenth and early nineteenth centuries were combining to force farmers to reorganize agricultural production and methods. The infamous Hessian fly invaded southeastern Pennsylvania in the 1790s and caused widespread devastation, prompting farmers to reconsider their overreliance on wheat. In 1807, Thomas Jefferson's Embargo delivered another blow to grain producers. The Panic of 1819 and ensuing depression also forced readjustments. Land prices in the county plummeted for a time.25 Some histories mention problems with soil exhaustion. Though painful, these disruptions were eventually overcome, because the much anticipated “home market” was becoming a reality, as the nonagricultural population in the young republic expanded. The emergence of nearby urban centers and the general affluence of American consumers helped to turn farmers’ attention to producing meat, as well as bulky items that could be marketed locally. Thus hay, livestock for meat, and dairy products became attractive. An important artery leading to Philadelphia, the Lancaster Pike, was finished in 1794 and this stimulated new

24 Fletcher, *Pennsylvania Agriculture and Country Life*, 181; Lemon, *Best Poor Man’s Country*, 197-8. The *Pennsylvania Gazette* announced in 1776 that one Thomas Smith bought six beef cattle in Leacock Township, leaving as security a “small chestnut horse.” In 1788 Sebastian Graff, “living near Lancaster,” advertised “About thirty head of cattle, Such as Heifers, Steers and Cows, fit to be turned into grass the ensuing season.” Accessible Archives.
25 Ellis and Evans, *History of Lancaster County*, 351.
agricultural productions. The Lancaster Plain soon was laced with roads and eventually with railroads, and was ideally positioned to participate fully in this economic development.

A telling account of how the Hessian fly forced changes came from a “Lancaster County Farmer” writing from Salisbury, Pennsylvania to the American Farmer in 1820. He described the devastation not only of wheat, but of barley crops in Lancaster County beginning in 1789, and how anxious it made farmers, because “the farmers of Lancaster County, chiefly depended upon their wheat crops as their staple at that time.... grazing not being practiced among us, were the more concerned how we should make our farms profitable.”

His solution was to plant later, so that frost would kill some of the insects, but also to institute a “rotation of crops” in which Indian corn, barley, wheat, rye, and clover were rotated and treated with barn yard manure; he “also commenced raising sheep and grazing cattle...” He concluded proudly: “the Hessian fly, instead of being a curse, has had the contrary effect; my land is now in as productive a state as I can desire...”

The 1842 Farmer’s Register described a very similar “cropping system” in southeastern Pennsylvania: farmers “plough a sod field, in the fall or spring, for corn, which is cut up at the ground, following crop oats or barley, then manured and put into wheat; after which it is put down to grass, generally clover, without and with timothy...” The observer added: “this system is the most laborious, hence it is uniformly adopted by the German farmers, on our best lands.” The article also noted that many farmers practiced what he called “mixed” farming, combining grass and livestock production. The same article described how cattle from Greene and Mercer Counties (in western Pennsylvania) were being driven east and “sold in Lancaster and Chester counties, to be fed off.” In 1846, another author noted that “Lancaster, York, and Dauphin are fast following the example of Chester” in fattening beef animals; this writer attributed the trend to the decline in distilling, declaring that most Lancaster County distilleries were now “defunct.” It seems that temperance was yet another factor in agricultural change.

Cattle feeding was just one component of a system that was diverse and complex. Swine, for example, were quite important; by 1850 several Lancaster Plain townships averaged more than fifteen hogs per farm. Cattle, hogs, and horses complemented a very productive cropping system. As before, an immense variety of crops and products came off of Lancaster County farms. It is important to note that Lancaster was a top farming county in a state that in 1850 still was the

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26 Ellis and Evans, History of Lancaster County, 180. Gerald Lestz, A Brief History of Transportation in Lancaster County (Ephrata, PA: Science Press, 1979); also H. W. Kriebel, Seeing Lancaster County from a Trolley Window (Littitz, PA: the Express Printing Company, 1910), 76.
27 “For the American Farmer,” American Farmer February 25, 1820, 48; APS online.
nation’s top wheat and rye producer: the county was first in Pennsylvania clover seed production, and second in oats, potatoes, hay, and buckwheat. The shift in farming meant that instead of forming the primary basis of agricultural production, grains and hay were now integrated into a crop and livestock system.

While beef stall feeding commanded the greatest attention, butter dairying also claimed a place on the Lancaster Plain farm. In several Lancaster Plain townships (Leacock for example) butter production was well above state averages. Women there made over 700 pounds of butter on average in 1850. Most of this product would have gone to market.

Lime was another important farm “product” on the Lancaster Plain. A farmer from Pequea writes to the American Farmer in 1823 that “every farmer is anxious to get a lime-kiln built... observing that they have too long been putting their farms in their pockets.” Lime (calcium oxide) is made by burning limestone (calcium carbonate) in a lime kiln, commonly distributed along major roadways. Wood (later coal) was used for fuel. By 1864 the county atlas shows numerous lime kilns. Lime figures in agricultural histories as an important early dressing for fields where soil acidity was too high. As well, it worked in conjunction with clover to produce high quality hay. However, generally Lancaster Plain soils have low lime requirements.29 We should consider lime more broadly. Lime was a key ingredient in mortar, plaster, and whitewash. It was also used as a disinfectant in outdoor privies. Given its many uses, lime could generate income. Alan G. Keyser and Frederick Weiser write: “lime sometimes had to be hauled great distances to meet the needs of persons who lacked it on their property.”30

Figure 10: Paradise Township, 1864, showing lime kiln locations.

Improved land accounted for a disproportionately high amount of Lancaster County’s nineteenth century farmlands. Seventy-seven percent of a typical 1850 Lancaster County farm was improved, which the Census defined as land “cleared and used for grazing, grass or tillage, or which is now fallow.”31 Lancaster County ranked twelfth in the state in this category in 1850, and by 1860 it was sixth. Wood land was correspondingly scarce. Farms were smaller than in the eighteenth century, and they were smaller than the contemporary Pennsylvania average (92 vs 117 total acres in 1850). However, per-farm total crop production far exceeded statewide averages for corn, oats, wheat, and hay. Land productivity (that is, production per improved acre) was also higher: overall the average Lancaster County farm in 1850 produced more grain crops per improved acre than in Pennsylvania generally – about 12 bushels to 10 for the average Pennsylvania farm.

30 H. Winslow Fegley, Farming, Always Farming. (Birdsboro, PA: The Pennsylvania German Society, 1986), caption to Figure 91, page 103. Thanks also to Jeffrey Graybill, Lancaster County Agricultural Extension. See also Ellis and Evans, History of Lancaster County, 351.
31 U. S. Census of Agriculture, 1850, Instructions to Marshals and Assistants, xxiii.
Many histories connect this high productivity to superior farming methods, but it is just as likely that it was due to naturally superior soil productivity. We know from modern soil surveys that Lancaster Plain soils are naturally more productive than most other Pennsylvania soils; indeed, the “index of relative productivity” places other Pennsylvania soils between 50 and 80 in relation to the Lancaster Plain’s 100, depending on the crop and location. While the new “dunghill doctrines” likely resulted in maintaining soil fertility and productivity, there is insufficient evidence (despite claims to the contrary) to conclude that productivity was actually improving on a long-term basis. Absolute production was increasing significantly, because land was still being cleared; but in general, productivity (ie per-acre production) was probably static.  

Because such a high percentage of land was in crops, and because the land was so naturally fertile on the Lancaster Plain, some townships’ crop production was double the state average. Upper Leacock, Paradise, and East Donegal farms averaged well over 1400 total bushels per farm (including corn, wheat, oats, rye, buckwheat, barley, and potatoes), while the average Pennsylvania farm produced around 500 total bushels. This doesn’t count hay production, which also was well above average in Lancaster County, at seventeen tons per farm annually. Other products added to this diversity. With the new emphasis on rotation and clover, clover seed came into demand. A contributor to the *American Farmer* in 1820 described the “Pennsylvania mode of getting out clover seed,” declaring that Chester and Lancaster Counties were “two of the first counties that became eminent in the culture of clover in the State of Pennsylvania.” One “German farmer” he saw at market in Philadelphia was selling no less than 71 bushels of seed. Turnips, flax, flax seed, honey, beeswax, and hams were other articles produced for markets. As before, families grew and processed many orchard fruits, especially apples; and tended extensive gardens.

**Labor and Land Tenure, c. 1780-1865**

Family still supplied the most labor. This meant everyone; observers continued to note that women and girls worked in the fields. About the same time, the transition from bound to free labor was completed. Wage workers, hired in an open labor market, were more in evidence. These extra farmhands helped provide the labor that enabled farmers to put more of their acreage into production. In Lancaster County, male farm hands could command $10-15 a month and board except during harvest and haying time, when they made a dollar a day. Female “domestics” made

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33 “On the Pennsylvania Mode of Getting Out Clover Seed,” *American Farmer* January 12, 1820, page 42. APS Online. See also “Interesting Travels in America...” *The Port-Folio*, October 9, 1802, page 40; APS online.


only $4 per month.\textsuperscript{36} Farm tenancy continued to be common, though no hard quantitative figures are available before 1880.

Because Lancaster Plain farming was so intensive, mechanization levels were very high. In 1850 the average Lancaster County farm had $171 worth of implements, as compared with Pennsylvania at $113, on much larger farms.\textsuperscript{37}

**Buildings and Landscapes, c 1780-1865**

**Farm House, c 1780-1865**

Many more Lancaster Plain farm houses survive from the first half of the nineteenth century. Even taking into account that surviving buildings usually represent wealthier families, these houses illustrate the region’s prosperity. The Federal and Georgian styles are well-represented; they typically had symmetrical facades, often five bays with a central doorway. By the late nineteenth century Italianate and Victorian Gothic ornament were appearing in the county.\textsuperscript{38}

![Figure 11: Farmhouse, East Hempfield Township, Lancaster County.](image)

![Figure 12: Two-door farm house, East Lampeter Township, Lancaster County.](image)

![Figure 13: Three-level, two-door house, Pequea Township, Lancaster County.](image)

The four-bay house, often with two doors, was popular for a time. This type has uncertain origins; the most thorough work so far has concluded that in York County, it represents Pennsylvania German cultural accommodation in the sense that it blended elements of “English” and “German” cultural repertoires. It does seem clear that the form was most popular in German Pennsylvania during the entire nineteenth century.

The examples included above from the Historic Preservation Bureau files illustrate how Lancaster Plain farm families made variations on the basic form. The Musser and Bassler Landis houses are both substantial brick double-pile, two-story houses with end chimneys. The Haverstick House continues the earlier custom of devoting significant space to productive areas, in this case a full basement kitchen. Numerous documented examples from the nineteenth century also had vaulted cellar storage rooms, reflecting not only an enlarged subsistence sector but probably also enhanced home dairy production for market.\textsuperscript{39}

![Figure 14: Farm house, Conestoga Township, Lancaster County.](image)

**Tenant House, c 1780-1865**


\textsuperscript{38} Schneider, *Foundations in a Fertile Soil*, 52-56

\textsuperscript{39} For further discussion of Lancaster County rural houses, see Schneider, *Foundations in a Fertile Soil*; and *Lancaster County Architecture, 1700-1850*. 
Since tenancy was so prevalent, there must have been a good many farm tenant houses. Documentary efforts haven’t really focused on tenancy, so we don’t know much about this. However, it is quite likely that many smaller houses probably served tenants, and that many farms had more than one house. Nineteenth-century real estate ads for farms usually mentioned tenant houses. The Historic Preservation Bureau files note several enclaves with groups of very similar small rural houses that could conceivably have served as tenant quarters.\textsuperscript{40}

\textbf{Barns, c 1780-1865}

During this period, the Pennsylvania Barn became ubiquitous on the Lancaster Plain. This famous type has as its main diagnostic feature the projecting 7-8 foot forebay, or overshoot. The barn is banked, and organized such that the upper level consists of central threshing floor(s), flanked by mows for hay, straw, or unthreshed grain; and one or more granaries (sometimes in the forebay, sometimes next to a mow on the bank side). The Pennsylvania Barn almost always has a gable roof. On the lower level, stable and stalls (organized crosswise to the roof ridge, separated by alleyways for humans) housed horses, milk cows, beef cattle, and sometimes sheep or hogs.\textsuperscript{41}

The Pennsylvania Barn was a highly flexible form. It ranged in size from just twenty feet long to over a hundred. It could also accommodate features such as an "outshoot" or "outshed" that would extend back from the bank side; multiple threshing floors and haymows; a root cellar; a corncrib/machinery shed extension; a machinery bay on the lower level; or a 'horse power' on the bank side, or sometimes in the basement. The forebay might project unsupported, or it might have supporting endwalls or posts. Nomenclature for these various features varies, too. But, it is important to remember that in order to be considered a Pennsylvania Barn, a barn must have these essential features: a projecting forebay and banked construction, almost invariably with the eaves side in the bank.

The Pennsylvania Barn exemplified and facilitated the new grain-and-livestock agriculture. That is why it appeared when it did. Historian Steven Stoll has compared the Pennsylvania Barn to a cow – taking in raw materials and producing milk, meat, and manure. Indeed, the barn promoted productivity and its stable level and yard functioned to collect the valuable manure (generated with feed stored in the upper levels) and to combine it with straw to make it the perfect dressing for crop fields. A local historian wrote that “straw, grain, corn stalks, and refuse from the stables” were “trampled under the feet of fattening cattle during the winter. The barn-yards were cleaned once a year... and this refuse was spread over the fields and plowed under the soil.... the farmer who had a

\textsuperscript{40} For advertisements describing farms with tenant houses, see: \textit{Lancaster Journal}, September 1, 1826, an ad for a property with a “comfortable Log Tenement...suitable for a tenant;” \textit{Lancaster Intelligencer} January 4, 1848, page 4, farm with a stone dwelling house and “good Tenant House;” \textit{Lancaster Intelligencer} September 12, 1848, page 3, a two story brick farm house and a one-story brick tenant house;” Farm in Lampeter with a “large two-story brick dwelling house 50 by 40 feet [and] a Tenant House...” All obtained via Lancaster County Historical Society Digitization Project, http://lcdp.wetpaint.com/. BHP files that include likely tenant houses are a “small group of apparently related one story brick houses” in Conestoga Township and a tenant house at the Swarr-Harnish Farm in Manheim Township.

\textsuperscript{41} Robert Ensminger calls this the “Standard Pennsylvania Barn.” Here the more generic term “Pennsylvania Barn” is used to emphasize all the shared characteristics rather than draw attention to subtypes.
large barn-yard full of manure to haul out, after harvest, was looked upon as a model.” The barn design fit with the rising agricultural reform movement of the day, though whether it did so self-consciously is doubtful.

With its rational, centralized organization and gravity-fed multi-level arrangement, the Pennsylvania Barn also represented a response to an increased need for labor efficiency. Provision for horses reflected mechanization.

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**Figure 15**: Historic Photo, Schreiner barn, Lititz vicinity, 1941.
**Figure 16**: Windom Mill barn, Manor Township, Lancaster County.
**Figure 17**: Windom Mill barn floor plan, main block.
**Figure 18**: Windom Mill Farm, site plan.
**Figure 19**: Historic Photo, Christian and Fanny Landis Barn, Lancaster vicinity, post-1933.
**Figure 20**: Historic Photo, lower level interior, Jacob and Elizabeth Miller Barn, 1933, Lancaster vicinity.

**Still House, c 1780-1865**
Still houses were apparently not uncommon in this period, but no extant examples were found in research for this document.\(^{43}\)

**Lime Kiln, c 1780-1865**
Lime kilns were dry laid masonry structures which tapered from base to top and had openings in the base. Limestone was deposited into the stack through a hole in the top; the fire was built in the hearth below. The intense temperature caused a reaction which converted limestone (calcium carbonate) to lime (calcium oxide). After cooling, the lime was raked from the bottom. As we have seen, lime kilns were common on the Lancaster Plain and were often sited along a road.

**Figure 21**: Double lime kiln, Manheim Township, Lancaster County.

**Spring House, c 1780-1865**
Spring houses supported home dairying and played an essential role in preserving other foods.

**Figure 22**: Spring house, David Davis Farm, Earl Township, Lancaster County.

**Smoke house, c. 1780-1865**
By the nineteenth century, free standing smoke houses were more common than attic smoke chambers. They still served the same purpose: to provide a specialized space where meat (almost always hams and bacon) was cured using smoke. The smoke house usually was a small building

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\(^{42}\) Huber, “Two Hundred Years of Farming in Lancaster County,” 99. See also *New England Farmer* September 25, 1829 page 80 (American Periodicals Series online)

with a more or less square footprint; an entry door; a gable or pyramid roof; and no openings, so the smoke would stay in the chamber. It was usually sited near the house.

**Figure 23:** Smokehouse, East Earl Township, Lancaster County.

**Figure 24:** Smokehouse, East Earl Township, Lancaster County.

**Summer kitchen, c 1780-1865**
It is not certain how common summer kitchens were during this period, but probably by the Civil War Era their numbers were beginning to rise.

**Figure 25:** Historic Photo “Fry homestead, which has been in the family for seven generations,” Ephrata vicinity, 1942.

**Figure 26:** Summer kitchen, Hibschman Farm, Ephrata Township, Lancaster County.

**Figure 27:** Summer kitchen, bake house, and smoke house, Denver Borough, Lancaster County.

Real estate advertisements for the period mention many other outbuildings, including machine sheds, corn cribs, still houses, root cellars, ice houses, privies, wash houses, hay houses, cattle sheds, stables, a “Grain House,” and a “Corn Kiln.”

**Landscape, c 1780-1865**
Probably few landscape features have survived from this period. Crop fields would have been relatively small and irregularly shaped, given the metes-and-bounds property system prevalent in southeastern Pennsylvania, and the small field sizes in conventional rotation. Hay meadow probably accounted for a significant chunk of the farm lands, perhaps as many as 10-15 acres.

Woodlots were small and shrinking. Farm burial grounds are mentioned and depicted in Schneider.

**Crops, Livestock, and Tobacco, c 1865- about 1920**

**Products, 1865-about 1920**
The signature characteristic of this era was development. Between the post-Civil War years and the Great Depression, Lancaster County farming families added multiple layers to their agricultural system, while eliminating few. The single most important addition to the farming system was tobacco. It was smoothly integrated into the existing stall feeding and crop system in the late 19th century. At the same time, the farm subsistence base was diversified and elaborated; farm families added new fruits, vegetables, and processed foods to the traditional favorites. Beginning around 1900, Lancaster County farm families expanded fluid milk dairying and simultaneously

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45 Huber, “Two Hundred Years of Lancaster Farming,” 108.

curtailed home butter production. At the same time they significantly enlarged their poultry business. The net result was an even more intensified, diversified and productive farming system than before.

The crop and livestock regime enriched many a Lancaster County farm family in the antebellum years and on through the Civil War, when feeding the Union Army became a pressing concern. The war also set a tobacco boom in motion, because the supply from the Southern states was disrupted. At war’s end, development in the west posed stiff competitive challenges; cheap wheat, corn, pork, and beef flooded eastern markets and made it difficult for Eastern farmers to hold their own. Panic (1873) and agricultural depression worsened the situation. Surprising though it might be from today’s perspective, Lancaster County farmers worried about falling land values. Farm numbers grew, and farm size shrank. For some eastern Pennsylvania farm families, urban growth provided a way out of the crisis through opportunities in dairying, market gardening, and hay sales. Lancaster County farm people did all these things, and more. To be sure, as before, Lancaster Plain farms continued their diverse crop and livestock production. But the key crop – the one that really made the Lancaster Plain distinctive – was tobacco.

**Figure 28:** Lancaster County and Pennsylvania Tobacco Production, 1840-1950.

Tobacco production in Lancaster County – and indeed in Pennsylvania -- was concentrated in the Lancaster Plain. While the 2 million pounds of 1850 and the nearly 3 million of 1860 were not trifling, the decade between 1870 and 1880 dwarfed earlier production levels. It was a period of astounding growth in Lancaster County tobacco production. By 1880 Pennsylvania, led by Lancaster County, had become the nation’s third-ranking tobacco state, having increased production from about 3.5 million pounds in 1870 to 37 million pounds in 1880. By 1919 Lancaster County alone accounted for 50 million pounds. Thereafter, production dropped because the county produced exclusively cigar tobacco, and cigarettes were eclipsing cigars in popularity. Ironically, though, cheaper cigar brands -- made from domestic leaf -- weathered the challenge more successfully than the more expensive imported cigars, allowing the industry to hang on in Pennsylvania. In 2002, almost 900 Lancaster County farms raised 9.6 million pounds.

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Figure 29: “Agricultural Geography of the Cigar Tobacco Industry of the Lancaster, Pennsylvania Region” Map.

Why did farm families on the Lancaster Plain turn to tobacco? A 1982 article in *Pennsylvania History* by Daniel B. Good addressed "The Localization of Tobacco Production in Lancaster County Pennsylvania." Good argued that the "complex of cultural characteristics of Amish and Mennonite tobacco growing families" accounted for tobacco’s "localization." Plain Sect families, he reasoned, valued tobacco culture as a way to keep all family members occupied year-round in hand labor. Productive, non-mechanized family labor fit in well with Plain Sect commitments to simplicity, community, and agrarian life.\(^{50}\)

However, Good’s conclusions are erroneous. Simple demography makes it impossible that Plain Sect people accounted for most Lancaster County tobacco production before about the mid twentieth century. The eminent scholar Donald Kraybill estimates that the Amish population in Lancaster County around 1890 was only about 800. The total county population that year was nearly 150,000, and there were over 9,400 farms in the county, thousands of which were producing tobacco. Even adding other Plain Sect groups like the Mennonites and Dunkards would not account for a fraction of the tobacco growers. Good made a common mistake; he conflated "Pennsylvania German" with "Plain Sect." In fact, most Pennsylvania Germans -- about ninety percent by most estimates -- belonged to the "church" groups, Lutheran and German Reformed. They account for most of the people growing tobacco on the Lancaster Plain in the nineteenth and early twentieth centuries. As well, other, Anglo-American social groups farmed in the county. A 1935 Penn State Agricultural Experiment Station Bulletin estimated that there were 7,000 tobacco growers in the county.\(^{51}\) It is clear that the original choice to grow tobacco cannot have been motivated solely by Plain Sect values or group members.

Roger Heppell, in a 1953 Penn State thesis, attributed the Lancaster Plain localization to supposed cultural attributes, namely a broader Pennsylvania German “rugged individualism and brotherly love.”\(^{52}\) However, geographic patterns call into question even a historical connection between “mainstream” Pennsylvania German ethnicity and tobacco growing in Pennsylvania. During the cigar heyday, tobacco was quite extensively grown in river-bottom areas in the heavily Yankee Northern Tier counties, and of course the Connecticut River Valley was another important tobacco growing region in New England. Conversely, there was little tobacco grown in heavily Pennsylvania German counties like Lehigh and Berks. The geographic distribution suggests that soil conditions, local topography, and local economies had as much to do with tobacco raising as ethnicity.


\(^{51}\) W. S. Beach, “Control of Tobacco Wildfire,” Penn State Agricultural Experiment Station Bulletin # 322 (August 1935), 3.

The confusion has persisted because by the late twentieth century, probably most Lancaster County tobacco was indeed grown by Plain Sect families. Hard data is scarce, but a 1942 study by sociologist Walter Kollmorgen suggested that Plain Sect families raised tobacco because it was remunerative, and because it still required hand labor and thus did not pose religious issues. Non-Amish families gradually abandoned tobacco production, supposedly because of labor issues. The historiographical problem arose when scholars extrapolated contemporary conditions backward into historical time.  

Tobacco growing probably was initially chosen in Lancaster County for several reasons. The tobacco plant grew well in the fertile soils of the Lancaster Plain; Penn State agricultural scientists believed that the soils on the Plain produced superior leaf. Tobacco does best on land with low-relief topography, which is abundant on the Lancaster Plain. Though it was probably not a determining factor, the climate on the Lancaster Plain was well suited to tobacco. Tobacco fit very well within the existing crop and livestock system. Not least, tobacco was a very lucrative crop on a per-acre basis. Frank R. Diffenderffer of Lancaster wrote in 1879 that “Taking the average realized per acre during the past twenty years, there can be little doubt but that it has been twice as great as from any other crop Pennsylvania is accustomed to grow.” High per-acre profitability was especially important because Lancaster County farms were shrinking. By 1880 the average Lancaster County farm was 61 acres, sixth lowest in the state; there were many farms of twenty acres and even less. Farm size declined steadily to 51 acres in 1910 – the smallest Pennsylvania farm size except for Philadelphia County. The number of farms increased by over a thousand between 1880 and 1910, even as the total farm acreage declined; so farmers really needed a crop that paid well on a small acreage. Though tobacco plantings were typically under five acres, they were crucial to financial viability on these ever-smaller Lancaster County farms. Lancaster County historian Horace Barnes estimated that in 1880 only 1/25 of the arable land was in tobacco, but that tobacco accounted for 1/5 of total crop receipts. It was therefore not surprising that by 1880 in some townships (East Hempfield, for example), nearly 100 percent of farms produced tobacco.

The tobacco growing boom in Lancaster County was fueled by the mania for the “cheap five-cent cigar.” After the Civil War, cigar smoking became immensely popular, and cigar manufacturing became a major industry in Pennsylvania. Indeed, the term "stogie" derives from a Lancaster region-- the Conestoga watershed, where tobacco was grown early on.

57 Total farms in the county: From 5,629 in 1850 to 9,069 in 1880 to a peak of over 11,000 around 1925 
Some cigar tobacco, of course, was imported, but local growers furnished cigar leaf usually destined for cheap cigars, while the imported leaf went into the more expensive product. Lancaster County leaf was filler or binder leaf—the cigar’s interior. Names for the seed were numerous, but generally, over time Lancaster Plain farmers adopted what they called the "Pennsylvania seed leaf" and eventually the U. S. Government labelled it "Type 41." Short lived experiments with wrapper leaf came to nought.  

Tobacco was added to traditional field crops, rather than substituting for any of them. By 1880 the typical Lancaster Plain farm had over eighty percent of its acreage in crops. This would include a small plot for tobacco, along with corn, oats, wheat, and hay. Various rotations were practiced, but they all involved wheat, grass, corn, and tobacco. Corn production had actually increased on a per-farm basis since 1850, though other output decreased as farm size also dropped. Wheat production still exceeded Pennsylvania averages on a per-farm basis, so taking into account the small size of Lancaster farms, corn and wheat production was still disproportionately high. Buckwheat, potatoes, rye, and barley were raised in smaller quantities. The corn, oats, hay, and straw produced on the farm were mainly used for animal feed and bedding and rarely sold off the farm. Wheat, however, probably went to market; Lancaster County averaged over 200 bushels per farm in 1880, and many Lancaster Plain farms grew even more, despite Western competition.

Figure 30: Lancaster County farm crops, 1880.

The typical 1880 Lancaster County farm livestock consisted of about 2.6 horses, 3.8 milch cows, 2.8 “other” cattle, six swine, and 36 barnyard fowl. These numbers were near or even below state averages. All were below 1850 averages for the county. In understanding them, we must take into account the small (and ever declining) size of Lancaster County farms and the attention devoted to crops, yet also note that Lancaster Plain townships generally had somewhat higher numbers. A few farmers raised draft horses for sale, also likely a few at a time.

Figure 31: Lancaster County farm livestock, 1880.

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59 William Frear and E. K. Hibshman, “Production of Cigar Leaf Tobacco in Pennsylvania.”
62 It is also possible that since stall feeding typically occurred in fall and winter, and the census numbers were stated as of June 1, that the numbers of “other” cattle are too low. But they probably are not far off; if we take the overall estimate of 30,000 animals fattened in the county in 1890 and divide by 9,400 farms, we get only a little more than three beef animals per farm. The 1880 manuscript census shows that, not surprisingly, the total numbers of cattle “sold living” varied, from just a few to over thirty. However, it also shows that virtually every farm on the Plain engaged in beef cattle feeding. In other words, the low average numbers do not reflect a situation in which a very few large herds create the appearance of a low per-farm average. On draft horses, see Lancaster County, Pennsylvania, The Garden Spot of the United States, the Picturesque and Historical East End (1908; Penn State Library Digital Collections), 1; Frank B. McClain, “The Union Stock Yards and the Feeding of Cattle in Lancaster County,” in H. M. J. Klein, ed., Lancaster County, Pennsylvania: a History, (1924; Penn State Library Digital Collections ), 667-670, 955.
In sum, Lancaster Plain farming in the late 19th century was intensive (both as regards land and labor) and complex, but small scale.

Stall feeding continued to hold a key place in the Lancaster Plain farm economy, despite competition from the West. The manure was critical to maintaining soil fertility where so much depended on heavy feeding crops like tobacco and wheat. The 1880 US Census “Report on the Culture and Curing of Tobacco in the US” noted that “if the farmer only realizes a fair price for the corn fed [to steers] he looks for no other profit for his trouble, well aware that the increased size of his manure pile will make him ample amends, and that the fertility of his farm will be maintained.” The agricultural census manuscripts show that typically farmers would keep one beef animal to slaughter, and sell the rest live. A 1910 observer claimed that 30,000 steers were fattened each year in the county; twenty years later, the USDA put the estimate at between 65,000 and 80,000. One account also mentioned that each year five to ten thousand steers were purchased and grass-fed, rather than stall-fed.

During the late nineteenth century, some observers thought that artificial fertilizers were unpopular in Lancaster County. However, by the mid 1920s, the US Census published estimates indicating that Lancaster County farmers spent nearly $900,000 on fertilizer. Moreover, local boosters noted businesses such as the Lancaster Chemical Company, maker and importer of agricultural chemicals and fertilizers.

Where livestock pursuits were concerned, dairying took a back seat to cattle feeding in 1880. A few Lancaster Plain townships wholly in the Plain (notably West Lampeter) had notable dairy production, but the most productive dairy townships in the county were partially or wholly outside the Plain. Dairying competed for labor with tobacco. The 1880 manuscript agriculture census shows that except for Warwick and Strasburg Townships, almost 100 percent of milk was made into butter on the farm. An 1883 report from the county estimated that half of this butter was sent to markets outside the county, mainly Philadelphia and Baltimore. Lancaster City also consumed farm...
butter from its neighborhood. Soon, however, dairy production shifted toward fluid-milk sales, and farm-made butter declined as a proportion of the total milk production. There were two main reasons for the change. Centralized “creameries” appeared; these took milk or cream from farms and manufactured it into butter. By the early twentieth century most Lancaster County municipalities had at least one creamery.

At the same time, the refrigerated rail car combined with rapid urbanization and transport expansion to create a huge market for fluid milk, mostly for direct consumption. Rather than make milk into butter on the farm or send milk to creameries, farm families began to send fluid milk to population centers. The so-called “milk shed” (the catchment area from which a municipality received its milk supply) widened as rail networks penetrated further into the countryside. In 1914 the county agricultural extension agent noted that “the production of market milk in the vicinity of Lancaster is fast becoming greater than the local raw milk market is demanding,” so “arrangements were effected with a Philadelphia firm to accept all surplus milk at desirable rates and to provide a $10000 cooling station. He wrote that this scheme “will advance milk prices generally for the milkmen.”

Lancaster County was only an average milk producer in 1890, but thereafter per-farm production improved faster than in the state as a whole – even as farm size dropped. By 1924 less than 15 percent of Lancaster County milk was processed into butter on the farm, well under the state average. This change occurred mostly with “native” cattle rather than purebreds. In 1890 the US Census of Agriculture reported that of 66,000 cattle in the county, over 60,000 were “common or native, including grades less than one-half [pure] blood.” The point here is that increases were achieved through better feeding and shelter, and to some extent simply adding animals to the herd. Even though dairying was on the rise, it was still not as important as outside the Plain.

A look at Sanborn maps for Lancaster County shows another significant outlet for milk produced on the Lancaster Plain: candymaking. In Lititz, for example, in 1898 on the lot at 708 East Main Street, from rear to front, were ranged: an ice cream factory; a candy factory; and a stone building fronting on the street labelled “candy,” probably a retail outlet. All of these processing industries would have used milk from the surrounding countryside. David Schneider, in Foundations in a

68 Pennsylvania Board of Agriculture Annual Report, 1883, 30-31, shows a table of “statistics from correspondents.” Lancaster County respondents raised 30% of their dairy cows; sold 50% of their butter 10% of their cheese, and 15% of their milk outside the county. Milk was sent to Philadelphia, Baltimore, and Lancaster City.

69 See Lititz Sanborn Map 1898 sheet 5. On the 1927 Lititz map, Sheet 2, North Alley creamery has expanded to be Jacob H. Stover Co. Ice Plant (with Ice Tank Room and Ice Storage building); a cinder block “Bottling Works”; and an enlarged creamery at the same site as the Garber.

70 Lancaster County Agricultural Extension Archives, County Agent Report 1914, Narrative, week of May 19.

71 The figures in the US Census of Agriculture do not correspond to statements made in Schneider, Foundations in a Fertile Soil, page 27. Lancaster County was not the leading butter county in 1890; Bradford was. The figure of 8 million gallons of milk shipped in 1890 is about right, but it is important to note that milk shipped still represented only about half of the county’s total output; the remainder was made into butter on the farm.

Fertile Soil, suggests that in 1922 candy making soaked up “the equivalent of milk from two thousand farms.” In Lititz, the largest candy maker during the early 20th century was the Ideal Cocoa & Chocolate Company on North Broad Street; the 1912 map indicates that this concern operated on a substantial scale. There were two large candy factories in Mount Joy in the early 20th century. All of these markets were in or near the Plain.

Figure 32: Nissley Swiss Chocolate Inc., Mount Joy, Lancaster County, 1928 Sanborn Map.
Figure 33: Creamery, Lititz, Lancaster County, 1898 Sanborn Map.

Poultry raising expanded significantly. In 1880, Lancaster County farms had about three dozen fowl, right around the state average. But poultry numbers subsequently took off; by 1910, on much smaller farms, Lancaster County averaged 76 chickens, well above the state average. In total poultry numbers (over 800,000), Lancaster County far outstripped any other county in the state. Numbers continued to climb as poultry raising for meat and eggs assumed a central place in Lancaster Plain agriculture. Poultry raising was well adapted not only to market conditions but to small farm size.

As before, a great many farm products did not make it into the Census accounting. The butchering process, for example, resulted in sausage, scrapple, lard, ham, bacon, and fresh meat. A large vegetable patch provided edibles like cabbage, carrots, greens, turnips, rutabagas, radishes, onions, squashes, peppers, corn, beans, beets, broccoli, cucumbers, tomatoes, and celery. These all had to be processed or stored in one way or another. Virtually every farm had an orchard, dominated by apple trees. Popular local varieties included Smokehouse, Fallawader, and Red Astrachan. The fruits went into apple butter, cider, schnitz, vinegar, and sauce. Pears, cherries, and peaches were also grown. Raspberries, strawberries, gooseberries, asparagus, and rhubarb were popular. The farm wife kept busy making pickles, sauerkraut, preserves, and jams, as well as drying beans, apples, and corn.

Food processing possibilities expanded in the late 19th and early 20th century. Cheap sugar made jams and preserves affordable. Canning supplies and techniques also improved, as did stoves used in performing this work. Thus canned goods and preserves joined foods processed in traditional ways.

Truck farming expanded during this period. The city of Lancaster had several market houses throughout the city, fed by rail and trolley lines from the countryside. “In manifold ways,” a local booster proclaimed, “the traction or trolley system has brought town and country together.” Other urban facilities processed truck garden produce; for example, in Manheim there was a corn drying

73 Schneider, Foundations in a Fertile Soil, 33. Sanborn maps show many candy and confectionary establishments. See especially: Manheim 1886, Sheet 1; Manheim 1886, Sheet 3; Manheim 1896, Sheet 1; Manheim 1896 Sheet 3; Mount Joy;1928, Sheet 14; Mount Joy 1928 Sheet 4; Lititz 1912.
74 Lancaster County, Pennsylvania, the Garden Spot of the United States, the Picturesque and Historical East End (1908, Penn State Digital Collections), 5, 8; Lancaster Farmer August 1875, 114, 115. On celery culture, see Pennsylvania Agricultural Society Annual Report, 1884, 24-26.
facility in 1912, probably for drying sweet corn. Quantitative data for truck farming don’t exist for this period, but anecdotal evidence suggests that Lancaster County’s sobriquet “Garden Spot” was well earned. In 1908, for example, an observer noted “many private gardens” that sold locally, along present day Route 30 in Greenland, East Lampeter township. Indeed, truck farming took place at many points between Lancaster and Christiana. Smaller municipalities also supported truck farming. Sanborn maps show produce warehouses along town railroad sidings in Manheim in 1886. By the early 20th century, nurserymen and florists were opening large greenhouses on town peripheries. For example, in Manheim in 1912, three people with the surname Hostetter (Monroe, E. P., and P. S.) owned large greenhouses, some extending a full block. In Lititz, florist H. H. Garvin operated three large greenhouses at the corner of Spruce and West 2nd Street in 1927. These businesses likely produced plants for local truck farmers, as well as flowers and other ornamentals. Related firms like the Park Seed Company also originated in Lancaster County.

So, even as they stepped up tobacco production, continued stall feeding beef cattle, and followed intensive crop farming, Lancaster County farming families were also getting into dairying more seriously; raising many more chickens; and raising, processing, and selling more garden produce.

Labor and Land Tenure, 1865-about 1920.
It is no wonder then that despite their small size, Lancaster Plain farms were heavily mechanized. The typical 1880 Lancaster County farm had $250 worth of machinery, and in the heart of the Lancaster Plain, average machinery value reached as high as $500. Horse powered plows, reapers, mowers, threshers, grain drills, harrows, and many other implements were common sights. Many farms had a team of mules, too. As late as 1925, 39 percent of Lancaster County farms had mules, and 88 percent had horses. The horse power era had not yet passed, by any means.

Transport, however, was revolutionized by the combustion gasoline engine; close to 100 percent of Lancaster County farms had an automobile by 1925. A third of farms had electricity, and twenty percent had tractors. About a quarter had running water. All of these numbers were above state averages, some well above. The figures remind us that Lancaster County agriculture at this point was not by any means synonymous with Plain Sect technology choices.

Figure 34: Historic Photo, men and women working together in a Lancaster County tobacco field, late 19th century.

Despite heavy mechanization, much hand labor was still required on Lancaster County farms, particularly because tobacco culture demanded year-round labor. It began with sterilizing the seed bed, followed by carefully planting the tiny seeds, watering the seedlings, thinning, transplanting, weeding, cultivating, topping, suckering, de-worming, harvesting, storing, and finally stripping. Spraying for pests, cleaning seed, and steaming seed beds (for sterilization) joined other tasks by the early twentieth century. Preparation for market took a lot of work. One observer noted that the Lancaster County tobacco grower, “unlike his brethren elsewhere, prepares his tobacco in the shapes that make it easy to be handled by the dealer, sorting the leaves according to size and packing them together in neat bundles.”  

Soon after the warehouseman collected one year’s crop, preparation began for the next season. Tobacco work was not significantly mechanized in the 19th century. A few innovations appeared, such as the horse drawn transplanter, but it is not clear how many people invested in such implements when their acreage was so small.

Farm labor for raising tobacco and tending to the other myriad farm tasks was assembled from family, hired wage workers, and tenants. The discussion below takes each of these in turn, though it must be noted that often all of these types of labor were used simultaneously. Moreover, not infrequently, tenants or hired hands were also family members.

Family members supplied most labor on the Lancaster Plain farm. As elsewhere in Pennsylvania, a loose gender and age division of labor prevailed; men performed field work and handled large animals while women tended poultry and hogs, cooked, cared for children, gardened, and processed foodstuffs. Children were assigned chores. Yet, it is important to note that these lines were seldom hard and fast. There was a good deal of crossover.

Men, women and children worked in tobacco culture. For example, the 1879 Lancaster Farmer noted that “country girls from Lancaster and other counties” worked at setting out plants and weeding, for 75 cents a day.

Period photographs show women harvesting, planting, and weeding tobacco. During the winter, entire families stripped the leaves from the stalk, sized and graded them, and collected them into “hands” for market. This work usually occurred in the tobacco barn “stripping room.” One writer worried that children spent too much time stripping tobacco and not enough time in school.

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76 DeForest, Resources and Industries of Lancaster, Pennsylvania, 3.
Figure 35: Historic Photo, “Farmer (sic) at work, Lancaster County,” 1938.

No comprehensive study of Lancaster Plain farm labor has been made, but a sampling of James Frey’s collations for Earl Township in 1880 suggests that averaged sized farms combined family and hired labor. Eli Martin, for example, owned a 61-acre farm; besides his immediate family, two apparently unrelated teenage workers lived in the household: Annie Shirk, servant; and Samuel Eaby, farmhand. Levi Weaver owned 37 1/4 acres and employed servant Clara Gejar. M. Peter Zimmerman owned 100 acres and raised 10,500 pounds of tobacco; when the census taker came to his farm, residing there were Zimmerman, his wife, five daughters aged six to eighteen, plus 23 year old farmhand Jesse Ludwig. More often than not, Earl Township farm households contained servants or farmhands, some as young as nine years old. Others did not list farmhands in the household, but nonetheless paid wages. For example, Daniel Symons had a young family and rented 82 acres; he hired 52 weeks’ worth of farm labor.

Hired labor frequently was obtained from neighbors or kin. In 1910 A. G. Seyfert of Lancaster County reminisced about his days as a hired boy, back in the 1860s. At ten he was hired out to a neighbor for ten dollars a year. He felt “practically as one of the family.” For a decade he served, working for several different households. “The unwritten law of the farm was that the hired man was never his own master, and often had to work long days during the busy season of the year... I was supposed to do the morning, noon, and night feeding of the stock [on Sunday] the same as on any other day.” Yet he “always had a comfortable home, plenty to eat and no cares to worry about.” Farmhands didn’t always get paid in cash. Though one employer offered Seyfert forty dollars a year, “all I got out of it in real cash was two dollars for spending money.” Seyfert remembered his farmhand days fondly, yet ambivalence tinged his memories as well.

In addition to live-in hired farmhands and “servants,” day laborers filled out the farm wage labor force. They came from the country neighborhood (or sometimes from the city or town) and worked on an irregular basis. By the early twentieth century the trolley system connecting Lancaster with its hinterland served to move farm and factory workers back and forth.

Another common means of organizing labor in the tobacco region was tenancy. Tenant farming was already a well established part of Lancaster County agriculture, but tobacco culture brought renewed emphasis. In the county as a whole, tenancy was above average (28 percent versus 21 percent) in 1880. In the heart of the Lancaster Plain, several townships (Earl, Leacock, and Ephrata for example) had still higher rates. Tenancy rose steadily during the tobacco boom. An 1894 article by Dr. George Groff used tax records to conclude that there are “18,494 resident freeholders, 16,343 male tenants and 1,107 tenant women” in the county. Some of these were city people, but nonetheless the figures show that farm tenancy was a significant institution. Farm tenancy reached

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41% in 1925, highest in the entire state. Some observers thought that tobacco offered new opportunities to get established in farming, but the figures suggest that if anything the opposite was true. The number of farms in Lancaster County certainly increased during the tobacco boom, but so did the tenancy rate. Rising land values, high cost of equipment and stock, partible inheritance, and low outmigration probably combined to make land ownership an ever more elusive goal. Possibly kinship-based share tenancy was a mitigating factor, since these tenants actually were part of the owner’s family.

Several different types of tenancy arrangement evolved. In one, the tenant farmer rented land “solely for the growing of tobacco.” The tenant furnished labor, plants, and paper and twine for baling. The owner furnished horses, equipment, curing-shed space, and manure, and he prepared the seed bed. These tenants were called “croppers.” They usually received a share of the crop as payment, but essentially they were laborers rather than farmers. So were their families. The 1880 US Census report on Pennsylvania tobacco said of croppers: “the labor being light, much of it is performed by the women and children of the family; so that there is really little or no expenditure in cash on the part of the cropper.” This statement reveals much about patriarchal control of labor in tobacco farming, and also about perceptions of whether labor was light or heavy.

In another variation on share tenancy, a landowner rented out a complete farm. The lease gave incentives to keep livestock and even prohibited tenants from “selling any hay, straw, or stover from the farm.” Tenants either paid money rent or received a share of all the crops (usually half) and often furnished fertilizer as well as labor. Quite often, tenants and landlords were related by blood or marriage. Pennsylvania German families commonly practiced kinship-based share tenancy, which derived from an Old World custom called the “Altenteil,” or “old people’s part.” Younger family members worked land in return for a share of the crops, often splitting the shares with a widowed mother or with a father who had retired from active farming. Patriarchal control characterized the system: as father, uncle, or father-in-law, the landowner exerted considerable control over the tenant. Knowing this context helps us interpret the census. For example, in Earl Township in 1880, George Zimmerman, a 27 year old sharecropper, had a wife and infant son; they lived with George’s father, Christian. Three of George’s siblings, 24 to 32 years old, completed the household. It is very likely that George was renting on shares from Christian. Share tenant Aaron Hoover, 35, lived in a household headed by Isaac Hoover, a 66-year-old retired farmer. Likely Aaron was renting from Isaac.

83Frear, “Production of Cigar Leaf Tobacco in Pennsylvania,” 7-8.
85“Culture and Curing of Tobacco in Pennsylvania,” 1880, 162.
Buildings and Landscapes, c. 1865- about 1920

**Houses, 1865-1920**

The two-door house continued in popularity during this period. More often they were executed in frame, and incorporated period styles. An essential conservatism marked farmhouse architecture in this period. The 1877 Abraham and Anna Herr House, for example, has a facade with five bays on the lower level and four, separated by a date stone, on the upper level (Figure 36). Its minimal ornamentation typifies the period. To be sure, a few families adopted current styles like the Colonial Revival, but in general, Pennsylvania Germans made conservative architectural choices in their houses. This tendency was by no means confined to Plain Sect members.

**Figure 36**: Abraham and Anna Herr House, Pequea Township, Lancaster County.

**Figure 37**: Four over four farmhouse with two doors, Pequea Township, Lancaster County.

**Barns, 1865-1920**

The vaunted Pennsylvania Barn continued to be by far the predominant type in the Lancaster Plain. Late nineteenth and early twentieth century versions combined new with older features. The basic barn design did not change: above, a ramp led to one or more threshing floors, flanked by mows. Granaries were built into the forebay or sometimes on the bank side. Below, stalls and stables accommodated horses, cattle, and sometimes other animals. Most barns were now wood sided. The timber frames were mainly heavy post and beam structures; log was passé. Timbers were more frequently machine sawn rather than hand-hewn, and the joinery was simpler. Covering consisted usually of vertical board, increasingly produced using circular saws.

**Figure 38**: Historic Photo, Pennsylvania Barn, Lancaster vicinity, 1941.

The newer features of the Pennsylvania barn reflected agricultural changes of the day. For example, many now incorporated a machinery bay on a gable end, or integrated within the main structure. Mechanization was also reflected in a “horse power” shed, located on the bankside or sometimes in a basement. Provision for tobacco might appear as a dedicated wing, or as improvised tiers of lath in the main barn. Integral gable-end corn cribs were also sometimes incorporated into the barn structure.

The Stoner Barn in West Lampeter Township (Figures 39-44) illustrates the important trends of its day. It was built in the early 1870s, and its relatively small size reflects the shrinking size of Lancaster County farms. Yet for all its diminutive scale, it also incorporated mechanization and current diversified strategies. An integrated machinery bay on the ground level provided for storage, and a horse-power extension on the upper bankside housed the motive power for machines used inside the barn. Tobacco cleats in the framing accommodated this important cash crop without a dedicated building, thus centralizing agricultural functions, and an integrated corn crib did the

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88 It is hard to know how representative these were, but they are dominant in BHP files.
same thing. Neither were aesthetics ignored; the forebay side was decorated with round louvered ventilators.

Figure 39: Stoner Barn, West Lampeter Township, Lancaster County,.
Figure 40: Stoner Barn, horse power shed.
Figure 41: Stoner Barn, ground floor plan.
Figure 42: Stoner Barn, threshing floor plan. .
Figure 43: Stoner Barn, corn crib.
Figure 44: Stoner Barn, rails and cleats for tobacco hanging in the main barn.

Though separate tobacco barns were common, some farmers adapted their main barns. They might add onto one end of a larger barn, or mount "cleats" on threshing floor level framing members to receive tobacco rails.89

Figure 45: Herr barn floor plan, West Lampeter Township, Lancaster County.
Figure 46: Barn, Benedict Eshelman farm, Conestoga Township, Lancaster County.

**Tobacco Barn, 1865-1920**
The most notable addition to the Lancaster Plain farming landscape during this era was the specialized tobacco barn. Thousands of these distinctive structures were erected during the tobacco boom, and many are still standing. These are overwhelmingly frame structures, with stone or cement block basements. Pennsylvania cigar filler and binder leaf requires air-curing. Therefore the most conspicuous feature of any Pennsylvania tobacco barn is that its cladding can be opened and closed to regulate ventilation. Rather than being nailed tight to the frame, the exterior covering boards are hinged. When tobacco is curing in the barn, these slats are opened up. Vertical siding is hinged at the top or along the vertical edges, and held securely when closed by metal latches. Horizontal siding is hinged along the long side of the board, and sometimes a vertical bar connects all the boards so they could be opened simultaneously.

The barns usually have evenly-spaced roof-ridge ventilators, or sometimes monitor-style vents that run almost the length of the roof ridge. On the interior, between structural framing members, lighter "rails" are arranged crosswise in tiers, nearly to the gable peak. These rails are generally about 4-5 feet apart. The lower rails are often not permanently attached to the frame but suspended in cleats, so they can be removed to admit wagons or to permit filling the upper tiers. Short (4-5 foot) "laths" laden with tobacco leaves are laid across the rails about eight inches apart. The tiers are filled from the top down. Frequently, hatches in the upper floor lead to a basement dampening room, a humid, below-ground space, where the brittle cured leaves can regain their suppleness before being stripped, and where baled tobacco can be stored before being sent to market. Another key feature of the Pennsylvania tobacco barn is the stripping room. This is a space, usually heated by a stove (hence these barns often have chimneys or stovepipes) and lighted by windows, where workers

would detach the cured leaves from the stalk during the winter months.\textsuperscript{90} Usually it is achieved through banked construction. Multi-level tobacco barns could have either gable end banks or eaves-side banks, and the stripping room also could occupy either the gable end or eaves side. Lancaster County style tobacco barns are visually and spatially an integral part of the farmstead. They are near the house and main barn and are often painted to match other buildings.

Since tobacco hung curing in the barn only a short time in the year, some tobacco barns were designed to serve other purposes in the off-season.\textsuperscript{91} At Windom Mill Farm in Manor Township, for example (Figure 47), one of two tobacco barns contained a horse-power which was designed to be connected to a neighboring corn barn by a belt.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{Windom_Mill_Tobacco_Barn.png}
\caption{Windom Mill Tobacco barn, Manor Township, Lancaster County.}
\end{figure}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{Tobacco_Barn_Floor_Plan.png}
\caption{Tobacco barn floor plan, Drumore Township, Lancaster County.}
\end{figure}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{Herr_Tobacco_Barn.png}
\caption{Herr tobacco barn, West Lampeter Township, Lancaster County.}
\end{figure}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{Herr_Tobacco_Barn_Floor_Plan.png}
\caption{Lower Level floor plan, Herr Farm tobacco barn, Lancaster County.}
\end{figure}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{Herr_Tobacco_Barn_Floor_Plan_2.png}
\caption{Upper Level floor plan, Herr Farm tobacco barn, Lancaster County.}
\end{figure}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{Herr_Tobacco_Barn_with_Slats_Open.png}
\caption{Herr tobacco barn with slats open.}
\end{figure}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{Lancaster_County_Tobacco_Barn.png}
\caption{Lancaster County style tobacco barn, Manor Township, Lancaster County.}
\end{figure}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{Tobacco_Hanging_in_Lancaster_County_Tobacco_Barn.png}
\caption{Tobacco hanging inside a Lancaster County tobacco barn, 2003.}
\end{figure}

**Summer Kitchen, 1865-1920**

Throughout Pennsylvania in the late nineteenth and early twentieth centuries, farm families elaborated and diversified their diets. Of course rural people had long possessed numerous and subtle skills relating to food preparation and processing; but now newly available supplies and technologies reworked the possibilities. Orchards matured, garden patches expanded, products from far away became available, and to the old staples of corn mush, meat, and sauerkraut, farm families added more cakes, pies, preserves; made more poultry dishes; and slowly shifted away from pork to beef. There were several key ingredients to this change. One was the cookstove. Reliable, affordable coal-burning cookstoves were now far more widely available, just as the wood supply for traditional outdoor ovens diminished. As the cookstove replaced the open hearth and the outdoor bake oven, two important consequences followed. Cookstoves generated intense heat in the farm kitchen, so summertime cooking became difficult. Second, food preparation changed. More separate dishes could be prepared simultaneously. Expectations rose for dietary variety.

Another important change was in the increased availability of cheap sugar, produced on Caribbean and Latin American sugar plantations, and later US possessions in Puerto Rico and the Phillipines. Consumption rose and the repertoire of jams, jellies, preserves, cakes, and puddings expanded.\textsuperscript{92}


\textsuperscript{92} William Woys Weaver, *Sauerkraut Yankees* (Mechanicsburg, PA: Stackpole Books), 116, 150.
Tropical fruits became available too. A recipe in the *Lancaster Farmer* for 1884, for example, explained how to make a “Cream Cake”:

One teacup cream, two teacups sugar, three well-beaten eggs, teaspoon saleratus, dissolved in wineglass of milk, butter size half an egg, flour to make as thick as pound cake; add raisins and spice to taste; wine and brandy if you like.\(^93\)

It is impossible to know how many people actually made "cream cake," but the instructions in themselves are revealing for what they assume about ingredients the farm wife might have on hand.

To accommodate the intensified subsistence activity, and to get the hot summertime cooking out of the house kitchen, more summer kitchens appeared. The summer kitchen was not a new building type, but it became more common in this period. The typical Lancaster County summer kitchen would be a small detached building, usually gabled and made of frame. It would have ample windows for light, at least one door for access, a stove, and sometimes a set-kettle for heavy work. It was usually very close to the main kitchen. Often a decorative cupola with dinner bell sat on the roof ridge. The summer kitchen facilitated increasingly complex and demanding women's productive work. The work was productive because it resulted in tangible articles to consume, sell, or trade. The summer kitchen's siting near the main house reflects its preeminence as primarily a women's space.

*Figure 55*: Summer kitchen, Rapho Township, Lancaster County.

*Figure 56*: Historic Photo, “View of Enos Royer's farm with home garden in the foreground” 1938.

**Poultry House, 1865-1920**

The larger Lancaster Plain flocks required dedicated poultry housing. Lancaster County poultry houses from this period would still be modest in scale, but tailored to poultry raising and sometimes specialized to life cycle stage or type. Construction material would almost always be frame.

*Figure 57*: Small poultry house, Rapho Township, Lancaster County.

Functionally, an early 20\(^{th}\) century poultry house had some characteristic features. Usually it had either a shed roof or a gable roof. Windows across one eaves side afforded the light essential to chicken health. Small, hinged access doors, and ramps, allowed fowl to move in and out. Access doors for humans were placed either in the eaves side or in the gable end. Siting was usually between house and barn, especially for earlier structures; over time, poultry housing moved further from the house as men became more involved in the poultry business. It is important to note that farm families often improvised poultry housing, most notably by converting other buildings, usually by adding levels for nesting and perching, and cutting windows into previously solid walls. Smaller houses were frequently built on skids so that they could be moved.

\(^{93}\) *Lancaster Farmer* April 1884: 63.
The type of housing depended on the purpose. From the exterior, it is hard to tell a house intended for laying hens (layer house) from one where the occupants were destined to become meat (broiler house), so here, both types are treated together as generic “poultry houses.” Inside, a layer house would have perches and nesting boxes, but a broiler house would dispense with the nesting boxes, and thus be able to crowd more birds in the same square foot area. The influence of Penn State Extension and other elements of the agricultural establishment was notable.

**Figure 58**: Small poultry house, Christian and Emma Herr farm, West Lampeter Township, Lancaster County.
**Figure 59**: Poultry house plan, from *Farm Structures*, 1914.
**Figure 60**: Historic Photo, “Lancaster County Pennsylvania rural scene,” 1938.
**Figure 61**: Historic Photo, “Rich Farmland, Lancaster County, PA,” 1939.
**Figure 62**: Historic Photo, “Barnyard on the farm of C.F. Minnich,” Lititz vicinity, 1938.

**Machine Shed/Corn Crib, c 1865-1920**
Machine sheds housed farm equipment. In the heavily mechanized Lancaster Plain, they were numerous and substantial. Most were rectangular, some quite elongated. They could be enclosed, with large gable ends or eaves side doors to admit machinery; or they might be open on one eave side and enclosed on the other three sides. A machine shed might be combined with a corn crib, so that a drive-through roofed-over space was created between two corn cribs. In Lancaster and Lebanon Counties, machine sheds often had two levels; a lower, stone level housed machinery, and the upper level housed more machinery and ear corn. Machine sheds were most commonly built of light frame, covered over with horizontal or vertical board. They were sited nearer the barn than the house.

**Figure 63**: Corn barn with machine shed, Manor Township, Lancaster County.
**Figure 64**: Drive through corncrib/machinery storage, Manheim Township, Lancaster County.
**Figure 65**: Drive through corn crib, New Holland Borough, Lancaster County.

**Greenhouse, c 1865-1920**
In the city and immediately adjacent to it, large greenhouses served truck farmers, and provided plants and flowers for ornamental use.  

**Windmill**
Farm windmills were principally used to pump water for livestock and for human use as well. They could also be connected to machinery that would grind animal feed, shell corn, cut straw, thresh grain, or saw boards. A number of companies (both local and out of state) made windmills in the late 19th and early 20th centuries. Most designs involved a three- or four-post tower surmounted

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94 de Forest’s *Lancaster Resources*, 1909, says Barr has a greenhouse at 940 Columbia Ave and soon expects to open a large tract “adjacent to the city”. On p 47 there’s a photo of the office and greenhouse.
with a wind-wheel and rudder assembly which turned as winds shifted, and which was connected to shafts to transfer energy to machinery. The height of the tower determined the amount of power available. Windmills were sited near the barn or house, or in a pasture, or even protruding directly through a building roof. A turn of the century Lancaster County soil survey mentioned farm windmills; today they can sometimes be seen on Plain Sect farms.\(^95\)

**Figure 66**: Windmill, from *Farm motors*, 1917.

**Ice House, c 1865-1920**

Farm ice houses were useful conveniences in the era before mechanical refrigeration. H. M. Engle of Lancaster County wrote in 1882 that his ice house was constructed so it extended seven feet below ground level, and was insulated by sawdust. He noted that his ice house had “not been empty of ice in the last five or six years, and not in twenty years, except when we failed to get a supply for filling…” Ice was obtained in the winter by cutting from a pond.\(^96\)

**Figure 67**: Ice house plan, from *Radford's Combined House and Barn Plan Book*, 1908.

**Silo, c 1865-1920**

A silo is an airtight structure that holds fresh organic matter (moisture content 50-65 percent) destined for winter animal feed. It is filled with shredded or chopped grass, corn, or sometimes other plant material, which ferments into a highly nutritious and palatable feed. Silage feed resulted in significant productivity increases for dairy cows, and also permitted marginal farms to carry more animals. Ensilage was first publicized in the US in the late 19\(^{th}\) century when the results of experiments in Europe became known. However, it did not become widespread until dairying was taken up more seriously.

Silos can be constructed horizontally in pits, or vertically. Most silos of the first half of the twentieth century were vertical. Early silos were sometimes placed inside the barn, rectangular in shape, and of wood construction. These were quickly supplanted by round vertical silos located outside the barn, usually in a spot that would permit efficient filling (usually from holes in the top) and unloading (usually from a tier of doors from which silage was thrown down an exterior chute, which contained a ladder for access to the doors. Because masonry is inexpensive, durable, and clean, it became the norm; materials included concrete, special curved brick, and hollow glazed tile bricks. Metal (galvanized iron) was also used. Cement staves came into use after about 1910 and concrete in one form or another was the most popular until the advent of Harvestore silos in the later 20\(^{th}\) century. Early silos were filled using conveyor belts; silo filling was a community activity. They were originally unloaded by hand, from the top. Later, Archimedes screw systems conveyed silage into the barn.


\(^{96}\) *Reports of the Transactions of the Pennsylvania State Agricultural Society*, 1882, 309.
As Lancaster Plain farmers increased dairying activity, silos became more common. The Penn State agricultural extension agent reported in 1913 that “Quite a number of silos have been built this summer” on farms that raise both dairy and “fat cattle.” The agent promoted ensilage enthusiastically and proudly noted by 1918 that more and more farmers were building them. By the mid 1920s Lancaster County did boast a higher than average percentage of farms with silos, though even then in only one township (Upper Leacock) did more than half the farms have one. On the Lancaster Plain, about a third of farms had silos. 97 Statewide, under twenty percent of farms had silos.

Figure 68: Historic Photo, “Barn and Concrete Stave Silo of C. F. Minnich,” 1938.
Figure 69: Historic Photo, Christian and Fanny Landis Barn, Lancaster vicinity, 1933.

Landscape, 1865-1920
Even more than before, the Lancaster Plain had a wide-open character. Little land area was left unexploited. One commentator found in 1894 a tidy landscape with “no weeds or bushes... all waste places are drained... nothing is left out in the weather to waste...” Early twentieth century observers remarked how pervasive were productive spaces-- farms stretched from fencerow to fencerow. While cropland still predominated, fenced pasture also was integral to the landscape. Barbed-wire fencing was in use by the early twentieth century; a local chronicler reminisced about a hired man complaining that “a wire fence is no place for a hard-working hired man to be resting.” 98 The walled barnyard enclosure remained on many farms. Forest was disappearing, and this raised concerns about erosion and wind protection.

Figure 70: Historic Photo, “Blue Ball, Pennsylvania (vicinity). Mennonite funeral,” 1942.
Figure 71: Historic Photo, “Dutch barn, Lancaster County,” 1941.

Livestock, Tobacco, Truck Farming, and Poultry, c 1920-1960
Even the “banner county” was susceptible to agricultural depression. The number of farms in the county peaked sometime around 1925, when the census recorded 11,457 farms; but after that, every census year showed a decline. By 1950 there were 7,952 farms in the county, a loss of 3,500 from the 1925 peak. 100 Average farm size rose, but not in strict lockstep with the decline in farm

97 Agricultural Extension Archives, County Agent Report, 1913, 1918; Pennsylvania Triennial Census, 1927.
98 Groff, “Garden Spot,” 30; Kriebel, Seeing Lancaster County from a Trolley Window, 9; Lancaster County, Pennsylvania, the Garden Spot of the United States, the Picturesque and Historical East End (1908, Penn State Digital Collections), 11; William Riddle, Cherished Memories of Old Lancaster – Town and Shire (Lancaster, PA,1910), 59; Ellis and Evans, History of Lancaster County, 1; “Report of the Committee on Grass and Grasses of Pennsylvania,” Pennsylvania State Board of Agriculture Annual Report, 1883, 168-75.
100 Schneider, in Foundations in a Fertile Soil, 37, asserts that 1940 was the first year since the 18th century that farm numbers declined; but the US Agricultural census published figures show 11,457 in 1925; 9,705 in 1930; 8,446 in 1940 (Schneider’s figure is 8,823); and 7,952 in 1950. The correction is made here because it is important to the interpretation: whereas Schneider implicitly attributes farm disappearances to development, the revised numbers
numbers, because the total amount of farmland in the county had been on the decline since 1880. In 1950 the average Lancaster County farm still had only 62 acres. Rural to urban migration drained the countryside during the Depression and war years; thereafter development began to bring new pressures.\textsuperscript{101} Lancaster County agriculture in this period developed against a darkening background.

Figure 72: Lancaster County and Pennsylvania farms average size, 1940 and 1960.

\textit{Products, 1920-1960}

Overview: During this period, Lancaster Plain farming families continued with a basic crop and livestock structure, but altered it in significant ways. Farm families had to adjust to stay in business. In general, as elsewhere, Lancaster Plain farms yielded “fewer sources of income” during this period.\textsuperscript{102} Census figures are not available down to the township level after 1927, so much of the discussion below relies on countywide census data combined with specialized studies to make inferences about the Lancaster Plain.

In crop production, Lancaster County still stood among state leaders in overall totals (and often in per-farm averages also) for grain corn, silage corn, hay, wheat, barley, and tobacco. Tobacco production fluctuated. In 1950 (the latest year for which figures are available), it was lower than the peak year of 1920. Yet in 1950 tobacco was still a major income generator at 45 million pounds for the county as a whole (really only for the townships in the Plain), on about 31,000 acres. To some extent, vegetable growing and commercial nursery operations made up for the lost tobacco acreage. For most field crops, hybrid or improved seed combined with chemical fertilizers to boost per-acre productivity.\textsuperscript{103} The proportion of total farm land area in crops was still high – 70 percent in 1950 (statewide it was 48 percent). Orchards declined; other regions could more profitably produce fruit, and Lancaster County farmers got out of the orchard business.

Where livestock were concerned, hogs fluctuated in total numbers, mostly declining but rebounding briefly between 1940 and 1950. Dairy cattle numbers increased modestly in the county as a whole, but dairying was still more important outside the Lancaster Plain. Chicken numbers boomed. The number of horses declined; see the discussion under “labor and land tenure” for more details. Beef cattle feeding, in conjunction with tobacco farming, continued to its central role in Lancaster Plain farming.\textsuperscript{104}

Figure 73: Lancaster County farm types, 1950.

\textsuperscript{101} Gideon L. Fisher, \textit{Farm Life and Its Changes} (Gordonville, PA, 1978), 9-17.
\textsuperscript{104} Sloat, “Eleven Years of Farm Account Books,” 34, 49, 53.
The chart shows how difficult it was to characterize Lancaster County farms, even as late as 1950. "General" farms made up the single biggest group. “Miscellaneous or unclassified” farms also accounted for a significant percentage. According to the definition, the only type these could have been in Lancaster County would be flower nurseries, but it is difficult to believe they would account for such a large portion of farms. Since truck farms sold small quantities of many products, they probably fall between the cracks of this categorization system.

**Figure 74:** Map “Types of Farming in Pennsylvania,” 1929.

**Specific Products:**
Crops changed in their proportions, but the chart in figure 75 suggests that the traditional crops retained their importance. This was partly because they continued to play multiple roles. During the Depression, for example, low wheat prices led farmers to use wheat as a feed crop for poultry and even hogs. Steer feeders valued “straw and standability.” When the combine appeared, the need for strong stalks became even greater. Wheat also served as a nurse crop in rotations. Lancaster County farmers often raised wheat for seed, especially the "Pennsylvania 44" variety. Winter barley performed similar functions, serving not only as livestock feed but as straw source and as nurse crop for alfalfa and clover. Oats production declined and became insignificant; other regions were much better suited to oats, and in any case horse numbers were also on the decline.

**Figure 75:** Lancaster County crop acreage, 1880-1950.

Corn yields and uses changed during this period. Corn acreage increased significantly between 1910 and 1925, precisely the years when dairying became more important in Lancaster Plain farming strategies. Early in the twentieth century, Lancaster Sure Crop corn, a locally developed open-pollinated variety, achieved popularity. It was valued for “early maturity, disease resistance, ease of harvest and uniformity.” Yields fluctuated as always, because of weather vagaries. Another important development in the period was hybrid corn. Hybrid varieties first came to the agricultural extension agent’s attention in the late 1930s; Lancaster County farmers embraced them enthusiastically and by 1940 the agent claimed that seventy percent of county farmers had switched over. Hybrid corn had several important implications. Yields were higher with hybrids; hybrids

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105 Agricultural Extension Archives, County Agent Report, 1932.
106 Agricultural Extension Archives, County Agent Report, 1942 and 1953.
107 Agricultural Extension Archives, County Agent Report, 1922, page 19.
108 Winter barley is discussed in the Agricultural Extension Archives, County Agent Report virtually every year between 1930-1950.
109 Agricultural Extension Archives, County Agent Report, 1947, page 12: “Lancaster County has practically passed out of the picture as an oats growing county”
110 Schneider’s *Foundations in a Fertile Soil*, page 32, states that hybrid corn seed was in use “by the 1920s.” There is no evidence for widespread hybrid corn use this early, either in the agricultural extension reports or in the secondary literature. Deborah Fitzgerald, author of the definitive history of hybrid corn, notes that commercially available hybrid
lent themselves better to mechanized harvesting, thus encouraging further mechanization; and hybrids cemented farmers’ dependency on seed companies, since farmers themselves could no longer save seed for the coming crop year. Hybrids also produced best with heavy applications of purchased fertilizer, further requiring cash inputs.

Silage corn acreage increased to 7,200 in 1925. This was still less than ten percent of the total corn acreage planted that year, but silage corn acreage kept rising and soon silage was well established. Ensilage provided high quality winter feed for cattle, mainly for dairy cows, but also for beef animals. It facilitated year-round milking and so brought significant changes to farm routines. Vegetable production increased significantly and attracted attention from the agricultural extension agents. Like tobacco, truck crops took up relatively little acreage on a given farm; unlike tobacco growing, truck farming was practiced by relatively few farmers. But the high-value crops produced made it disproportionately important to farm economic strategies. There was much diversity in truck crops. In the 1920s, for example, many farms raised sweet corn for drying, probably meeting a local market demand from Pennsylvania Germans, who used dried sweet corn in favorite Pennsylvania German dishes. In 1925 the extension agent noted: “the dehydrating of sweet corn on a commercial scale in six communities of the county has assumed such proportions that it now assumes a place of note in our agricultural scheme as a money crop.”112 Extension agents also helped with variety selection for tomatoes, peas, cabbage, cauliflower, carrots, celery, beets, limas, snap beans, and lettuce. Washington Boro enjoyed a microclimate that permitted early tomato harvest, and the area became a local center for tomato raising.113 Local canneries multiplied and many farmers sent their vegetables there for processing. Small fruits, such as blackberries, blueberries, and raspberries, became popular.114 By the 1940s, the emerging highway transport system threatened local truck farmers, because it brought in cheap California and Florida produce. However, local vegetable growers also used the highway network to raise vegetables for freezing and distribution to the eastern seaboard and as far west as Chicago.115

Though distant markets assumed an important role, local markets for farm produce continued as a strong presence in Lancaster County.116

Figure 76: Historic Photo, Lititz woman at farmers’ market, 1942.

Another specialty was commercial flower production. We have seen that greenhouse businesses flourished before 1920, and this trend continued. Two local trade associations supported the industry. By 1955, the agricultural extension agent could report that Lancaster was the top ranking flower county in Pennsylvania, boasting 1.5 million square feet of greenhouse space. Carnations, chrysanthemums, roses, snapdragons, and various other plants and shrubs were grown. This business was another typical Lancaster Plain adaptation: it could be pursued on small acreage, it generated high per-acre profits, and it benefited from highly skilled local agricultural labor force.

Tobacco still anchored the Lancaster Plain farming economy. While total production had dipped, cigar leaf still accounted for $12 million in sales in 1950. A thorough study examining the “Agricultural Geography of Cigar Tobacco” in Lancaster County cast the years between 1919 and 1949 as a period of “consolidation” in the business. Expansion ceased, but stability prevailed. Innovations in disease control, marketing, and mechanization resulted in greater productivity and profit. Traditional rotations of tobacco:winter wheat: hay (clover and timothy): and field corn continued. The author, Roger Heppell, noted some important features of the tobacco farming system. For example, tomatoes were “seldom found on tobacco farms,” since the two competed directly for labor and other resources. Heppell thought that potatoes were a popular crop in tobacco regions, but the overall potato acreage was flat. USDA researchers thought that tobacco farmers were beginning to use more purchased fertilizers.

Heppell made the important point that dairying was not as prevalent in the tobacco regions as elsewhere. Dairy operations were not absent from the Plain, but dairy herds were small herds numbering five to ten animals. This was for several reasons. Most important was labor: dairy cows, according to Heppell, took 154 hours of “man-labor” per year, and steers only 12. Another serious drawback to combining dairying with tobacco farming was that since dairy cows were still being pastured at this point, manure collection was not feasible. Poultry farming and tobacco farming did coexist, according to Heppell; but the larger scale poultry farms also tended to be located outside of the Lancaster Plain. Again, it seems that labor allocation and manure must account for this pattern, because Heppell estimates that poultry took up 2.7 “man-hours” of work per year per hen, a significant commitment. Moreover, poultry manure was regarded as inappropriate for tobacco growing.

Figure 77: Lancaster County crop acreage, 1919, 1939 and 1950.

This graph, based on US Census data, shows two important facts. First, acreage of vegetables for sale did increase in Lancaster County, but not as fast as it did elsewhere in the state; and the acreage of vegetables added between 1919 and 1950 (about 8,000) roughly corresponded to the acreage of

119 Heppell, “Agricultural Geography of the Cigar Tobacco Industry of the Lancaster, Pennsylvania Region,” Chapter IV and V.
tobacco lost during that same period (roughly 9,000). In money terms, truck crops and tobacco were both high value crops per acre.

**Figure 78:** Lancaster County livestock figures comparison.

In the dairy business, fluid milk was now essentially the only dairy product; farm-made butter was fast disappearing. Per-cow productivity increased with new breeding and feeding practices, and soon a milk glut resulted in low prices and struggles for dairy families. These changes occurred everywhere, but in Lancaster Plain dairying they are not the biggest story.

The county agricultural extension agent's annual reports suggest that a distinctive pattern characterized twentieth-century dairying in the county. Throughout the 1920s, 1930s, and even into the mid 1940s, conflicts over tuberculin testing appear to have significantly influenced dairy development in Lancaster County and more especially on the Lancaster Plain. Bovine tuberculosis eradication had emerged as a key goal for municipal, state, and federal governments after new scientific discoveries confirmed that the pathogen responsible for the disease in cattle also could infect humans. Soon efficient testing techniques were developed, followed by concentrated testing strategies focusing initially on breeding stock and later proceeding on a geographic ("area") basis. These were underpinned by federal and state appropriations for testing and indemnities.  

In Lancaster County, the matter first surfaced in the agent's 1926 report when he wrote that bovine tuberculosis had killed many cattle in the county. The epidemic, he wrote, “coupled with the activities of a few anti-testing advocates was sufficient to fan the flames of one of the most powerful agricultural upheavals that we have ever known in this county.” This was the formation of the Farmers Protective Association, “an organization of about 800 farmers whose avowed purpose is to fight tuberculin testing in this county and particularly the Board of Health of Lancaster City which board has sponsored a city ordinance requiring all raw milk sold in the city to be tuberculin tested.” The agent claimed that the organization successfully prevented other farmers from having their cows tested. Yet their competitive position suffered in the end, because “the county witnessed a very heavy importation of tested cattle.” It seems that the Plain was the epicenter of this disturbance since in 1929 the agent wrote that most of the opposition emanated from the Lancaster city vicinity. Throughout the 1930s anti-testing farmers waged a protracted battle with municipal authorities both in Lancaster and other markets such as Philadelphia. The agent noted that a good many Lancaster County farmers chose to take lower prices from "untested" or "less demanding" (1932) markets rather than meet sanitation requirements imposed by more lucrative markets. For example, the Hershey Company accepted lower-grade milk for its candymaking process. As these "cheaper" markets became less numerous, though, the choices were fewer.

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Against the background of efforts to eradicate bovine TB, Lancaster County's protracted opposition stands out. Lancaster County farmers were not the only ones to protest, but they resisted longer than most.123 In fact, a Lancaster County farmer, Christian S. King, became the very last farmer in the state to have his herd tested, in 1935; the following year, the USDA certified all of Pennsylvania as an “accredited area in bovine tuberculosis eradication...”124 To be sure, many Lancaster County dairy farm families did comply with testing regulations, and they modernized their farm plants in accordance with strict requirements. However, resistance seems to have had a noticeable impact.

To the agent, the apostle of progressive and scientific agriculture, resistance was exasperating and irrational. But, according to Stevenson Fletcher, many farmers regarded the new regulations as intrusive violations of private property rights. Indemnification was not an issue; a strong compensation program compensated for animals that tested positive. But conservative Lancaster County farmers still resented what they regarded as unreasonable “search and seizure.” The courts, however, supported the testing laws, interpreting them as an “abatement of a public nuisance.”125

Though bovine TB also affected livestock kept for beef, eradication efforts focused on dairy cows, and perhaps we should consider continued beef feeding partially as borne of an aversion to dairy sanitation requirements. In addition to issues with dairy cow testing, labor demands were much greater in dairying, so when labor was scarce, stock feeding was a rational alternative. In the early 1950s, for example, high labor prices combined with high prices received for beef animals to spur some dairy farmers to convert to beef feeding. Stall feeding and tobacco growing still went hand in hand; tobacco acreage actually rose slightly between 1930 and 1950 period. Heppell estimated that tobacco farmers raised seven or eight steers per season.126

Stock feeding in the twentieth century followed some longstanding customs, and departed from tradition in other respects. As before, cattle were not born and raised on the farm, but purchased from elsewhere for fattening and ‘finishing.’ The April 20, 1956, issue of Lancaster Farming noted that “there have been times when farmers in our county feed more steers for slaughter than in any other county in the US, even though we do not raise beef cattle.” The US agricultural census indicates that 6,900 of Lancaster’s 7,952 farms purchased cattle and/or poultry in 1950. This practice reflected historic patterns of geographic distribution; cheaper western pasture lands were used to raise young animals, then they were shipped further east toward market centers for fattening. One important change was that purchased feed played a much larger role than in the past. Though Lancaster County farms still produced hay, corn, and other feeds on the farm, the evidence suggests that feed generated on the farm was inadequate. The US Census for 1950 reported feed expenditures for Lancaster County to the tune of over $20 million. This included feed

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for both cattle and poultry, but no matter how the numbers might be divided, this is a staggering figure amounting to nearly $3,000 per farm. Roger Heppell wrote: “most steer feed is produced locally. Characteristically, all the corn, hay, and straw are utilized on the farm, while concentrates, chiefly cottonseed, linseed, and soybean meal, bran, and sometimes more corn, are purchased in large quantity.”127 No longer could farms recycle nutrients in a closed system. It is not possible to know where the purchased feed originated, but at least some must have come from outside the county. The implications are significant even if not entirely clear. It seems that once feed and fertilizer came from off the farm, conditions were developing for nutrient surpluses that today cause major environmental problems in the region.

Figure 79: Lancaster County farm chickens, 1880-1950.

Poultry raising was already important by 1920, but thereafter poultry numbers rose even more sharply, especially between 1940 and 1950. Major changes shaped the poultry business during these years. It was undertaken on a much larger scale, so more capital was invested and more scientific management principles applied. More men entered the poultry business, though usually farm women made important if unacknowledged contributions. Chickens were raised for meat and eggs, and a few families raised chicks as a specialty. By 1950 the census figures for that year show over 2 million chickens in the county, easily the largest number in the state. They produced nearly 20 million dozen eggs, or about 2,500 dozen per farm. The overall impression is that Lancaster County was overrun with chickens. As before, Lancaster Plain farming families had adapted to changing conditions by turning to an enterprise that could be pursued on small acreage, fit with traditional practices, and generated reasonable profits. Poultry production took a high place in the agricultural extension agency’s priority list.Agents pushed for better “quality of flocks” through record keeping and culling the notorious “boeder hen” (the bird who ate more food than she was worth). Housing was an important focus; it is discussed in the section on buildings. By the 1930s, the extension reports assume that poultry producers purchased at least some feed, and local suppliers developed thriving feed businesses.128

Hog raising in general became less popular during this period as low prices discouraged farmers. However, numbers turned back upwards in the 1940s. Extension agent reports suggest that hog feeding moved in parallel with steer feeding; in 1956, for example, the agent explained how the two literally went together: “many steer feeders add to this population [of swine] by running the hogs with their steers in order to reduce the loss of feed and grain nutrients.”129

Subsistence strategies continued to hold an important place in Lancaster Plain rural life. The 1935 Home Economics Extension agent noted: “It was estimated by a farmer in the Dutch and Amish

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homes 500 to 1000 jars of fruits, vegetables, meats, chicken, rabbit were preserved besides an unlimited quantity of apple butter, preserves, jams, jellies and pickles, chowchow and sourkraut.” By 1938 the agent wrote: “These women can all they grow and do not keep a canning budget. In asking about the number of jars canned they report they can from 300 to 800 quarts of fruit and vegetables and meats. More are using the freezing lockers for meat and poultry.” “Freezing lockers” were public facilities renting out space. Canneries also opened their facilities to farm families. During World War II women reportedly increased their canning total threefold. By the end of the war, home freezing began to replace canning. In 1950, nearly a third of Lancaster County farms reported having an electric home freezer.130

**Labor and Land Tenure, 1920-1960**

The decisive shift from horse to tractor farming occurred between 1940 and 1950, when the number of horses dropped by half (21,000 to 10,000) and tractors went from 3,400 to over 9,000. Yet only 5,345 farms (of 7,952) reported tractors. This must mean that tractor farming was unevenly distributed: farms with tractors often had more than one, and over 2,000 farms had no tractor at all. Lest we hasten to conclude that this disparity reflects Plain Sect farm operations, we should note that tractors did not always make economic sense on small Lancaster County farms.131 Moreover, throughout Pennsylvania in 1950 many farms still lacked tractors. For example, in Bradford County, where there were virtually no Plain Sect farms, there were 3,741 farms and only 2,500 of them reported tractors. Tractor use may have been more widespread than ownership, but nonetheless it is clear that the shift away from horse farming simply took a long time. A 1929 farm machinery survey noted the following popular equipment in Lancaster County: walking plows; disk harrows; grain drills; corn planters; dump rakes; corn shellers; feed grinders; manure spreaders; and tobacco planters. Indeed, by the 1950s machinery surpassed land as the primary capital expenditure.132

In Lancaster County for this period, rather than picturing a stark divide between “mainstream” and Plain Sect approaches to agriculture, it is more accurate to think in terms of a spectrum. The most modernized farming practices and most conservative Old Order ways now diverged considerably, but there was still a good deal of common ground between the two poles. For example, not only were many “mainstream” farms still horse-powered, and many non-Amish farm families lacking plumbing and electricity, but all social groups raised tobacco, grains, livestock, vegetables, and hay. As the dispute over cow testing shows, “mainstream” Pennsylvania Germans often shared some conservative social values with their Plain Sect neighbors.

Demographically the Amish presence was still small. As of the 1930s, there were still probably fewer than 3,000 Old Order Amish people (individuals, not households) altogether in the county, not nearly enough to account for 9,000 farms. Other Plain Sect groups would have swelled the

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130 Agricultural Extension Archives, Home Economics Extension Agent Report, 1935, 6; 1938; 1939, 7; 1942; 1945; 1950 Census.
131 Agricultural Extension Archives, County Agent Report, 1917.
total, but still not enough to influence the overall contours of agriculture in the county. The Amish were imagined in a cultural process that took place among mainstream Americans and other Pennsylvania Germans. For some, they represented backwardness and intolerance; for others, simplicity and piety. These characterizations had little to do with Amish people themselves, and much to do with modernization and its attendant anxieties.\footnote{133 Berenice Steinfeldt, \textit{The Amish of Lancaster County} (Lancaster, PA, 1940), 7; David Weaver-Zercher, \textit{The Amish in the American Imagination} (Baltimore: Johns Hopkins University Press, 2001).}

Farm labor patterns showed both continuities and changes during this period. Family members continued as the main labor source. The 1950 agricultural census listed a total of 14,491 workers on Lancaster County farms; only 2,276 farms reported hired labor, totalling 3,567 people. Family therefore accounted for 10,922 of the 14,491 farm workers in the county (75%).

\textbf{Figure 80:} Historic Photo, “Enos Royer farm, Lancaster County, Pennsylvania. Mrs. Royer milking.” 1938.

The agricultural extension agent noted a trend toward part-time farming in the 1950s. Statistics from a questionnaire showed that fifty percent of Lancaster County farmers “do some work off their farm.” Their farms often had poultry, beef, or dairy enterprises. The agent report continued: “almost all part-time farmers are full owners, but, on the average, they have smaller farm units than full-time farmers. ...most [...] have been working regular daylight hours at a laboring type of job.” The agent found positives in the practice: “the off-farm job serves as a source of economic security. They feel fairly well off compared with full-time farmers or other workers in industry.”\footnote{134 Agricultural Extension Archives, County Agent Report, 1958, page 57.} The report did not note whether farm women took off-farm jobs.

On the farm, though, women continued to play a key role. The home economics extension agent in 1958 noted that “rural women of Lancaster County do spend a great amount of time assisting with farm work; they help plant, cultivate, cut and strip the tobacco, as well as assist with the garden and poultry.”\footnote{135 Agricultural Extension Archives, Home Economics Extension Agent Report, 1959.}

But even so, during the war years and afterward, farm labor scarcity forced growers to add non-family workers. Wage laborers had always been integral to farming here; they had long been recruited locally. But local farmers began to complain that “school children, as a whole, are no longer willing to work for wages the farmer can afford to pay,” and that farm hands no longer were willing to do hard tobacco work: “all hired help wants to do,” went one complaint, “is drive the tractor.” During the war, prisoners of war, Jamaicans, African Americans, and Puerto Ricans worked on Lancaster County farms. After the war, labor shortages persisted and more non-local workers stayed in the Lancaster County fields. Spanish speaking people gained a foothold; many settled in the cities and formed new ethnic communities.\footnote{136 Agricultural Extension Archives, County Agent and Home Extension Agent Report, 1956, 1958. Heppell, "Agricultural Geography of the Cigar Tobacco Industry of the Lancaster, Pennsylvania Region," 311 and 260;}

\textit{133} Berenice Steinfeldt, \textit{The Amish of Lancaster County} (Lancaster, PA, 1940), 7; David Weaver-Zercher, \textit{The Amish in the American Imagination} (Baltimore: Johns Hopkins University Press, 2001).
Figure 81: Historic Photo, “Enos Royer and hired hands having dinner on the Enos Royer farm,” 1938.

Farm tenancy also continued. The county agent, in fact, analyzed account books throughout the 1920s and 1930s to conclude that tenants actually had higher labor incomes than did farm owners, mainly because owners had higher taxes, mortgages, and the like. In the long run, though, tenancy rates declined.

Buildings and Landscapes, 1920-1960

Farm House, 1920-1960

Schneider, in *Foundations in a Fertile Soil*, notes that new farm housing in this period infrequently drew from current styles such as the Craftsman style, and that some built using new materials such as “patterned block” (such as rock-face concrete block).

Barns, 1920-1960

Thousands of older Pennsylvania Barns continued in service. On the Lancaster Plain in particular, they still suited the farm economy in many cases, because the old stall feeding and tobacco growing regime had survived reasonably intact. Nonetheless, new barn types began to supplant the old favorite during these years, and pressures mounted for thoroughgoing renovations to existing Pennsylvania Barns. In the broader public realm the Pennsylvania Barn came under attack during these years. A new intellectual and political climate prevailed. Scientists had identified disease pathogens, and connected disease control to scrupulous cleanliness and exposure to light. Judged by the new standards, the Pennsylvania Barn was found wanting. A 1931 article released by the USDA made specific “Suggestions for the Improvement of Old Bank Dairy Barns.” It noted that regulations now “prescribe clean, light, sanitary stables; clean utensils; clean, healthy animals; and careful handling by disease-free labor” in addition to “a clean, wholesome farm-water supply.” In the eastern US, the author went on, “a large number of... barns were built ... before the necessity of cleanliness and health of milk cows was realized. In fact, many of them were built to house beef cattle rather than dairy cows...” He criticized the Pennsylvania Barn because its dark stables kept out germ-killing light. Its inefficiently organized stables were hard to clean, not only because they had too many corners, but because wood was “impossible to disinfect properly.” Poor ventilation, the article charged, would “lower the vitality” of delicate dairy animals.137

Commonly recommended renovations included pushing the forebay wall out to the front eaves wall and filling it with windows; gutting the stable interior and paving the floor with concrete; replacing crosswise wooden stalls with lengthwise metal stanchions; and installing ventilation systems.

Figure 82: Historic Photo, “Rich farmland. Lancaster County, Pennsylvania,” 1939.

Figure 83: Barn, Conestoga Township, Lancaster County.

At the Kolb Dairy in East Hempfield Township, a stable barn from the mid 20th century epitomizes high-end, ideal architectural choices in barns for the period. This c. 1950 barn conformed nicely to reformers’ ideals. Ample windows lined the entire eaves side and pierced the ends as well. Concrete replaced wood as the preferred construction material; it was regarded as cleaner than wood. Longitudinal aisles facilitated efficient feeding and manure removal. A huge hay loft took up the entire upper level; like its Pennsylvania Barn predecessor, it was accessed from a bank. But this barn was much more specialized, lacking the Pennsylvania barn’s threshing floor, granary, or machinery storage area. The rainbow roof permitted storage for a huge volume.

Figure 84: Stable barn, Kolb Dairy, East Hempfield Township, Lancaster County.

Figure 85: Stable Barn, East Earl Township, Lancaster County.

The agricultural extension agent in 1946 mentioned remodelling a bank barn for poultry. In East Lampeter Township, the Musser Barn is a good example; a bank barn with twin outsheds has been thoroughly redone to accommodate poultry. Windows appear not only the in outsheds but the gable end walls and the bankside eaves wall. Chutes for manure removal protrude from the gable end wall, and the entire barn has been covered.

Figure 86: Musser Barn, East Lampeter Township, Lancaster County.

**Tobacco Barn, 1920-1960**

Older tobacco barns continued in service, and some new tobacco barns were built. Newer ones differed from old not so much in basic design as in materials; circular-sawn vertical plank, lighter framing, and concrete block foundations replaced older materials.

Figure 87: Tobacco barn, Manor Township, Lancaster County.

**Milk House, 1920-1960**

The milk house was a major new form on the early twentieth-century dairy farm. It wasn’t a big building, but is an important reminder of the new role of the state and the agricultural establishment in agriculture. The state (meaning the government at any level) influenced the construction of milk houses in the first place, because during the Progressive and New Deal eras, legislatures and municipalities passed sanitary codes that required inspection not only of milk, but of dairy herds and milk production facilities.  

New York City pioneered in these efforts, and also seems to have been more effective at enforcement than other areas. In Pennsylvania, according to Stevenson Fletcher, a very few municipalities had inspection laws starting in the late 19th and early 20th

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centuries; however, enforcement was patchy. The first statewide dairy inspection law was passed in 1929, with a revision in 1933. This law provided for inspection of farm sanitary conditions, including facilities for sterilizing dairy equipment and milk houses for isolating milk.\(^{139}\) It is not clear how well these were enforced. These regulations were a facet of the assault that was launched on bovine tuberculosis and other diseases in this period, aiming at ensuring a fresh, uncontaminated milk supply. In order to market milk, increasingly farm producers had to comply with regulations that required them to install easily cleaned surfaces (like concrete) in barns, remove milk storage areas from dirt and odors (by building milk houses), cool milk, sterilize equipment, and the like. In Pennsylvania, these regulations took effect earliest in the Northern Tier, because New York City, where most milk went from there, passed quite stringent inspection standards by the 1920s. Other regions, including Lancaster County, were affected later. The milk house was one product of the new laws. In turn, its form and construction were influenced significantly by the agricultural establishment (meaning the complex that included state departments of agriculture, the land-grant university and extension apparatus, and agribusinesses). This new element in the farm landscape, therefore, illustrates the growing influence of the “agricultural establishment” on everyday farming practices and landscapes. Agricultural extension agents regularly disseminated plans for milk houses. Likely, for every farmer who followed a plan exactly there were more who either copied his building, or who adapted the basic guidelines using available materials and expertise. The overall result was a new level of homogeneity and standardization.

Milk houses provided a place to store and cool fluid milk before it was transported to market; to store milk cans not in use; and to wash containers (and sometimes other equipment like separators). Plans offered by the USDA for farm milk houses typically gave dimensions ranging about 10 by 13 feet up to around 12 by 20 feet. Interior plans for a 10 by 13 milk house with ell (# 909, “capacity 20 to 30 head market milk”) show a two-room plan with door leading to a wash room; milk room to one side, which contained a cooling tank and led to raised loading/unloading platforms and sunning racks, mounted on the outside. The ell contained a boiler room\(^{140}\) with its fuel supply, and back door. Larger milk houses had the same basic three spaces, only larger, and sometimes equipped with testers and separators. One (#1337) had a churn, butter worker, ripening vat, and refrigerator, and another (#1339) had quarters for workers. Another small, 12 by 14, one-room milk house (#1341, see illustration) was designed for “butter making by hand” for 20 cows. It contained the same basic spaces, but not divided. The very smallest, at 7 by 9, had a concrete foundation with a sunken vat for cooling cans of milk. All of these plans had sloping floors with drains, and provision for ventilation and light.

In Lancaster County, the agricultural extension agent helped farmers comply with new requirements. In 1928, for example, he wrote: “The demands of the Lancaster, Philadelphia and New York milk markets all required that milk houses be constructed on farms where the better grade of market milk is produced. To meet the need the Extension cooperated with a local cement

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\(^{140}\) Plans referred to are from *Farm Building and Equipment Plans and Information Series*, 1929.
block concern in drawing up plans and in choosing sites for the necessary milk houses. These were built in a majority of the communities of the county and served as demonstrations for other milk producers in respective communities.141

Figure 88: Barn with milk house, Pequea Township, Lancaster County.

**Machine Shed, 1920-1960**

As before, Lancaster Plain farms were heavily mechanized. Moreover, farmers here took good care of their equipment: a 1929 survey of farm machinery noted that a very high percentage of Lancaster County farmers surveyed housed all of their machinery – 95%. Only 45% owned a dedicated machine shed, though. Most machinery was stored on the barn floor (60%) and in the tobacco shed (44%). Dedicated machine sheds often were combined with corn cribs.142

Figure 89: Drive through corn crib and machine shed, Denver Borough, Lancaster County.
Figure 90: Machine Shed, East Hempfield Township, Lancaster County.

**Hog House, 1920-1960**

As interest in swine raising dwindled, hog houses became less common. Moreover, new regulations mandated that hog houses be sited at a distance from the cattle barn. (Bovine TB spread easily from cattle to hogs.) Some farmers converted hog houses to poultry houses. Nonetheless hog raising hung on and even revived during the 1940s.143

Figure 91: Hog house, East Hempfield Township, Lancaster County.

**Poultry Housing, 1920-1960**

*General trends in poultry housing:* By the 1930s, “battery” brooders were appearing where larger numbers (over 500) of chicks were raised. These consisted of stacked cages with “wire-mesh floors with dropping-pans underneath and water- and feed-hoppers on the outside.”144 Proponents claimed many advantages over the traditional brooder house, especially lower cost of building, the ability to keep many more birds in a smaller space, and lower labor costs.145 Notably, one author pointed out that “battery brooding will produce good birds without much experience on the part of the operator…”146 The shift to less-skilled labor probably occurred as men took over poultry raising, because male laborers were not likely to have the background in poultry raising that women did. The buildings in which batteries were housed often were indistinguishable from other types of poultry houses; but some purpose-built battery houses were built which were characterized by high

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141 Agricultural Extension Archives, County Agent Report, 1924, page 36; 1928, page 31.
143 Agricultural Extension Archives, County Agent Report, 1926, 1928, 1930, 1932, 1940
146 Platt, “Battery Brooding.”
windows around the perimeter walls. These permitted batteries to be ranged along the walls, and light to enter from above.

Figure 92: Battery House, illustrated in Farm Journal, June 1932.
Figure 93: Battery House interior, Farm Journal, June 1932.

The “battery” philosophy soon extended beyond chicks to adult birds. Articles began to appear advocating batteries not only for brooders and layers, but also for broilers. By the 1930s, the free range philosophy was in decline among the agricultural establishment (i.e. in the farm press, among extension agents, and with agribusiness), though on many a farm range practices continued. Farm Journal poultry editor D. C. Kennard wrote in 1932 that “Today the pendulum is swinging toward confinement.” Agricultural experiment station testing in Ohio and other states established that confined birds actually did better than those who were raised partly or wholly on free range. An important nutritional discovery -- that cod-liver oil added to the birds’ diet helped chicks thrive indoors -- spurred a “revolution in hen-coops.” With yards no longer emphasized and numbers of birds rising, multi story laying houses began to appear, and the new philosophy also encouraged renovations to large barns for poultry. These barn renovations did not necessarily always contain battery cages, but they did illustrate the abandonment of free-range practices.

By the 1950s, the battery technique was modified, because cages stacked above one another had resulted in ventilation and disease problems. Among large producers, cages were retained, but in single rows suspended above a concrete floor, often in a long, low building. Waste pits reduced disease and cleanup problems. Novel construction techniques such as trussed rafters and sheet-metal construction minimized the number of posts and thus created an open, flexible space. Farm magazines also advertised manufactured poultry housing, including conventional shed- or gable roof structures, but also pointed-arch houses. Prefabricated poultry houses were also discussed in the farm press. It is not possible at this time to determine how many farmers in the region took advantage of these technologies. Many continued on a more modest scale and their buildings were correspondingly modest.

Figure 94: Ralston Purina advertisement, Farm Journal, 1958.

Poultry housing in Lancaster County: A boom in building for poultry took place. Existing buildings, such as bank barns and tobacco barns, were pressed into service. Many new, purpose-built poultry houses were erected as well.

148 The Bradford County Agricultural Extension Agent’s Report for 1941 mentions BradCo’s role in supplying building plans.
Poultry housing was a more or less constant topic in agricultural extension agents’ annual reports. By 1948, the reports mention a shift to concrete block and to broiler houses, supplementing layer housing already in wide use. These closely resembled the descriptions in the farm press. By 1959 the agents relate complaints about competition from further south (the Delmarva peninsula for example) and planning 12,000-layer houses “without windows,” heralding the beginnings of modern mass confinement poultry raising.\(^{149}\)

The agricultural extension agent thought that trench silos were becoming more popular by the post World War II period, but the 1950 census reported only a few dozen in the entire county. Trench silos were not very important at this time.\textsuperscript{150}

**Greenhouse, 1920-1960**

No extant greenhouses were documented for this study, but Sanborn maps show that they were significant urban landscape features.

**Figure 103**: Greenhouse complex, Manheim, Lancaster County, 1929 Sanborn map.

**Landscape Features, 1920-1960**

**Figure 104**: Lancaster County farm land use, 1950.

**Field Patterns**: As always, cropland dominated the Lancaster Plain farm landscape in the mid twentieth century. Open pasture was still to be found, though it was probably concentrated in southern Lancaster County. Woodland and “other” land took up small percentages. The 1940 Penn Pilot aerials show an exquisite pattern shaped by metes-and-bounds property law custom, and by longstanding crop-rotation custom. Fields were relatively small and irregularly shaped, though usually having at least one straight boundary. Though the agricultural extension agents thought local farmers were slow to adopt contour plowing and strip cropping, the 1940 aerials do show instances of both.\textsuperscript{151} By 1957, contour plowing and strip cropping were far more common. Evidence appeared of field consolidation. And by 1971 development pressures were visible in the aerials. Overall, woodlot size and shape changed little.

**Figure 105**: Just east of Lititz, PA, April 1940 aerial view.
**Figure 106**: Just east of Lititz, PA, September 1957 aerial view.

**Boundaries**: Treelines marking field boundaries stayed intact in many instances also. Sheaves of grain and large straw stacks were commonplace sights well into the twentieth century; but those are ephemeral landscape features. Some Amish farm families still make sheaves of grain.

**Fencing**: Fencing around the barn yard continued to be important; sturdy wood or even cement replaced stone fences.

**Figure 107**: Historic photo, “Mennonite farmer going to town, near Lancaster, Pennsylvania.” 1941.
**Figure 108**: Historic photo, “Lancaster County, Pennsylvania. Children on their way home from school on a farm road.” 1942.

\textsuperscript{150} *Lancaster Farming*, February 22, 1957.
\textsuperscript{151} Agricultural Extension Archives, County Agent Report, 1938, 1955; “My land is the Way I want It,” *Lancaster Farming* July 11, 1959, cover story.
Pasture: While the proportion of pasture land in the county as a whole was small, and in the Plain probably smaller, pasture did form part of some farm land allocations. Thus fencing continued to be important in some spots.

Drainage: The agricultural extension agent mentioned open ditches and diversion ditches from time to time, but material evidence for these activities is slim. There was very little discussion in Lancaster Farming magazine, either. It is not clear that drainage was a pressing issue.

Ponds: As elsewhere, ponds became popular after World War II. Large scale digging equipment, aid from conservation districts, encouragement from insurance companies, and more financial resources contributed to a pond building movement. The agent in 1956 claimed that there were 1,000 new ponds in the county. They do not really appear prominently in the aerial photos, though.

Utility Poles and Lines: By 1950, about 80 percent of Lancaster County farm households reported electricity, and over half had telephones. These figures were fairly close to state averages. Thus utility poles and power lines became familiar rural landscape features.

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152 Agricultural Extension Archives, County Agent Report, 1931, 1941, 1952.
153 Lancaster Farming, December 16, 1955, page 12, noted that 70% of Lancaster County farms had phones, 86% electricity, 33% television, and 68% running water.
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Figure 1: Physiographic regions of Lancaster County, showing the Lancaster Plain. From Joseph Glass, “Agricultural Regions of Lancaster County, Pennsylvania,” MS Thesis, Pennsylvania State University, 1959, 14.
Figure 2: Lancaster County number of farms, 1850-1960

Figure 3: Lancaster County average farm size, c.1800-1960
Figure 4: Dohner farm house, East Lampeter Township, Lancaster County, c. 1732. Historic Preservation Bureau file image. The left portion is a classic three-room “Continental” floor plan.

Figure 5: Vaulted cellar, Benedict Eshleman House (I), 1759, Conestoga Township, Lancaster County.
Figure 7: Farm land use, 1850. Lancaster County had far more improved acres, but fewer acres overall, than the average Pennsylvania farm. Hay acreage may be overstated because yields were probably higher in Lancaster County. For a list of townships in the Lancaster Plain, please refer to the section on “Location.”
Figure 8: Lancaster County Farm Crops, 1850. Smaller Lancaster County farms raised far more crops than the average Pennsylvania farm. For a list of townships in the Lancaster Plain, please refer to the section on “Location.”
Figure 9: Lancaster County Farm Livestock, 1850. Overall livestock numbers were smaller than on the average Pennsylvania farm. This is because sheep were so common elsewhere; if they are omitted, average Lancaster County animal numbers are higher than for the state as a whole. For a list of townships in the Lancaster Plain, please refer to the section on “Location.”
Figure 10: Paradise Township, 1864, showing lime kiln locations. The road bisecting the image from left to right is present day Route 30. Bridgens’ Atlas of Lancaster County Pennsylvania (Lancaster, PA: D. S. Bare, 1864), 32. Lime kilns were situated right along the road so that the bulky and heavy product could be easily shipped out.
Figure 11: Farmhouse, East Hempfield Township, Lancaster County, mid 19th century. Pennsylvania Historic Preservation Bureau file photo.

Figure 12: Two-door farm house, East Lampeter Township, Lancaster County, 1854. Pennsylvania Historic Preservation Bureau file photo.
Figure 13: Three-level, two-door house, Pequea Township, Lancaster County, 1849. Pennsylvania Historic Preservation Bureau file photo.

Figure 14: Farm house, Conestoga Township, Lancaster County, mid to late 19th century. Pennsylvania Historic Preservation Bureau file photo.
Figure 16: Windom Mill barn, Manor Township, Lancaster County, late 18th–mid 19th century. Floor plan below.

Figure 17: Windom Mill barn floor plan, main block. The plan does not show the rear outshed or the gable-end machine shed. This barn originated as a stone barn and was enlarged twice. University of Delaware Center for Historic Architecture and Design.
Figure 18: Windom Mill Farm, site plan. University of Delaware Center for Historic Architecture and Design. See barn images above, Figures 16 and 17.

Figure 20: Lower level interior, Jacob and Elizabeth Miller Barn, 1804, Lancaster vicinity, Lancaster County, photographed after 1933. Historic American Buildings Survey, digital ID http://hdl.loc.gov/loc.pnp/hhh.pa1490.
Figure 21: Double lime kiln, Manheim Township, Lancaster County, 19th century. Pennsylvania Historic Preservation Bureau file photo.

Figure 22: Spring house, David Davis Farm, Earl Township, Lancaster County, c. 1800. Pennsylvania Historic Preservation Bureau file photo.
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Figure 23: Smokehouse, East Earl Township, Lancaster County, date unknown. Pennsylvania Historic Preservation Bureau file photo.

Figure 24: Smokehouse, East Earl Township, Lancaster County, date unknown. Pennsylvania Historic Preservation Bureau file photo.
Figure 25: “Fry homestead, which has been in the family for seven generations.” Ephrata, Lancaster County, photographed by John Collier in 1942. FSA/OWI collection, Library of Congress, digital ID fsa8c26497 http://hdl.loc.gov/loc.pnp/fsa.8c26497. The brick summer kitchen with attached bake oven may date from this period.

Figure 26: Summer kitchen, Hibschman Farm, Ephrata Township, Lancaster County, c. 1860-1890. Pennsylvania Historic Preservation Bureau file photo.
Figure 27: Summer kitchen, bake house, and smoke house, Denver Borough, Lancaster County, c. 1875-1900. Pennsylvania Historic Preservation Bureau file photo.

Figure 28: Lancaster County and Pennsylvania Tobacco Production, 1840-1950. Data from the US Census of Agriculture. Year-by-year figures also appear in the Pennsylvania Department of Agriculture Yearbook.
Figure 29: Roger Chatsey Heppell, “Agricultural Geography of the Cigar Tobacco Industry of the Lancaster, Pennsylvania Region,” Ph d dissertation, Geography, Penn State University, 1953, page 145. The Lancaster tobacco region temporarily overreached the county’s borders, but as this map shows, by the mid 20th century it essentially coincided with the Lancaster Plain.
Lancaster County PA Farm Crops, 1880 (10% sample)

- Bushels Potatoes per Farm
- Bushels Wheat Per Farm
- Bushels Rye Per Farm
- Bushels Oats Per Farm
- Bushels Corn per Farm
- Bushels Buckwheat Per Farm

Figure 30: Lancaster County farm crops, 1880.
Figure 31: Lancaster County farm livestock, 1880.

Figure 33: Creamery, Lititz, Lancaster County. The creamery was sited by a stream and had its own “milk house.” 1898 Sanborn Map, Sheet 5.
Figure 34: Men and women working together in a Lancaster County tobacco field, late 19th century. Philadelphia Commercial Museum Photo Collection, Manuscript Group 219, Box 11, #9795 n. a. 2506. Pennsylvania State Archives.

Figure 35: “Farmer (sic) at work, Lancaster County, PA.” Photographed by Sheldon Dick in 1938. FSA/OWI collection, Library of Congress, digital ID fsa 8c02036 http://hdl.loc.gov/loc.pnp/fsa.8c02036
Figure 36: Abraham and Anna Herr House, Pequea Township, Lancaster County, dated 1877. Pennsylvania Historic Preservation Bureau file photo.

Figure 37: Four over four farmhouse with two doors, Pequea Township, Lancaster County, c. 1875-90. Pennsylvania Historic Preservation Bureau file photo.
Figure 38: Pennsylvania Barn, Lancaster vicinity, Lancaster County, late 19th or early 20th century. Photographed by Charles H. Dornbusch in 1941. Historic American Buildings Survey, digital ID http://hdl.loc.gov/loc.pnp/hhh.pa1475. This barn is a good example of a late 19th or early 20th century barn. To the right, a shed-roof gable-end addition combines machinery bay, corn crib, and (to the rear of the corn crib) tobacco storage. The windows in the second story and at left suggest possible modifications for poultry. The chimney might be either for a stripping room or for warming baby chicks. Modern metal ventilators and lightning rods line the roof ridge.
Figure 39: Stoner Barn, West Lampeter Township, Lancaster County, c. 1870. This Pennsylvania Barn incorporates an integral machinery bay; chicken coop; horse power shed; tobacco lath; and corn crib. See also Figures 40-44.

Figure 40: Horse Power Shed, Stoner Barn
Figure 41: Stoner Barn, ground floor plan. University of Delaware Center for Historic Architecture and Design. Note the integral machinery bay and corn crib.
Figure 42: Stoner Barn, Threshing Floor Plan. University of Delaware Center for Historic Architecture and Design. The granary is in the bankside.
Figure 43: Stoner Barn, corn crib.

Figure 44: Stoner Barn, rails and cleats for tobacco hanging in the main barn.
Figure 45: Herr barn, West Lampeter Township, Lancaster County, c. 1800-1950. Floor plan and upper level bankside view showing accommodation for tobacco within the main barn. The earliest portion of the barn (a “double decker”) dates to the about 1800, with rear additions in the twentieth century. Floor plan courtesy University of Delaware Center for Historic Architecture and Design.
Figure 46: Barn, Benedict Eshleman farm, Conestoga Township, Lancaster County, c.1825-1890. The image shows how a Pennsylvania Barn was modified with a tobacco section extending from the gable end.

Figure 47: Windom Mill Tobacco barn, Manor Township, Lancaster County, c. 1875. This barn is banked, with stripping room on the basement level and facing south. Note the stovepipe protruding from the stripping room, and the roof-ridge monitor-style ventilator. The barn is located near the main barn, corn barn (just visible at left), and house. The box protruding from the gable end was connected to the horse power inside, and in turn to a belt that was connected to machinery in the corn barn.
Figure 48: Floor plan of a tobacco barn erected by J. W. Johnson, Drumore Township, c. 1879. Published in Frank R. Diffenderffer, “Our Tobacco Crop for 1879,” Agriculture of Pennsylvania (Harrisburg: Pennsylvania Board of Agriculture, between 190 and 191.)

Figure 49: Herr tobacco barn, West Lampeter Township, Lancaster County, 1907. This barn has vertical slats, metal ventilators, and a gable-end stripping room. The vents are closed in this photo.
Figure 50: Lower Level Floor Plan, Herr Farm tobacco barn, Lancaster County. University of Delaware Center for Historic Architecture and Design.

Figure 51: Upper Level Floor Plan, Herr Farm tobacco barn, Lancaster County. University of Delaware Center for Historic Architecture and Design.
Agricultural Resources of Pennsylvania, c.1700-1960

XVI. Lancaster Plain Historic Agricultural Region, c.1730-1960

Figure 52: Herr tobacco barn with slats open.

Figure 53: Lancaster County style tobacco barn, Manor Township, Lancaster County, PA, c 1940. The vertical slats are open and the tobacco can be seen hanging just inside the door. The stripping room is in the far gable end.
**Figure 54:** Tobacco hanging inside a Lancaster County tobacco barn, 2003. Note the rails suspended in cleats; the extra laths; open slats; and the tiers of leaves.

**Figure 55:** Summer kitchen, Rapho Township, Lancaster County, late 19th century. Pennsylvania Historic Preservation Bureau file photo.
Figure 56: “View of Enos Royer's farm with home garden in the foreground.” Photographed by Sheldon Dick in 1938. The summer kitchen is strategically located between house and farm garden. FSA/OWI collection, Library of Congress. Digital ID fsa 8c02303 [http://hdl.loc.gov/loc.pnp/fsa.8c02303](http://hdl.loc.gov/loc.pnp/fsa.8c02303)

Figure 57: Small poultry house, Rapho Township, Lancaster County, c. 1920-1940. Pennsylvania Historic Preservation Bureau file photo.
Figure 58: Small poultry house, Christian and Emma Herr farm, West Lampeter Township, Lancaster County, date unknown.

Figure 59: “Poultry House for the Average Farm.” Karl Ekblaw, *Farm Structures*, 1914, page 195.
Figure 60: “Lancaster County Pennsylvania rural scene.” This small Pennsylvania Barn has been turned into a poultry house. Photographed by Sheldon Dick in May 1938. FSA/OWI Collection, Library of Congress, Digital ID cph 3c37398 http://hdl.loc.gov/loc.pnp/cph.3c37398

Figure 61: “Rich Farmland, Lancaster County, PA.” Photographed by Marion Post Wolcott in 1939. FSA/OWI Collection, Library of Congress. Digital ID fsa 8c10444 http://hdl.loc.gov/loc.pnp/fsa.8c10444. Probably the three-story building in center is a post 1920 poultry house, but the low shed roof one across the lane may be earlier.
Figure 62: “Barnyard on the farm of C.F. Minnich,” Lititz vicinity, Lancaster County. Photographed by Sheldon Dick in 1938. FSA/OWI Collection, Library of Congress. Digital ID fsa 8c02113 http://hdl.loc.gov/loc.pnp/fsa.8c02113. It appears that the upper story is for chickens and the lower for hogs.

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**PRACTICAL BARN PLANS**

shade. If the drainage is not good naturally, put in tiling. Fill above the tiling with cinders and put a foot of sawdust on top of the cinders. Don't use straw if you can help it because it rots. Pine sawdust is the best if you can get it.

Fill the house in January or February.

Figure 67: From William A. Radford, *Radford's combined house and barn plan book* (New York, 1908), page 263.
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Figure 74: Types of Farming map. “Types of Farming in Pennsylvania,” Pennsylvania State College Agricultural Experiment Station Bulletin # 305 (April 1934), 46-7. This map shows 1929 types of farming down to the township level. Note that the Lancaster Plain had mainly crop-specialty (ie tobacco) farms or general farms, while dairying in the county was concentrated outside the Plain.
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Figure 79: Lancaster County farm chickens, 1880-1950.


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Lancaster County PA Farm Land Use, 1950

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Legend:
- Purple: All Other Land
- Green: All Woodland
- Red: Open Pasture
- Blue: Cropland
Figure 105: Just east of Lititz, PA, April 1940 aerial. Penn Pilot aerials.
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29: Roger Chatsey Heppell, “Agricultural Geography of the Cigar Tobacco Industry of the Lancaster, Pennsylvania Region,” Ph.d dissertation, Geography, Penn State University, 1953, page 145. The Lancaster tobacco region temporarily overreached the county’s borders, but as this map shows, by the mid 20\textsuperscript{th} century it essentially coincided with the Lancaster Plain.

30: Lancaster County farm crops, 1880.

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33: Creamery, Lititz, Lancaster County. The creamery was sited by a stream and had its own “milk house.” 1898 Sanborn Map, Sheet 5.

34: Men and women working together in a Lancaster County tobacco field, late 19th century. Philadelphia Commercial Museum Photo Collection, Manuscript Group 219, Box 11, #9975 n. a. 2506. Pennsylvania State Archives.


37: Four over four farmhouse with two doors, Pequea Township, Lancaster County, c. 1875-90. Pennsylvania Historic Preservation Bureau file photo.

38: Pennsylvania Barn, Lancaster vicinity, Lancaster County, late 19th or early 20th century. Photographed by Charles H. Dornbusch in 1941. Historic American Buildings Survey, digital ID http://hdl.loc.gov/loc.pnp/hhh.pa1475. This barn is a good example of a late 19th or early 20th century barn. To the right, a shed-roof gable-end addition combines machinery bay, corn crib, and (to the rear of the corn crib) tobacco storage. The windows in the second story and at left suggest possible modifications for poultry. The chimney might be either for a stripping room or for warming baby chicks. Modern metal ventilators and lightning rods line the roof ridge.

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47: Windom Mill Tobacco barn, Manor Township, Lancaster County, c. 1875. This barn is banked, with stripping room on the basement level and facing south. Note the stovepipe protruding from the stripping room, and the roof-ridge monitor-style ventilator. The barn is located near the main barn, corn barn (just visible at left), and house. The box protruding from the gable end was connected to the horse power inside, and in turn to a belt that was connected to machinery in the corn barn.
48: Floor plan of a tobacco barn erected by J. W. Johnson, Drumore Township, c. 1879. Published in Frank R. Diffenderffer, “Our Tobacco Crop for 1879,” *Agriculture of Pennsylvania* (Harrisburg: Pennsylvania Board of Agriculture, between 190 and 191.)

49: Herr tobacco barn, West Lampeter Township, Lancaster County, 1907. This barn has vertical slats, metal ventilators, and a gable-end stripping room. The vents are closed in this photo.

50: Lower Level Floor Plan, Herr Farm tobacco barn, Lancaster County. University of Delaware Center for Historic Architecture and Design.

51: Upper Level Floor Plan, Herr Farm tobacco barn, Lancaster County. University of Delaware Center for Historic Architecture and Design.

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53: Lancaster County style tobacco barn, Manor Township, Lancaster County, PA, c 1940. The vertical slats are open and the tobacco can be seen hanging just inside the door. The stripping room is in the far gable end.

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56: “View of Enos Royer's farm with home garden in the foreground.” Photographed by Sheldon Dick in 1938. The summer kitchen is strategically located between house and farm garden. FSA/OWI collection, Library of Congress. Digital ID fsa 8c02303 [http://hdl.loc.gov/loc.pnp/fsa.8c02303](http://hdl.loc.gov/loc.pnp/fsa.8c02303)


58: Small poultry house, Christian and Emma Herr farm, West Lampeter Township, Lancaster County, date unknown.


60: “Lancaster County Pennsylvania rural scene.” This small Pennsylvania Barn has been turned into a poultry house. Photographed by Sheldon Dick in May 1938. FSA/OWI Collection, Library of Congress, Digital ID cph 3c37398 [http://hdl.loc.gov/loc.pnp/cph.3c37398](http://hdl.loc.gov/loc.pnp/cph.3c37398)

61: “Rich Farmland, Lancaster County, PA.” Photographed by Marion Post Wolcott in 1939. FSA/OWI Collection, Library of Congress. Digital ID fsa 8c10444 [http://hdl.loc.gov/loc.pnp/fsa.8c10444](http://hdl.loc.gov/loc.pnp/fsa.8c10444). Probably the three-story building in center is a post 1920 poultry house, but the low shed roof one across the lane may be earlier.


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XV. Great Valley, c 1800-1960

Location

Pennsylvania’s “Great Valley” is a broad, relatively level valley which runs from Northampton County in the northeast, in a rough arc westward through Lehigh, Berks, Lebanon, southern Dauphin, Cumberland, and Franklin Counties, turning southward and continuing across the state line. Some geographers treat it in its own right; others consider it as part of the Ridge and Valley province. In either case, all recognize that it is not confined to Pennsylvania; it becomes the “Shenandoah” Valley in Virginia, and extends northeast into New Jersey. The Great Valley is bounded on the north by long, narrow, steep ridges, penetrated by gaps and given various names along its route. On the south, South Mountain forms a sharp boundary, and a band of lesser hills separates the Great Valley from northern Bucks, Montgomery, Chester, Lancaster, and York Counties. The Great Valley is between ten and twenty-five miles wide, and extends about 150 miles in Pennsylvania. Traditionally, within this larger region the “Lehigh Valley” comprises the eastern end; the “Lebanon Valley” the flat area from Reading to Harrisburg; and the “Cumberland Valley” from the Susquehanna to the Maryland line.¹

Figure 1: Map of Pennsylvania’s physiographic provinces, showing Great Valley section.
Figure 2: Relief map of Pennsylvania.

The narrative considers Franklin, Cumberland, and Lebanon Counties to lie wholly in the Great Valley. However, northern Northampton County probably fits better with the Pocono-Anthracite region; southern Berks with Southeastern Pennsylvania; and northern Dauphin with the North and West Branch Susquehanna Region. Northwestern Lehigh County, a notable potato growing region historically, has its own separate narrative.

Climate, Soils, and Topography

Climatic conditions in this large area vary. The growing season ranges from about 121 to 180 days, but averages around 150 in most places. Annual average precipitation ranges from 40 to 42 inches. Mean annual temperatures are in the low 50s Fahrenheit. Summers are relatively hot and winters cool. Important waterways within the Valley include the Delaware River, on its eastern edge; the Lehigh; the Schuylkill; and the Susquehanna and tributaries. Most run across the valley, but the tributaries (such as the Conodoguinet in Cumberland County) often run along it. Soils are alfisols and ultisols. One distinguishing feature in most of the valley is that limestone is the parent material. Sandstone and shale are the other important parent rocks. According to the Penn State online “Agronomy Guide,” in the Ridge and Valley region the limestone soils “are usually deep, well

¹ E. Willard Miller, ed., A Geography of Pennsylvania (University Park, PA, 1995), 20; Raymond and Marion Murphy, Pennsylvania Landscapes (State College, PA, 1952), chapter 6 and page 12.
drained, have high root zone available water-holding capacity, and have few rock fragments. The shale-derived soils are less productive because of their acidic nature, steep slopes, and generally low root zone available water-holding capacity. The soils in the valleys are on level or undulating land, and erosion potential is low to moderate. The valley soils are used intensively for agriculture.”

The two most important agricultural soil associations in the valley are the Hagerstown-Duffield and Berks-Weikert, which are limestone and shale soils respectively.

Since the Valley’s defining features are topographical, topography has already been discussed under “location” above.

**Historical Farming Systems**

**Diversified small-scale farming and wheat for export: Mid 18th to early 19th century**

The land lying within the Great Valley had been acquired by 1737, and pockets were well settled by 1760, especially in areas now covering southern Dauphin, Lebanon, and Berks Counties. These include places such as Tulpehocken region in Berks/Lebanon, the Reading area in Berks County (especially the Oley Valley, just on the Great Valley’s edge), and the region around Carlisle in Cumberland County. After the French and Indian Wars, more and more people followed the corridor and filled it up. By 1813 the present county boundaries were set with the creation of Lehigh County in 1812 and Lebanon County the following year. The population in the valley came from varied backgrounds. The British Isles were well represented, with English, Welsh, and most notably Scots-Irish people. Around 1800, the Scots-Irish still dominated in the western portion of the valley, in Cumberland and Franklin Counties. French Huguenots, Swedenborgians, and Mennonites came from the Continent. German-speaking people from the Rhine Valley and Switzerland came to Pennsylvania beginning around 1720 with the immigration peaking around the time of the Revolution. During this time period, they slowly gained in their proportion of the rural population in the region. By 1800, geographer Mark Hornberger estimates, German-speakers comprised over 65 percent of the population in most of Berks and Northampton Counties, with the percentage diminishing further westward. In many Cumberland County townships, for example, more than a third of the people came from English backgrounds and another fifth were Scots-Irish or Irish.

Transport corridors were rudimentary during this period. Reading and Easton were connected by road, and the Schuylkill River connected Berks County to Philadelphia for part of the year. Similarly, the Susquehanna was seasonally navigable. By the late 18th century, a road ran west through the valley from Reading to Harrisburg and on down through Chambersburg.

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2 [http://agguide.agronomy.psu.edu/cm/sec1/sec11a.cfm](http://agguide.agronomy.psu.edu/cm/sec1/sec11a.cfm) accessed November 16, 2010


Land distribution occurred in a protracted and complicated process. Some holdings were quite large—over a thousand acres—and slowly these were broken up into smaller parcels and sold for farms. Still, it was not unusual for a landowner to possess 200 or 300 acres in these early years. Clearing proceeded steadily, yet it took a long time, so crop acreage might only be 20 or 30 acres, plus some meadow land and orchard land. Crops were generally not rotated; instead, land was allowed to lie fallow periodically. These basic facts underlie analysis of production and trade patterns.6

Early farm production in the Great Valley region was quite diverse, but nonetheless patterns do emerge. Commentators during the colonial and early national periods mentioned wheat, buckwheat, rye, oats, and barley as typical small grains. Some sources mentioned spelt, an Old World grain. Within this broad list, rye was as important as wheat in Berks, Lebanon, Lehigh, and Northampton Counties, while west of the Susquehanna total wheat production probably surpassed rye. (Accurate figures are not available before 1840, so an assumption is made based on the 1840 census data plus earlier observers’ comments.) This difference can be attributed partly to cultural preferences, and also to differences in soils. In this period, the eastern counties were much more heavily Pennsylvania German than were those west of the river. An article in the Farmer’s Register noted that in Lehigh County, the Pennsylvania Germans much preferred rye bread, and also fed rye to animals.7 Rye straw was also prized for roof thatching. A second reason why wheat gained the upper hand in the western counties was probably that they had more of the favorable Hagerstown soils. Regardless of proportions, wheat was important throughout the region, especially in terms of its potential for generating income. As grain or flour, it found its way to mills and markets, often ending up in Philadelphia or Baltimore and beyond. As whiskey, it brought greater profits to farmers distant from markets. (This was also true for corn.) This is an important factor; unlike farms in the southeast, most farms in the Great Valley were still poorly connected to markets at this time. Corn (maize) was grown, but its importance varied before 1800, after which it became much more common. Oats was important as a feed crop, and small quantities of barley supplied brewing needs.

Fiber crops occupied an important place in the farm economy in the “Age of Homespun.” Flax and hemp were most often mentioned. Potatoes, cabbage, turnips, and many other garden crops fed humans and animals. By the end of the period, clover and timothy hay had begun to be deliberately planted. Orchards were planted immediately and within a generation, families were well supplied with fruits. Apples were the mainstay, yielding not only fresh fruit but dried fruit, vinegar, cider, apple butter, and hard cider. Historian Michael Kennedy has noted that besides the obvious outlets in major port cities, farm markets developed quite early at local mills and ironworks. These were well distributed throughout the region. Kennedy mentions beans, onions, wood, veal, parsnips, venison, cucumbers, molasses, greens, peas, leather, limestone, tallow, wax, straw, hops, hides, and feathers as items that were traded in these rudimentary markets. Others included processed items

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6 Philip E. Pendleton, Oley Valley Heritage, the Colonial Years: 1700-1775 (Birdsboro, PA, 1994), 29-34.
7 (In the Oley Valley, however, according to Pendleton, both English and German families ate rye bread.)
such as stockings, clothing, linen, baskets, soap, thread, cheese, vinegar, shingles, charcoal, and candles.\textsuperscript{8}

Livestock were few and generally fended for themselves. Nonetheless, horses, steers, milk cows, swine, sheep, and poultry were kept. Not only meat, but butter, fiber, cloth, and feathers were important livestock-derived products.

By 1892, Theophilus Cazenove traversed the Great Valley and noted thriving farms with “large fields of wheat, corn and buckwheat” as well as clover, tobacco, potatoes, flax, cabbages, carrots. He continued: “the hollows are good pasture… the houses are stone, and several of log and stone.” Farmers were selling beef, mutton, veal, wheat, salt, and butter; “they have all become rich, through the high price of grains since the French Revolution.” Anne Royall summed up the livestock practices with this observation of the Lehigh Valley: ”large sleek cattle, few sheep, and few horses in sight, but a number of fine hogs running at large in the woods.”\textsuperscript{9}

In sum, the early farm economy in the Great Valley mixed subsistence, cash grain production, bartering, and other forms of exchange to create a highly diversified, small-scale agricultural system.


Labor and Land Tenure, Mid 18th to early 19th century

Farm production relied heavily on human energy in this period. Slow oxen were the main draft animals, and farm implements were few and crude. The wood plow, scythe, flail, hoe, and rake were important implements. So, people were the main requisite for farming. They came mainly from family; every man, woman, and child had his or her own allotted duties, and at peak times everyone joined in the same work. Additional labor was obtained through neighborly exchanges.10

Another important labor source came from various types of “bound” or “unfree” labor. For example, under the “redemptioner” system, young adults with few resources paid for their trans-Atlantic passage by working for a period of years. These people came from all over Europe, including the British Isles. Some criticized the redemptioner system as a form of “white slavery,” while others saw it as a practical system that benefited both worker and employer.11 Indentured servitude was another form of “bound” labor, usually involving a child or teenager bound to a family for a period of several years, laboring in return for some training and possibly schooling, as well as room, board, and clothing. In 1818, for example, Lehigh County widow Eva Hoatz indentured her daughter to Adam Michael. The agreement read:

Heidelberg Township, Lehigh County, April 15, 1818. An agreement between Eva Hoatz, widow, and Adam Michael, as follows: first, Eva Hoatz hires her daughter, Magdalena Hoatz, to Adam Michael for four years, and Adam Michael shall give Magdalena Hoatz: a new cotton tick with sixteen pounds of feathers; a plaid cover for the whole bed, a new homemade cover; a linen bedsheet and one of new home-spun, two new pillows, one large and two small; a new tow-colored bedspread; a new low bedstead for a new and complete bed; a new chest with five drawers; a cow or nine pounds of money in lieu of the cow; a new spinning wheel, a new iron kettle of medium size, also a pan; furthermore during the entire term of employment he must keep Magdalena Hoatz supplied with clothes for Sunday and work-a-day wear, and must send her to school for three months and to catechetical instruction and confirmation. He must present her with a new dress of her own choosing, except that it shall not be a silk dress; and Magdalena’s employment begins January 1818. Signed on the day and date above given. Witnessed by: Adam Michael, John Peter, Georg Hoatz 12


A very few slaves also appear on farms in the documentary record for the period. The central point here is that most farm laborers were “unfree” in the sense that they were subject to binding, usually multiyear, agreements. Patriarchal power was so strong that even family labor was “bound” to some extent, since men exerted considerable legal control over wives and children.

Tenancy was an important institution. Sometimes it functioned as yet another means of obtaining and controlling scarce farm labor, but also it allowed people to ascend the “agricultural ladder,” accumulating resources while renting in order later to purchase land. Rates of tenancy are not available for this period in the Great Valley, but it is safe to say that it figured prominently in the agricultural system. Documentary evidence is readily available; for example, in Cumberland County, an 1805 sharecropping contract between Nicholas Schwerdt (the tenant) and William Alexander specifically explained how crops would be divided and expenses distributed.

Another important point to consider about labor in this time and place is that many people combined farming with other occupations, often trades like cabinetmaking, shoemaking, or carpentry, or even with professions such as the ministry.

Buildings and landscapes, Mid 18th to early 19th century
Houses, Mid 18th to early 19th century
Architectural survivals from before 1800 represent only the upper end of Pennsylvania housing. Overwhelmingly, the typical 18th-century dwelling was a small log structure, often only a single story. In Cumberland County, for example, the average house c. 1770 measured about 21 by 26 feet and had two rooms and a loft. The 1798 Direct Tax offers detailed evidence that the building stock consisted of log dwellings with around 600 or 700 square feet of living space. These buildings offered little room for agricultural processing work or storage.

The larger early houses in this region are among the most famous in Pennsylvania, so they have been much discussed by architectural historians. The reader is referred to the excellent works on colonial Pennsylvania architecture for detailed discussions about these buildings. For the purposes of this narrative, an attempt will be made to offer a broad and brief synthesis of major house types and their relationship to agriculture.

14 Nancy van Dolsen, Cumberland County, an Architectural Survey (Ephrata, PA, 1990), 285.
15 Clouse, “Household Inventories’
16 Clouse, “Household Inventories’
18 On Pennsylvania German architectural traditions, see Sally McMurry and Nancy van Dolsen, eds., Architecture and Landscape of the Pennsylvania Germans, 1720-1920 (Philadelphia, forthcoming); for others, see Henry Glassie, Pattern in the Material Folk Culture of the Eastern United States (Philadelphia, 1968); Richard Pillsbury, “Patterns in Folk and
The cultural mixing in colonial Pennsylvania is represented in the many architectural traditions that were combined and recombined. The famous “Continental” house, for example, was favored by German speakers. It featured a roughly square footprint, a front elevation with asymmetrically placed openings, a roof-ridge chimney, and a floor plan dominated by a long narrow kitchen with central hearth, a “stove room” heated off the hearth, and a “kammer” or chamber. Variations on the type were built in stone, log, half-timbering, and frame. Often these houses would have a full cellar through which ran a stream or spring. Some of these were vaulted. The one-or two-level attic often contained room for grain storage and a smoke chamber for smoking meats. The agricultural significance of these houses is in their extensive productive spaces. Cellar areas were important work and storage sites, while storage and processing occurred throughout the house. Over time, continual interactions among cultural groups resulted in modifications to the “Continental” house type.

In Cumberland County, evidence appears in the built environment that Scots-Irish people were adapting into log their traditional stone one-story, one-or two-room dwelling. Some had a hall-and-parlor configuration.

Over time, the average dwelling became more substantial and less “ethnically” distinct. All cultural groups embraced Renaissance ideals from Europe, which architecturally translated into features such as exterior symmetry (regularly spaced windows in a three, four, or five-bay front elevation), rooms with specific functions, and passages or hallways which separated interior spaces. The central chimney was replaced by gable-end chimneys. Often the change was only superficial; exterior symmetry might mask more traditional interiors. Productive spaces continued to be integrated into dwellings, especially the large kitchen and vaulted cellar and sometimes attic storage and processing too. Sometimes the kitchen appeared as a substantial ell.  

Figure 3: Immel house, Jackson Township, Lebanon County.  
Figure 4: Springood Cabin, Allentown, Lehigh County.  
Figure 5: House, Jackson Township, Lebanon County.  
Figure 6: House, Jackson Township, Lebanon County.

Barns, Mid 18th to early 19th century

Because livestock were few and crops small, barns were either absent or quite modest in scale, especially before 1800. Often the Direct Tax lists a log “stable” rather than a proper barn. These early buildings were small and built all on one level. For this reason they are sometimes called “ground barns.” These tripartite structures had a main entrance in the long side, leading to a threshing floor. In turn the floor was flanked by a hay mow and stable areas. This space accommodated the modest needs for hay storage, grain processing area, and housing a few select


Van Dolsen, Cumberland County, 1-16, 267-276.
animals. Very few of these survive intact. Some years ago Robert Ensminger documented one in Berks County but it is now badly deteriorated. The Casper Maul barn in the Oley Valley, 1791, is a late example in stone (Figure 7). In Cumberland County, the Alexander Leckey barn is a late-18th century survival. It has double log cribs and is not banked, though at 25 by 60 it is large.

Figure 7: Casper Maul barn, Oley Township, Berks County.

Outbuildings, Mid 18th to early 19th century

Outbuildings were relatively scarce during this early period. Most commonly found in the documentary record are kitchens, spring houses (also called “milk houses”), still houses, bake houses, and smoke houses. Philip Pendleton has identified an “ancillary house” type which often encompassed more than one of these functions, or served as a second house for grandparents or tenants.

Figure 8: Abraham Bertolet ancillary house, Oley Township, Berks County.
Figure 9: Keim Homestead ancillary building, Oley Township, Berks County.
Figure 10: Bakehouse, Bertolet-Herbein homestead, Berks County.
Figure 11: Dairy or wash house, Schaefferstown, Lebanon County.
Figure 12: Spring house, Cumberland County.
Figure 13: Smokehouse, Tulpehocken Manor, Jackson Township, Lebanon County.

There is evidence to suggest that still houses were as common as other farm outbuildings of the era. The distilling process required both water and heat, so a still house would probably have a water source and a fireplace. No free-standing still houses were documented in the Pennsylvania Agricultural History Project field study. However, architectural historian Nancy Van Dolsen in earlier work documented two still houses in Cumberland County, both dating c. 1800-1825. They were banked, built of stone and were rectangular with a large length:width ratio, measuring about 12 by 20-24 feet. A stream ran through a channel in the lower level floor and there were stone troughs there also. On the upper level were “...a gable end door, slit openings for light, and a fireplace.”

Spring houses could be, and were, used for distilling. In particular, it would seem that springhouses with an upper level fireplace would be well suited to distilling. The Alexander Schaeffer farm house in Lebanon County has architectural and documentary evidence that distilling took place in its basement.

21 Van Dolsen, Cumberland County, 114-116; this site is PA HRS Key # 088382.
23 Email communication, November 6, 2010.
The farm landscape in this period would have been a patchwork of small crop fields, woodlots, orchards, and meadows. Philip Pendleton points out that it “would have taken on a rather ramshackle appearance to modern eyes,” since no lawns set off the house and fencing was rudimentary. Stump fields lent an unfinished air to the landscape.\(^{25}\) Except for boundaries that might mark longstanding property lines, these features do not survive.

**Diversified grain-and-livestock farming: early 19th century to c. 1900**

A major agricultural transition took place around the turn of the 19th century throughout eastern and central Pennsylvania. It began with crisis. The infamous Hessian fly invaded southeastern Pennsylvania in the 1790s and caused widespread devastation, prompting farmers to reconsider their overreliance on wheat. In any case, some observers believed that soil exhaustion was beginning to set in. In 1807, Thomas Jefferson's Embargo delivered another blow to grain producers, making foreign markets less accessible. European recovery after the Napoleonic Wars, then the Panic of 1819 and ensuing depression also forced readjustments. Competition from newly opened wheat lands in the Genesee River Valley of New York State and in the nascent Midwest brought low priced grain into competition with Pennsylvania wheat.

Though painful, these disruptions were eventually overcome, because the much anticipated “home market” was becoming a reality, as the nonagricultural population in the young republic expanded. In the Great Valley, inland towns like Easton, Allentown, Reading, Lebanon, Harrisburg, Carlisle, and Chambersburg grew rapidly, providing domestic markets to replace lost overseas outlets. The nonagricultural population grew in rural areas, too, as the economy diversified and agriculture mechanized. At the same time, transportation infrastructure knitted the region together. Improved macadam road, plank roads, and turnpikes made road travel easier. The Lehigh Canal was completed in 1829 and the Union Canal in 1830. The latter penetrated right into the Great Valley and connected it with Philadelphia. Barely as soon as the canals opened, rail links followed. Already by the mid-1840s the Cumberland Valley Railroad passed through the county’s center, and by the late 1850s rail lines traversed the entire length of the Great Valley. Philadelphia, Lancaster, Baltimore, New York City, and Pittsburgh were now more easily accessible.\(^{26}\)

These domestic markets could be supplied with products that (unlike wheat) were consumed fresh. This meant that not only fruits and vegetables, but livestock and livestock products (meat, butter, cheese, eggs, and so on) took on new possibilities for eastern farming families. The basic agricultural adjustment made in this changing atmosphere was to shift from a crop-centered system to a crop-and-livestock system which incorporated rotations, manuring, and liming and which produced a diverse array of both crops and livestock products. Crop rotation avoided unproductive

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\(^{25}\) Pendleton, *Oley Valley Heritage*, 97.

fallows as a way to replenish the soil, instead substituting a sequence of crops, usually corn, wheat, oats, and grass. The grasses (for hay and pasture) contained timothy and clover, which improved soil texture and returned organic matter to the soil; this process was often enhanced by liming. Fertilizing with barnyard manure was a second key aspect in rotations. Manure had to come from confined livestock, and so the field husbandry and animal husbandry worked in tandem. At the same time, earlier constraints on available labor power began to drop away. Industrialization brought farm mechanization, both increasing the (rural and urban) consuming population and making the new style of farming feasible.

A Lehigh County correspondent for the *Farmer and Gardener* in 1834 summarized the changes:

... the introduction of the use of lime in farming, and the culture of clover about 20 years ago, wrought a most salutary revolution, and saved the second and third rate lands from being deserted for the far west. Every summer adds to the number of solid and capacious barns, and old ones enlarged.... Common rotation, 1st. clover, 2d. Indian corn, 3d, oats or flax, and potatoes, manure, 4th, wheat, 5th and 6th, clover...

This correspondent also noted that liming had “quick and immediate” effect on rye culture, which as we have seen was quite important there.27

An important social trend in the Great Valley during the 19th century was its increasingly Pennsylvania German flavor. Not just rural areas, but cities like Reading now became predominantly Pennsylvania German. By 1880, in Cumberland and Franklin Counties the percentage of Pennsylvania Germans had risen; most Cumberland County townships were now at least 45% German. During these years the people in the rural hinterland developed their rich Pennsylvania German cultural life. Without indulging in hoary stereotypes about the Pennsylvania Germans, it is possible to argue that this period represented a flowering of Pennsylvania German rural culture. In the years of the early Republic “Germans in Pennsylvania” coalesced to become “Pennsylvania Germans.” Since colonial days, German speakers in Pennsylvania had evolved a common dialect and established church communities and schools. Immigration from German-speaking lands had trickled to a stop by the early 19th century. Settled Pennsylvania German communities developed a sense of common identity through struggles over such issues as state-sponsored schools and religious evangelicalism, and through conflict with the newly arrived “forty-eighter” Germans. Pennsylvania German cultural practices and forms peaked during these years. In few places was this more evident than in the rural Great Valley.

27 “Letter 2,” *The Farmer and Gardener*, August 4, 1835. American Periodicals Series Online. Of course, this type of farming wasn’t “new” in a general sense. Europeans had long practiced variations on it. Moreover, it is not clear if the manuring and rotations actually resulted in higher per-acre crop yields. Clearing proceeded continually, thus adding acreage to the total under cultivation. Even though crop totals rose drastically, agricultural economist Kuan-I Chen demonstrated that increases were mainly due to added acreage under cultivation between about 1840 and 1880, possibly even to the end of the century. Kuan-I Chen, "Agricultural Production in Pennsylvania, 1840 to 1950," Ph d thesis, Agricultural Economics, Penn State, 1954. See also Steven Stoll, *Larding the Lean Earth* (New York, 2002.) A critic writing to the *Maine Farmer* in 1864 (“Drain,” *Maine Farmer*, September 1, 1864, American Periodicals Series) thought that Lehigh County farms were poorly managed and fertilized.
Products, early 19th century to c. 1900

19th century farm families in the Great Valley developed a richly varied agricultural economy. In general, crop production still exceeded state averages, while the number of livestock was lower than average. The one factor accounting for the difference in livestock numbers, however, is that almost no sheep were raised in the Great Valley. Great Valley farms actually had more cattle, horses, and swine than the average Pennsylvania farm. These formed the basis of intensive crop-and-livestock systems, while sheep were raised on pasture. The crops and livestock produced on Great Valley farms often went to local or regional markets, but almost everything had interchangeable uses, from livestock feed to family food to neighborly exchange. The Valley’s pronounced Pennsylvania German character subtly shaped production patterns.

Agricultural statistics are available for 1838 in some cases, and together with the 1850 figures, they reveal that the new system was settled and flourishing. The typical farm was smaller than average for the counties east of the Susquehanna; about average in Lebanon and Dauphin Counties, and larger than average west of the river. This probably reflects the timing of settlement rather than any fundamental differences. Throughout the Great Valley, farms had significantly more improved acreage, on average, than the typical Pennsylvania farm. Great Valley farms produced large crops of wheat, corn, and oats. Corn acreage and production rose rapidly to take a central place in the crop rotation.28 Most corn stayed on the farm; it was either fed to livestock or consumed by humans. At mid-century rye was still grown in Lehigh, Berks, and Northampton Counties, but by the end of the century rye had become less important even there. Barley, buckwheat, potatoes, turnips, hops, and hemp took up small acreages but provided important feed and fiber. Hay production was above average throughout the Valley, at 15-18 tons per farm. This reflected the prevalence of rotations and the need for livestock feed. Hay was also sold and sent out via rail.29 The 1838 census for Cumberland County split the accounting for hay lands into acreage for clover (21,900); timothy (4,160), and “natural meadow,” only 2,170 acres. This shows impressively the extent to which hay land had been developed and brought into a rotation system.

Figure 15: Berks County crops per farm, 1850.
Figure 16: Franklin County crops per farm, 1850.
Figure 17: Berks County crops per farm, 1880.
Figure 18: Franklin County crops per farm, 1880.

The aggregate figures show regional patterns clearly.

Throughout the 19th century, Great Valley farm families kept two or three horses; about four milk cows and a few steers; half a dozen sheep; and more than a dozen swine. In 1854 Eli Bowen, author of the Pictorial Sketch-Book of Pennsylvania, noted that livestock production was shaped by

access to railroad lines. Nearer the railroad, the farmers “turn their produce… into the dairy, or dispose of their grain by the bushel,” while further away they “are compelled to feed cattle during the winter…” purchasing from western drovers and sending on fattened cattle to market in the spring.\textsuperscript{30} Swine were far more important in the Great Valley, and sheep far less important, than in the state as a whole. The typical farm in the Great Valley had ten pigs, and often more. Pork was central to Pennsylvania German diet and foodways; food historian William Woys Weaver estimates that pork consumption was twice that of beef consumption.\textsuperscript{31} Farm families slaughtered two or three hogs, and sold the rest. Sometimes pig raising occurred in a mutually profitable relationship with the distilling industry. In Lehigh and Northampton Counties, for example, local farmers took their live hogs to a commercial distillery in Catasauqua, where the hogs were fed on distillery waste. When fattened, the pigs were taken back to the farm for slaughter. The distillery also purchased farmers’ corn.\textsuperscript{32} Dairy production was about average; Great Valley farms produced a small surplus of butter. Some townships produced more because they were near good markets, especially as the century went on.

\textbf{Figure 19}: Lebanon County livestock per farm, 1850.
\textbf{Figure 20}: Cumberland County livestock per farm, 1850.
\textbf{Figure 21}: Lebanon County livestock per farm, 1880.
\textbf{Figure 22}: Cumberland County livestock per farm, 1880.

The array of farm products was remarkable. Beeswax, cord wood, soap, and candles were enumerated in the 1838 tally.\textsuperscript{33} Many farms had limekilns, and burned lime in the off season to sell and to spread.\textsuperscript{34} Clover seed was a valuable commodity.\textsuperscript{35} Orchards by now were mature and productive, supplying apples, peaches, pears, and cherries. Small fruits like raspberries and strawberries were also grown. The family vegetable garden yielded a year’s supply of cabbage, beans, squashes, parsnips, carrots, tomatoes, and many other items. Poultry for meat, eggs, and feathers were found on every farm; an 1848 Dauphin County report estimated there were “25 to a family.”\textsuperscript{36}

What was “Pennsylvania German” about these agricultural production patterns and processes? How do we separate the impact of ethnically neutral factors like markets and soils? James Lemon argued that in colonial Pennsylvania, the Germans’ agricultural practices were no different from others’. He persuasively showed that everyone grew the same crops, including unfamiliar New World plants like corn and squash. He also found that everyone practiced the same “extensive” kind of farming, and shared a tendency to settle on scattered individual farmsteads –

\textsuperscript{31} William Woys Weaver, \textit{Sauerkraut Yankees} (Mechanicsburg, PA, 2002), 22.  
\textsuperscript{33} Rupp, I. Daniel. \textit{The History and Topography of Dauphin, Cumberland, Franklin, Bedford, Adams, and Perry Counties}. (Lancaster City, PA, 1846), 367-369.  
\textsuperscript{34} Franklin Ellis, \textit{History of Northampton County, Pennsylvania} (Philadelphia, 1877): 220  
\textsuperscript{35} \textit{Northampton Journal}, February 9, 1859  
both decidedly against European tradition. More recently, scholars such as Gabrielle Lanier and Cynthia Falk have challenged other stereotypes. The evidence for the 19th century suggests that Pennsylvania German agriculture was very much geared to raising what local soils and climate could yield, for the best market prices. Pennsylvania Germans’ highly diversified portfolio of crops and livestock did not differ in content from that of Pennsylvania’s “Yankee” areas. Few "ethnic" qualities attached to such universal practices as selling hay or grain, milking cows, or planting an orchard. Even the Pennsylvania Germans’ consumption patterns shared a great many features in common with dominant American practices. Yet at the same time, local cultural preference surely shaped some production choices. The preeminence of hogs in livestock raising is an example. One might expect to find swine in the “Yankee” Northern Tier, where they could be fed dairy by products. But “Yankees” preferred beef to pork and they did not raise a lot of pigs. Another case in point is the persistence of rye.

Ethnic practices asserted themselves most noticeably after harvest or slaughter. Many raw products were further processed on the farm. Hogs were converted to fresh pork and smoked ham, bacon, and sausage. *Panhaas*, or scrapple, was a Pennsylvania German favorite made from trimmings, spices, and corn meal. Blood pudding was made at slaughtering time. Milk was made into butter, but also into *smier kase* (a soft cheese), and cottage cheese. Apples were converted to *snitz* (dried, sliced apples), apple butter, cider, and applejack. Cabbage became sauerkraut. Cucumbers and other vegetables were pickled. Corn was dried. In short, a great many farm productions in the Great Valley helped support Pennsylvania German foodways. These practices were blends of European and American foods and customs. Folklorist Don Yoder has noted that Pennsylvania German cuisine is “an American hybrid…” The “Germanic cuisine that was brought with the emigrants in the 17th and 18th centuries has been subtly changed, through simplification and acculturation.”

It would be a mistake to consider the results as purely geared toward family subsistence. A memoir about the Harrisburg Broad Street Market in the 1840s and 1850s (sometimes dubbed the “Dutch market”) shows a flourishing market in these same products:

… the memories (of the old market houses) remain. We all remember the substantial unpretentious buildings, well ventilated and airy, through which the blasts of winter swept without hindrance, and where the snows piled up in pretty hillocks… When we recall the tons and tons of all manner of produce and luxuries to tickle the palates of hungry men, women, and children, and the barrels and barrels of ‘Smear Kase’ and apple butter that were distributed… and the ark loads of juicy beef and mutton and pork, and the miles of sausages and puddings, and the ten thousand bushels of apples and peaches and pears and plums, and

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A 1943 history of the Harrisburg market noted that in the 19th century one could buy “All the things you can buy today and some products that have gone out of existence since our forefather’s [sic] day. There were sausages of all kinds, both fresh and smoked; “smier kase” and “cottage cheese” mixed with cream or milk. Cream, sweet milk, buttermilk, dried fruit or “snits,” a kind of ginger bread called “Lep kucher,” teas of many varieties, fruits, vegetables of many kinds, poultry, live and dressed. Before Memorial Day there was always a large supply of many varieties of flowers that are today practically unknown.”

**Labor and Land Tenure, early 19th century to c. 1900**

Family still constituted by far the most important source of farm labor. Gender and age shaped the division of labor, but not rigidly. Men usually did jobs like feeding steers, plowing, mowing, planting, cutting cordwood, and cradling grain, while besides the cooking and baking, women raised poultry, prepared produce for the town market, milked the cows, made butter and cheese, and tended the garden. However, as before, all adults worked together frequently. Corn husking, haying, grain harvesting, butchering, potato and apple harvesting, and apple butter making are just some of the tasks in which all adults shared. Photographer Winslow Fegley recorded men, women, and children going about their work in Berks County.

Where non-family labor was concerned, farm labor practices had changed in important ways. The transition to free wage labor was essentially complete by about 1830. Some farm households engaged wage workers on a long-term basis, paying by the month or even contracting for an entire year. In other cases, hired men and women worked intermittently, for instance during harvest time or when a new child was born. Regardless of whether they worked by the day or year, wage laborers had become integral to farming. By 1838, for example, in Berks County there were reportedly over 6,000 farmhands (or more than three for each farm) “steadily employed” at $9 per month. Probably most of these workers were from the local neighborhood. The cash nexus subtly changed the employer-worker relationship, since fewer obligations or constraints bound the two together. Historians note a reforming trend urging farmers to adopt ideals of efficiency, time-consciousness, and sobriety. These shifts were gradual.

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39 Charles E. Walmer, “Farmers Markets of Harrisburg, Pennsylvania, Their Origin and History, read at a meeting of the Society on November 15, 1943.” _Dauphin County Historical Review_ 1956: 29-36. See also Cook, _Brief Summer Rambles_, 181, on Reading markets.

40 Jonas Gudehus, “Journey to America,” 303, describes the apple butter making process. For photographs of various processes, see Fegley, _Farming, Always Farming_, especially pages 190 and 193.

41 Daniel Rupp, _History of Berks and Lebanon Counties_, (Lancaster: G. Hills, 1844), 264.
Farm mechanization dramatically changed both labor processes and labor needs during this period; more work was done using animal and machine power, and less human power was required. This is a familiar story and it played out in a thoroughgoing way throughout the Great Valley, since its farms were more highly mechanized than typical Pennsylvania farms. Sale announcements, probate inventories, and account books help to measure the shift. An ad in the March 7, 1860, Northampton Journal was typical. Among the items to be auctioned were:

Four horses (of which one is a good breeding mare with foal, and one a stud), seventeen head of cattle, of which seven are good milch cows, six heifers, one large Devonshire bull with three young bulls of the same stock, nine head of hogs, one breeding sow with pigs, one four horse wagon and body, one two horse wagon and body, one truck wagon, one spring wagon, one sulky, one first rate pair of bob sleighs, two good wood sleds, one planks sleigh, one sett of quiller harness, one sett of Yankee harness, one sett leader harness, and plough harness. Five ploughs, two barrows, one Fanning Mill, one cutting box, one chop chest, hay ladders, mixing trough, log and other chains, manure forks and rakes, one cradle and scythe. Also a small assortment of Household Articles consisting of two cooking stoves, one parlor stove, one bedstead and bedding, one corner cupboard, cider mill trough, one table, and about forty Bushels planting potatoes.

Note that this collection of tools lists old style hand tools like manure forks with a more modern grain cradle and fanning mill.

By 1886, Judge Heister of Dauphin County could look back and recount the cumulative effect of mechanizing many different processes:

...In early years I made a regular pilgrimage to Powell’s and Lyken’s Valleys during the month of May to engage eight or ten skilled workmen with scythe and cradle to help with haying and harvest. In those days the ministers of the gospel for the sake of health and social enjoyment, came to the country and made a hand in the field; now they go to the sea shore. ... Now we send one man with a pair of horses and mower to the field, and he will do the work of ten men in a day. The next day a man with a tedder and one horse, and he will do the work of ten men in turning the grass. Again we send a man and one horse with a rake and he will do the work of ten men in gathering into winrows, and when the hay is ready for the barn, with the hay fork and horse power we unload a ton and a half of hay in twenty minutes. So with threshing, instead of spending half the winter in tramping out the grain with horses, we engage a steamer and in a few days, by threshing 400 bushels of wheat or 600 of oats a day, the work is done. 42

Land tenure practices in the Great Valley shaped the region’s social and architectural landscapes. Estate records, court records, and the like show that tenancy was pervasive in Pennsylvania throughout the 19th century. The 1880 Federal agricultural census offered the first systematically

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collected tenancy data. In that year, tenancy rates statewide averaged about 20 percent, but in the Great Valley, they were significantly higher, ranging from 28% in Berks County to 37% in Cumberland County. By 1900, fully half the farms in Cumberland County were operated by tenants or managers, and in the other Great Valley counties typically over 40% were tenanted.

The iron furnaces in the region owned vast tracts and often maintained tenant farms. The Colemans in Lebanon County, for example, reportedly owned 22,000 acres. Little is known about these tenancy arrangements. Most farm tenants in the region were share tenants working for a relative—that is, for compensation they received an agreed-upon share of the farm crops. The tenants usually paid taxes, and often supplied their own livestock and some tools. A Cumberland County rental agreement was described in the 1883 report of the county agricultural society: “the farm is worked by a tenant on shares. He has the use of the buildings, orchard, and garden, free of rent. He has all the benefits of grass, hay, fodder, and straw, conditioned on its all being consumed on the farm and converted into manure. He gets, for his share, one half the wheat, corn and oats raised on the farm. He furnishes all the machinery and motive power. He performs, or pays for, all the labor done on the farm; he builds and repairs the fences, and does the hauling necessary thereto (I paying for the material;) he pays the school tax and road tax; he furnishes one half the seed wheat, seed oats, seed corn, and grass seed sown.” Some tenants stayed over a long period, but usually the term was one year. “Flitting” day, March 1 or April 1, found streams of farm families on the road with their belongings. Winslow Fegley captured “flitting day” with vivid photographs in Berks County toward the end of the century.

Share tenancy in the Great Valley had a familial and ethnic dimension. The institution had a strong kinship basis. In other words, landlord and tenant were often related, most frequently as father and son, but sometimes uncle and nephew, or father-in-law and son-in-law. In the 1820s a German immigrant schoolteacher named Jonas Gudehus noted that the Pennsylvania Germans had a practice of “lending” their land to their sons and then retiring: the American German parent “often lease[s] his children the plantation (‘loans out’ one says there), moves into the city and leads a carefree life. However, he remains the owner of his possessions as long as he lives and when he dies then his children all get an equal share of the estate…”

The ethnic aspect of kin-based share derived from common customs stretching back to German-speaking Europe in the early modern period. One was the Altenteil, or literally, “old peoples’ part.” This custom was a kind of old-age insurance in which a child received access to land in return for supporting the aged parent. Should the mother become a widow, the share rent made up her

43 Tenancy data are from the United States Census of Agriculture. Published summaries are now available online at http://www.agcensus.usda.gov/Publications/Historical_Publications/index.asp.
44 William Henry Egle, History of the Counties of Dauphin and Lebanon in the Commonwealth of Pennsylvania: Biographical and Genealogical (Philadelphia, 1883), 167, mentions that the Colemans’ estate was 22,000 acres and most of it was cultivated.
46 Fegley, Farming, Always Farming, 163-7
47 Jonas Gudehus, “Journey to America,” 304.
widow's dower. Among the Pennsylvania Germans, kinship-based share tenancy filled a very similar function.

**Buildings and landscapes, early 19th century to c. 1900**

**Houses, early 19th century to c. 1900**

During this prosperous time, modest log houses gave way to larger and more substantial dwellings of stone, brick, or frame. Extant houses from the period are numerous. The most common types are variations on the “Pennsylvania farmhouse” form— that is, a square-proportioned, double-pile, three, four- or five-bay house. The “four-over-four” version of the Pennsylvania Farmhouse was especially popular. Often it had two central front doors. Most farm houses had at least two stories, and some had two and a half, or two full stories above ground plus a walk-in basement. Five-bay versions usually had a central doorway. These dwellings had interior gable end chimneys, sometimes just for stove flues rather than fireplaces. Exterior ornament was usually spare, and sometimes out of date. The two-story ell with integral double-decker porch was popular, especially in the Cumberland Valley. The 19th century Pennsylvania Farmhouse interior spaces and layout often represented subtle adaptations of the Pennsylvania German “stove room” and kitchen, and sometimes had no hallways; external openings were not reliable clues as to floor plan. Some productive spaces from the colonial era house, such as the attic granary and smoke house, had been moved to specialized outbuildings. The large farm kitchen still played an important productive role.

Scholars have noted a common architectural strategy of putting adapted “German” spaces behind updated “Georgian” facades. However, this blending could occur even on the farmhouse exterior. At least two examples from the mid 19th century (in Franklin and Lebanon Counties respectively) have a formal, symmetrical eaves side oriented to the “public” side of the farm, and an asymmetrical gable end oriented to the “work” side, with doors entering directly into the kitchen. To be sure, these are not common, but they are notable instances where the builder chose to express both “traditional” and “formal” values on the building’s exterior.

A stereotype about the Pennsylvania Germans invokes their conservatism. Numerous period observers voiced the opinion that the Germans were resistant to change. The historical evidence does suggest that there is some validity to this characterization; for example, German Reformed and Lutheran congregations resisted such innovations as Sunday School, and migration rates were low. However, cultural patterns were more complex than simple rejection of change. This can be seen in the landscape. A good example is in the custom of casing log buildings in brick. This was a popular strategy for updating farm buildings, especially in Cumberland and Franklin Counties.

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50 This was not an exclusively Pennsylvania German practice, but it was common in the Pennsylvania culture area. See for example the Matthias Krall house, in Van Dolsen, *Cumberland County*, 38-9.
Architectural historian Nancy van Dolsen has shown how the practice allowed farm families to give their houses a new look, while expressing frugality and respect for the past in re-using an old building. Moreover, it was not unknown for farming families to try out new forms such as the “four-square,” or to give their Pennsylvania Farmhouses contemporary trim.

Figure 23: Five-bay house, South Annville Township, Lebanon County.
Figure 24: Three-bay house, Antrim Township, Franklin County.
Figure 25: Four over four house, Mill Creek Township, Lebanon County.
Figure 26: Four over four house, Bethel Township, Lebanon County.
Figure 27: Floor plan, four over four house, Oley Township, Berks County.
Figure 28: Four over four house, Oley Township, Berks County.
Figure 29: Four over four house, Bethel Township, Lebanon County.
Figure 30: House with formal Georgian front, Mill Creek Township, Lebanon County.
Figure 31: House with formal Georgian front, South Annville Township, Lebanon County.
Figure 32: House with formal Georgian front, South Annville Township, Lebanon County.
Figure 33: Foursquare house, Washington Township, Franklin County.
Figure 34: Brick-cased log house, Washington Township, Franklin County.

Tenant houses were ubiquitous in the 19th century Great Valley landscape. Sometimes a farm would have a main house (sometimes referred to as the “mansion” house), and a second house for tenants. In his 1844 history of Berks County, I. Daniel Rupp noted that “According to the report of 1838, there were two thousand and twenty-one farms, averaging seventy-five acres each. The whole number of stone farm houses, was one thousand two hundred and fifty four; brick houses, two hundred and seventy nine; wood farm houses, one thousand nine hundred and fifty five; tenant houses on farms (not farm houses) one thousand two hundred and five.” If Rupp was correct, somewhere around a third of farms had both a main house and a tenant house. Nancy van Dolsen has documented tenant houses in Cumberland County, and field study in Franklin County documented several farms with a main house and tenant house. Another type of tenant house formed the main house on a separate tenant farm. It is more difficult to identify these tenant houses definitely, because often they were quite substantial. The National Register listed Knorr-Bare and Angstadt farms in Berks County each have substantial tenant houses.

Figure 35: Ancillary house, possibly tenant house, Montgomery Township, Franklin County.
Figure 36: Log tenant house, Antrim Township, Franklin County.
Figure 37: Angstadt farm tenant house.

Barns, early 19th century to c. 1900

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52 Rupp, I. D. *History of the counties of Berks and Lebanon*. Lancaster, PA, 1844, 263. (catalog record contains this misspelling of “Lebanon”)
53 In Franklin County, site MO 001 documents two related farmsteads and site WA 003 has a tenant house.
The famous Pennsylvania forebay bank barn had begun to appear in the late 18th century, but it was not the predominant type until well into the 19th century. Some of the most evocative examples of the type are found in the Great Valley. Its main diagnostic feature is the projecting 7-8 foot forebay, or overshoot. The barn is banked, and organized such that the upper level consists of central threshing floor(s), flanked by mows for hay, straw, or unthreshed grain; and one or more granaries (sometimes in the forebay, sometimes next to a mow on the bank side). The Pennsylvania Barn almost always has a gable roof. On the lower level, stable and stalls (organized crosswise to the roof ridge, separated by alleyways for humans) housed horses, milk cows, beef cattle, and sometimes sheep or hogs. Traveler Joel Cook noted in 1882 that “red paint is evidently cheap in the Lebanon Valley, … for all the farm buildings and many of the houses are painted in cardinal.”

The Pennsylvania Barn was a highly flexible form. It ranged in size from just twenty feet long to over a hundred. It could also accommodate features such as an "outshoot" or "outshed" that would extend back from the bank side; multiple threshing floors and haymows; a root cellar; a corncrib/machinery shed extension; a machinery bay on the lower level; or a 'horse power' on the bank side, or sometimes in the basement. The forebay might project unsupported, or it might have supporting endwalls or posts. Nomenclature for these various features varies, too. But, it is important to remember that in order to considered a Pennsylvania Barn, a barn must have these essential features: a projecting forebay and banked construction, almost invariably with the eaves side in the bank.

The Pennsylvania Barn exemplified and facilitated the new grain-and-livestock agriculture. That is why it appeared when it did. Historian Steven Stoll has compared the Pennsylvania Barn to a cow—taking in raw materials and producing milk, meat, and manure. Indeed, the barn promoted productivity and its stable level and yard functioned to collect the valuable manure (generated with feed stored in the upper levels) and to combine it with straw to make it the perfect dressing for crop fields. A local historian wrote that “straw, grain, corn stalks, and refuse from the stables” were “trampled under the feet of fattening cattle during the winter. The barn-yards were cleaned once a year… and this refuse was spread over the fields and plowed under the soil…. the farmer who had a large barn-yard full of manure to haul out, after harvest, was looked upon as a model.” The animals’ confinement and the collection of manures really distinguished the new farming from the old; colonial farmers had kept livestock, but because they grazed freely, they were not really part of a highly integrated system. Pasture continued as an important seasonal feeding ground, but to it was added the barn as shelter and manure collection facility. With its rational, centralized organization and gravity-fed multi-level arrangement, the Pennsylvania Barn also represented a response to an increased need for labor efficiency. Provision for horses reflected mechanization.

Practically every variant on the Pennsylvania Barn can be found in the Great Valley. A small barn in the Oley Valley shows how the form could be adapted to have just one threshing floor and mow.

The Diller Barn in Cumberland County, by contrast, had five threshing floors, two mows, a seven-bin granary, and a cistern by the time it reached its final size. An 1863 ad in the *Franklin Repository*, listed a “cistern at the house, and one at the barn for watering stock.”56 One 19th century site in Franklin County had a cistern apparatus integrated into the barn ramp area. The National Register-listed Boyer-Mertz (aka Angstadt) Farm in Maxatawney Township, Berks County has no fewer than five stone cisterns. Joel Cook held that “all the barns in this section [near Reading] have cisterns underneath, collecting the rain that falls on the roof, to secure a supply of water in time of drought.”57 Barns might have rear outshed granaries; gable end machinery bays; or straw-shed ell additions. There was apparently a horse power room on the National Register-listed Ernest Angstadt farm in Maxatawney Township in Berks County. The barns were executed in brick, stone, log, and timber frame. Some were decorated with painted designs. The examples from the Great Valley, shown in the figures below, show the variety and underlying it a remarkable consistency in basic form.

![Figure 38](Pennsylvania barn, Oley Township, Berks County)
![Figure 39](Pennsylvania barn, near Moselem Springs, Berks County)
![Figure 40](Knabb barn, Oley Township, Berks County)
![Figure 41](Jacob Plank barn, Cumberland County)
![Figure 42](Floor plan, Plank barn)
![Figure 43](Waggoner Barn, Cumberland County)
![Figure 44](Frame Pennsylvania barn, Jackson Township, Lebanon County)
![Figure 45](Boyer-Mertz farm (aka Angstadt), Maxatawney Township, Berks County)

**Springhouses, early 19th century to c. 1900**

Springs often determined a farm site, and care was taken to protect the family’s water source. As well, springhouses provided work space for cooling milk and separating it, then for butter making and storage. Springhouses often had two levels, sometimes appearing in combination with living quarters or a summer kitchen.

![Figure 46](Springhouse, Heidelberg Township, Lebanon County)
![Figure 47](Combination springhouse and summer kitchen, Jackson Township, Lebanon County)

**Smokehouses, early 19th century to c. 1900**

The hog was central to Pennsylvania German foodways. Not only was fresh pork relished, but smoked pork products, especially ham and bacon, appeared in many a Pennsylvania German dish. The smokehouse was therefore a common sight on Great Valley farmsteads. It was usually located within the house’s orbit. Smokehouses could be frame, but probably more were brick or stone. The smokehouse was a small building with a roughly square footprint and gable or pyramid roof, and

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56 *Franklin Repository*, September 20, 1865. Online through Pennsylvania Civil War Newspapers collection.
only a few small openings. Inside, hooks and nails provided a place to hang the meat. The care given to architectural detail and finish just confirms the importance of this small building.

Figure 48: Smokehouse, South Annville Township, Lebanon County.

Bake Ovens, early 19th century to c. 1900
A few outdoor bake ovens were documented in field study. Some farm women continued to bake bread at home well into the 19th century.

Figure 49: Bake Oven, Straban Township, Franklin County.

Butcher Houses, early 19th century to c. 1900
Most often work at butchering time took place in a summer kitchen or wash house, but some farms had a separate building called a “butcher house.” Characteristics of buildings documented as “butcher houses” varied. Butcher houses documented in Lebanon and Lehigh Counties, for example, had ample lighting, sitting between house and barn and near the smoke house, interior counters, and set-kettles.

Figure 50: Butcher house, North Lebanon Township, Lebanon County.
Figure 51: Butcher house, Heidelberg Township, Lehigh County.

Summer Kitchens, early 19th century to c. 1900
Throughout Pennsylvania in the late 19th century, farm families elaborated and diversified their diets. Of course rural people had long possessed numerous and subtle skills relating to food preparation and processing; but now newly available supplies and technologies reworked the possibilities. Orchards matured, garden patches expanded, products from far away became available, and to the old staples of corn mush, meat, and sauerkraut farm families added more cakes, pies, preserves; made more poultry dishes; and slowly shifted away from pork to beef. There were several key ingredients to this change. One was the cookstove. Reliable, affordable coal-burning cookstoves were now far more widely available, just as the wood supply for traditional outdoor ovens diminished. As the cookstove replaced the open hearth, two important consequences followed. Cookstoves generated intense heat in the farm kitchen, so summertime cooking became difficult. Second, food preparation changed. More separate dishes could be prepared simultaneously. Expectations rose for dietary variety.

To accommodate the intensified subsistence activity, and to get the hot summertime cooking out of the house kitchen, more summer kitchens appeared. The free-standing kitchen was not a new building type, but it became more common in this period and its use was likely more seasonal than in the past. The typical Great Valley summer kitchen would be a small detached building, usually gabled and made of frame. It would have ample windows for light, at least one door for access, a stove, and sometimes a set-kettle for heavy work. It was usually very close to the main kitchen. Sometimes a decorative cupola with dinner bell sat on the roof ridge. The summer kitchen facilitated increasingly complex and demanding women's productive work. The work was
productive because it resulted in tangible articles to consume, sell, or trade. The summer kitchen's siting near the main house reflects its preeminence as primarily a women's space.

The examples offered in the figures below depict summer kitchens in the Great Valley. Their size, architectural finish, and relationship to the house all reinforce their centrality in the farm economy.

- **Figure 52**: Summer kitchen and springhouse, Mill Creek Township, Lebanon County.
- **Figure 53**: Summer kitchen, South Annville Township, Lebanon County.
- **Figure 54**: Summer kitchen, Southampton Township, Franklin County.

**Privies, early 19th century to c. 1900**
Few privies survive from this period, even though every farmstead had one. One rare upscale survival can be seen at Tulpehocken Manor in Lebanon County, Figure 55.

- **Figure 55**: Privy, Tulpehocken Manor, Jackson Township, Lebanon County.

**Pigsties, early 19th century to c. 1900**
Given the importance of pigs in the Great Valley farming economy, the pigsty occupied a prominent place in the farmstead organization. Normally it would be situated at right angles to the barn, on the forebay side. Its distinguishing features include low doors on one eaves side, which allowed the animal to move back and forth between narrow indoor and outdoor pens. An aisle along the opposite side, accessed by a human door in the gable end, allowed humans to enter and tend to the animals safely. Light was admitted through high windows. Often a low pitched shed roof covered the interior pens.

- **Figure 56**: Pigsty, Heidelberg Township, Lebanon County.
- **Figure 57**: Pigsty, Heidelberg Township, Lebanon County.

**Machine Sheds, early 19th century to c. 1900**
With the sharp rise in mechanization came a need for dedicated storage. In the Great Valley region, machine sheds began to appear on farms in and after the mid 19th century. These could be quite elaborate. For example, two-level sheds with a gable-end bank entry often appeared. Another common local type had an asymmetrical gable roof, with two doors in the gable end, one larger and one smaller.

- **Figure 58**: Machine Shed and corn crib, Heidelberg Township, Lebanon County.
- **Figure 59**: Machine Shed and corn crib, Mill Creek Township, Lebanon County.
- **Figure 60**: Machine Shed and corn crib, North Annville Township, Lebanon County.

**Root Cellars, early 19th century to c. 1900**
The root cellar facilitated storage in the pre-refrigeration era, by taking advantage of constant below ground cool temperatures. Some were quite elaborate, with vaulted stone roofs and shelving.
Lime Kilns, early 19th century to c. 1900
Lime was an important product, not only for agriculture but also for uses such as mortar and disinfectant. Lime used in conjunction with clover helped to increase yields and improve soil productivity. Many farms in the Great Valley once had lime kilns, but few have survived.

Figure 64: Lime kiln, South Annville Township, Lebanon County.

Landscapes, early 19th century to c. 1900
The most evocative images of landscapes from this period are surely those taken by Berks County photographer H. Winslow Fegley. His views were perforce less idealized than those which appeared in county atlases and local histories. The farm was divided into small, square or rectangular fields, sometimes descriptively named. By this time, sturdy post and rail fencing often divided pastures and fields, and ornamental iron or picket fences set off the house’s yard. Most farms had a woodlot and an orchard. Often fruit trees were also planted along a field boundary or property line. Little in the way of fencing remains from this period, and many fields have been consolidated. However, some treelines and property boundaries may date to the 19th century, and a few stone or ornamental fences also remain.

Figure 65: Fence and tree windbreak, Mill Creek Township, Lebanon County.
Figure 66: Stone fence, Antrim Township, Franklin County.
Figure 67: Evergreen fence line, Montgomery Township, Franklin County.

Another notable rural landscape feature that appeared on a few farms was the enclosed family burial ground.

Figure 68: Family burial ground, Franklin County.

Diversified Crops, Livestock, and Poultry, c. 1900-1940
The 20th century saw rapid urban growth in Great Valley cities and towns. Allentown, for example, grew by 46% between 1900 and 1910 alone. The Berks County agricultural extension agent reported in 1920: “All of the farms in the County are situated ideally with respect to markets. The city of Reading (110,000 population) and a dozen or more country towns of several thousand population each, afford splendid markets for milk, fruits, vegetables, eggs, meats and produce in general. Railroad and Trolley Express facilities make it quite possible to ship to Philadelphia and other markets outside the County. Eight large public markets, established for years in Reading,

bring thousands of producers and consumers together several times a week.” Farming families in the region continued to supply these markets and to practice a diversified crop and livestock farming, modified from the previous period. The most important stories during this period concern modernization. The horse slowly gave way to the tractor and auto; sanitation requirements, centralized processing, and fluid milk markets transformed dairying; new crops such as alfalfa made their appearance; and poultry keeping came to occupy a prominent place in the farm economy. Prosperity was succeeded by difficult times in the twenties and thirties, yet for many the farm provided a hedge against hard times. Overall, though, farm numbers declined throughout the Great Valley, while average farm size increased or stayed stable.  

**Products, c. 1900-1940**

The most important field crops in the Great Valley in the early 20th century were wheat, corn, oats, rye, and hay. The 1927 census shows that throughout the Great Valley, farms averaged significantly more acres of wheat, corn, and oats than in the state as a whole, and often more hay also. A 1924 Cornell University thesis graphed field crop trends over time (between 1880 and 1923) in Cumberland and Franklin Counties. The data show a notable drop in oats acreage; this was probably because horses were less used for farm power and because oats were not a very profitable crop. Hay, wheat, and potato acreage fluctuated from census to census, but over time did not rise or decline notably. Corn acreage rose perceptibly. Rye acreage increased briefly between 1910 and 1920 only to decline after Prohibition. Yet these minor grain crops like rye continued to be grown, even if they might bring small profit, because each had a place in the rotation.  

The livestock – rotation – manure – crop cycle continued to be practiced.

Wheat was grown with notable success on the limestone soils in the Valley. The region had actually increased its relative importance within the state for wheat growing, so much so that George Fiske Johnson pronounced that “the southeastern counties as a group are making wheat history.” Though within a national context Pennsylvania wheat farming continued to decline in significance, it is nonetheless notable that Great Valley farming families found it worthwhile to raise wheat well into the 20th century. The evidence suggests that wheat was valued for several reasons. In 1925 A. C. Berger explained of Lebanon County wheat that “Wheat has retained its position in the cropping systems not only because it is profitable to produce wheat for sale but also because Lebanon County farms require a large amount of straw in dairy and livestock production for bedding.” Wheat grown in the region went to several destinations. In Lebanon County in 1924, for example, 130,000 bushels were shipped out to New York City and Philadelphia for eventual export. As well, “the mills of the county, outside of those in the city of Lebanon, mill local wheat exclusively,” reported Berger. This flour also ended up in the export trade. In this respect, Great Valley agriculture continued a tradition established in colonial times.

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60 The only county in the region where both farm numbers and farm size decreased between 1910 and 1940 was Cumberland.

61 See also A. C. Berger, “Agricultural Production and Marketing in Lebanon County, Pennsylvania,” Pennsylvania Agricultural Experiment Station Bulletin # 198 (September, 1925), Table 4.
In other parts of the Great Valley, local and regional mills and bakeries supplemented overseas markets for wheat grown in the region; one source noted that in Berks County, pretzel factories bought local wheat. 62

Corn became significantly more important than it had been before, both in terms of acreage and of total production. It was used mainly in animal feed; human consumption was less important than before. The Berks County agricultural extension agent noted in 1915 that “Corn is the principal crop in the rotation on most farms.” Acreage-wise, it was third next to wheat and hay. Around 1900, locally-selected varieties prevailed; by 1940, varieties promoted by the Extension service, such as Lancaster Sure Crop, had gained in popularity.

Hay was a valuable crop throughout the Valley. 63 It was mainly fed on the farm, but some was probably sold to urban and industrial markets, especially before about 1925 when horse drawn transport was replaced by trolleys and autos. The most important shift was the trend toward legume hays (mainly clover and alfalfa) and away from timothy. The agricultural extension agents promoted alfalfa, and their advice was taken in some counties. By 1938 the Northampton County agricultural extension agent claimed that there were 10,000 acres planted in alfalfa there.

Potatoes were grown for family use and for market throughout the region. By this time, northwestern Lehigh County and portions of Berks (Albany Township) and Northampton Counties (Moore Township) had specialized in potato production, but in the Great Valley itself virtually all farm families also raised some potatoes. In the 1920s Lebanon County potatoes, for example, were sent out by truck to Harrisburg and also peddled door-to-door after the harvest. 64 Small amounts of tobacco were grown in scattered pockets.

This is a notable era in crop production, because for the first time, per-acre yields were rising. “Production by expansion,” i.e. through adding cropland, had given way to “production by concentration,” i.e. improved per-acre yields. This was accomplished by using improved varieties, following better cultivation practices, and in some instances (such as potato and fruit culture) more widespread use of sprays. The extension service tested and promoted newer varieties such as Pennsylvania 44 wheat and Lancaster Sure Crop corn. 65

Figure 69: Great Valley farm crops, based on 1927 census.
Figure 70: Great Valley farm livestock, based on 1927 census.
Figure 71: Chart, “The Trend of Agriculture in Adams, Cumberland, Franklin, and York Counties, Pennsylvania.”

65 Chen, “Agricultural Production in Pennsylvania, 1840 to 1950,” 160; Cumberland County Agricultural Extension Archives, County Agent Report, 1919 and following years.
Livestock patterns on Great Valley farms continued in many respects as before, with some adjustments. Horses by no means disappeared during this period, but their numbers did decline slowly as farm families acquired automobiles and tractors. Interestingly, at least to the mid 1920s, the number of mules rose, suggesting a trend to less demanding draft animal power. Perhaps once horses were no longer needed for transport, they were unfavorably compared with mules for draft purposes.

The agricultural extension agents noted that dairying accounted for an increasing proportion of farm income. In Berks County, for example, the agent reported in 1916 that “Dairying is one of the chief agricultural industries in Berks County. The majority of our farmers depend upon their dairy herd for a large part of their cash income.” In 1933 the Berks agent had a more specific figure of about 44 percent of county farm income derived from dairying. In Lebanon County in the mid 1920s it was around 38%. Yet at least through 1927 the actual number of milk cows on a typical Great Valley farm was not appreciably greater than the state average, and in most cases was actually less than average. Nor had other signs of specialized dairying, such as silage corn acreage, affected aggregate figures much. The overall figures do mask a tendency towards more milk cows in townships with good access to markets, so we may conclude that dairying specialization was occurring within the region, but in fairly concentrated geographic areas. For example, in Dauphin County, there were more milk cows per farm and more silos and silage corn in townships near Hershey; in Franklin County, Peters Township and Washington Township bordered Mercersburg and Waynesboro respectively, and they too had more signs of dairying in the landscape.

The dairy business changed fundamentally during this period. Milk was no longer processed on the farm. It was sold in fluid form for direct consumption or for centralized processing into products like butter, cheese, evaporated milk, ice cream, or candy. In the Great Valley, especially Lebanon and Dauphin Counties, the Hershey Candy Company profoundly influenced dairy production, annually collecting “millions of pounds of milk” from a wide catchment area. Agricultural economist A. C. Berger criticized Lebanon County farmers for relying on Hershey, arguing that they gave up higher prices in the Philadelphia market. However, he also noted that Lebanon County producers “have not met the inspection requirements [of the Philadelphia market]” and we may speculate that perhaps local farmers preferred to sell to Hershey at a sure (if lower) price and not invest in changes necessary to meet more stringent sanitation requirements elsewhere. Though corporate and oral histories suggest that the Hershey Company did monitor farms for cleanliness, it seems that their requirements were still not as stringent as those for fluid milk to be consumed directly. Hershey Company promotional materials bragged that “Our location helps very much in producing that superior rich flavor in Hershey's milk Chocolate and Almond Bars … we do all our milking with sanitary milking machines.” For candy production, condensing the milk also probably eliminated some microbes. Hershey thus could take less than Grade A milk.

66 Berks County Agricultural Extension Archives, County Agent Report. 1916 and 1934.
Up to about 1930, milk in cans was transported to the factory by a trolley system extending east to Lebanon and west to Harrisburg. Milk accounted for most of the trolley traffic, and at one point a 3,000 gallon glass-lined bulk tank was put into service. After 1930 milk delivery shifted to trucks. Local dairy farmers depended on Hershey for markets; when in 1937 the CIO affiliated union of workers at the candy factory staged a sit-down strike, dairy farmers were among those who picketed and even reportedly physically assaulted the strikers.68

In general the shift to fluid milk production had important implications for farming. For example, interest rose in higher producing cows, since income now depended on quantity production rather than value-added processing. Breeds such as the Holstein, Guernsey, and Jersey were more often mentioned – though they did not come to dominate immediately. Secondly, quantity feeding and year-round milking became a goal, spurring interest in feed crop improvement and silage. Thirdly, with the rise of a milk-consuming public came demands for better sanitation. Municipal and state government bodies imposed sanitation requirements on milk distributors, and they in turn pressured producers into compliance.69 Farmers who would not or could not meet requirements had access to some markets but not others.

Swine continued to be important in the Great Valley throughout the period. Both high lard-yielding types and leaner breeds were raised. The “heavier farm-raised and fattened hogs, usually old breeding stock,” were sold locally or slaughtered for home use, while the lighter ones went to cities within the region.70 Steers were fed on some farms, particularly in Lebanon County; these animals were shipped out.71

The biggest development in the livestock industry was a dramatic rise in poultry products. Great Valley farms quickly outstripped state averages for poultry meat and egg production. Turkey farming was locally important within the region. The Berks County agricultural extension agent noted in 1932: “Turkey raising is becoming an industry of some note in our county. We have what is believed to be the largest flock in the country, ten thousand and more turkeys raised this year on this farm. Other flocks of 500 to 2000 turkeys are growing in number. A larger majority of the turkeys sold on our local markets through chain stores and independent stores during the last Thanksgiving season were turkeys grown within our county. The number of imported turkeys on our markets has been reduced to a very small percentage.”72 The vast majority of poultry production, however, was chickens. Poultry products went to local and regional markets. In

69 For an excellent treatment, see E. Melanie Dupuis, Nature’s Perfect Food: How Milk Became America’s Drink (New York, 2002).
72 Berks County Agricultural Extension Archives, County Agent Report, 1932, 1933, 1934.
Lebanon County, for example, a 1925 report noted that “Over 200,000 head of poultry were collected by hucksters in Lebanon County last year,” a third of which were sold in the county and the rest shipped to Reading and Philadelphia. Hucksters must have handled nearly all the chickens that were marketed in Lebanon County, because total local production for 1924 was 268,000 birds, and that includes consumption by the farm family. Local marketing cooperatives also seem to have helped poultry farmers. In Berks and neighboring counties, for example, the Tri-County egg auction in 1936 sold around 20,000 cases of eggs, helping to pull local supplies from hucksters and local markets and in turn forcing prices up.\(^{73}\) Aggregate figures from the 1927 Pennsylvania state agricultural census show the predominance in the region of swine and poultry.

Fruit production received a good deal of attention from extension agents during this period. It was a challenging time for orchardists. The San Jose scale infestation descended on the region in the early 20\(^\text{th}\) century, wiping out many home orchards. In Berks County by 1933 the extension agent thought that “Fruit growers are alert as to their responsibility in the production of quality fruit if they would meet competition from more distant regions. The farm orchard of a fraction of an acre or a very few acres, is rapidly passing out.” The agent was correct, but quite a few small commercial orchards hung on, and in Franklin and Cumberland Counties especially, larger ones on the mountain slopes remained viable.\(^{74}\) In the other counties, fruit production was concentrated in one or two townships. For example, in 1927 Palmer and Forks Townships, Northampton County, accounted for most of the county’s peaches and apples. The orchard areas are clearly visible on period aerial photographs. Some of these products went to local processors, some was sold at roadside stands, some probably was shipped out, and some was sold by huckstering.

Liming of soil continued to be a common practice. The Berks County soil survey of 1909 noted that many farmers had their own kilns and burned limed for their own farms and that of their neighbors. The author took a dim view of lime use, though: “Considering the whole area it may be said that lime is used in too large amounts, and there is considerable waste of time and labor in its application.”\(^ {75}\)

As before, myriad smaller-scale production and processing strategies occupied an important place in the farming economy, especially during the lean Depression years. One of the more ingenious and unusual cash-generating activities was pursued by a Berks County farm woman who not only sold conventional goods at the Reading market, but raised raccoons to sell for “coon field trials.”\(^{76}\) However, most farm people concentrated on long-proven strategies. A Northampton County home economics extension survey of 1934 is revealing. The specialist reported that farm families grew between twelve and twenty-seven different vegetables, averaging twenty. On average each family canned 107 quarts, including beets, carrots, corn, spinach, string beans, lima beans, peas, “Sauer Kraut,” and tomatoes. Tomatoes were the most popular canning vegetable. The agent added that

\(^{73}\) Berger, “Agricultural Production and Marketing in Lebanon County,” 26; Berks County Agricultural Extension Archives, County Agent Report, 1936.

\(^{74}\) Berks County Agricultural Extension Archives, County Agent Report, 1933.


“... cabbage was stored in generous amounts by all but 12 families... 521 heads of endive was stored by 13 families...” In Berks County that same year, one farm’s canning output was described: “The variety of vegetables canned were – squash, egg plant, peas, tomatoes, okra, sauerkraut, beets, succotash, corn, string beans, cauliflower. The fruits were – plums, blackberries, peaches and apple sauce.” Other sources mention cabbage, onions, beans, sweet corn, tomatoes, cucumbers, and sweet potatoes.

These goods as before went both to family subsistence and to market. For example, the Berks County home economics extension agent in 1933 mentioned that “Mrs. William Geiger of Geigertown expects to can asparagus for retail trade.” Many families had huckster routes. Cities in the Great Valley served as redistribution points for goods brought in from outside, and also maintained venues for sales of “locally-produced fruit and vegetables.” During this period, there were separate marketing processes for local and non-local goods. A thorough 1925 publication describing “Agricultural Production and Marketing in Lebanon County” noted that in the main, “local farm produce is sold generally by the producer to the retailer or directly to the consumer,” the latter either at market houses or by “street peddling.” Lebanon had city markets to channel goods from the countryside to urban dwellers, but most of the county’s fruit and vegetable needs were supplied by Lebanon County farms, and never entered Lebanon City markets at all. The items that came in on railroad cars were things that couldn’t be grown locally, like citrus fruits and bananas.

It is difficult to estimate the economic impact of these direct sales, since contemporary agricultural statisticians had few good ways to keep track of them accurately. One 1943 essay about Dauphin County market houses referred to a study which estimated that sales at farmers’ markets accounted for “one-fourth of the average annual value of all Pennsylvania farm products sold” other than milk and milk products. Unfortunately the author did not give a citation for that reference. If the assertion was accurate, farmers’ market sales could have accounted for a significant portion of the value of Pennsylvania farm products sold annually.

Labor and Land Tenure, c. 1900-1940

Great Valley farms continued to be worked mainly by family members, supplemented by wage laborers. In 1909 the Berks County soil survey authors noted: “The question of farm labor in Berks County is not as serious as in some sections, because many of the women and children work in the fields. On many small farms, therefore, no extra farm hands are needed.” In 1940, the published US Census figures suggested that no more than a quarter of Great Valley farms used hired labor from outside the family.

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77 W. J. Geib et al., Soil Survey of Berks County Pennsylvania (Washington, DC, c. 1910), 167; Berks County Home Economics Extension archives, agent report, 1933.
78 Berks County Agricultural Extension Archives, County Agent Report, 1932, 1933.
79 John Z. Harner, As told to Alliene Saeger Dechant. Seed Time to Harvest. (Kutztown, PA, 1957), 109-110. Oral histories in Lehigh County confirm that huckstering was a widely followed practice.
The 1909 soil survey reported that when farmers found outside laborers, they often paid them $15 a month including board. This increased during the summer months, where many laborers were paid $20 a month. Day laborers were often paid a dollar a day, with a raise to $1.25 a day during the time of harvest. By 1925, it seems that farm labor costs had risen in Berks County. That year a local historian complained that “Hired help on the farms of the county is a most serious problem at this time. A wage of $30 to $40, with board, lodging, and washing included is quite commonly paid. This is the equivalent of about $80 to $100 per month. Some farmers are paying men more than this. Day labor on the farms commands $4 to $5 per day. These wages don’t seem to be high when compared with wages of tradesmen and industrial workers, but the farmer cannot afford to pay higher wages and in some cases not as high wages as he is paying, because of low returns on crop and live stock products.” Industrial employment in the region must have presented competition for labor and driven up wages to some extent, at least until the Depression hit.

Figure 72: Great Valley hired labor, 1940.

Labor processes and patterns were changed again by a second phase of mechanization, this time by a slow shift away from animal power to steam or fossil fuel powered machinery. The stationary gasoline engine could replace horse power to drive threshers, silo fillers, and the like. Gasoline powered tractors provided draft power in the fields to pull plows, harrows, reapers, and mowers. Automobiles furnished personal transport, and trucks added the ability to transport farm produce. Electricity (either from a power line or from an independent generating plant) could power pumps for running water, lights for working, and household appliances. Studies in other areas have shown that these new technologies changed work patterns. For example, some farm women found themselves running errands using a car, and perhaps cutting back on work in the fields. Shared communal tasks such as “husking bees” disappeared, but newer ones like silo filling arose. In the Great Valley counties, distinctive farm technology choices were made with respect to statewide patterns. For example, tractors were quite a bit more popular in the Great Valley than in the state as a whole. This makes sense when we consider that mostly the terrain was fairly flat, and crops were so important in the region. Trucks and automobiles were also much more prevalent than in the state as a whole in 1927; nearly every farm had one motorized vehicle and many had more than one. A well developed road network and the importance of huckstering explain these choices. On the other hand, in general the region lagged behind the rest of the state in electrification, running water, and telephones. It is tempting to speculate that these choices reflect a lower status for household work and -- by extension -- for women. No in-depth research has closely examined the issue, but studies for other areas show that families deliberated together about these costly conveniences. Particularly during the depression decades 1920-1940, the farm’s viability was the first priority. Moreover, many women chose mobility and maintaining social ties over household appliances. A historical study in a different state quotes one farm woman as saying, “you can’t go to town in a bathtub.”


Off-farm labor by farm household members was not quite as important in the Great Valley as elsewhere in Pennsylvania, probably because farms were more economically viable than in regions like the Allegheny Plateau. Nonetheless, by 1940 a quarter of all farm operators in the region worked off the farm at least part of the year. Off-farm labor also was related to what agricultural economists called “part-time” farms. Part-time farms surveyed in Berks and Northampton Counties in the 1930s showed that farm products accounted for less than twenty percent of farm income, and off-farm employment for three-quarters. Textiles and slate/cement industries offered employment in these Berks and Northampton respectively. Women and children did most of the work on these farms. Off-farm labor statistics were only collected for farm operators, i.e. male household heads; the impact of women’s wage labor is therefore difficult to ascertain.

**Figure 73:** Percentage of farm operators working off the farm, 1940.

Tenancy continued to be a central institution in the Great Valley. In 1927 tenancy ranged from around 20 percent in Northampton County in 1927 to 40 percent in Cumberland County. (State wide, it was 25%). In general, higher tenancy rates seem to have been correlated with the percentage of farmland that was rented in a given area. (In other areas, southeastern Pennsylvania for example, the overall percentage of tenants was low, but they farmed a disproportionate land area, indicating that a different social dynamic was at work.) As before, share tenancy was the most common form of landlord:tenant relationship. Some agricultural economists believed that changing conditions rendered share leases less effective than before, but they seem to have persisted anyway.

**Figure 74:** Percentage of farmland rented by township.
**Figure 75:** Great Valley farms lighted with electricity, 1940.

**Buildings and landscapes, c. 1900-1940**

**Houses, c. 1900-1940**

The large and substantial houses built in the previous century continued to serve farm families in the Great Valley. In Cumberland County, for example, one study concluded that half the farmhouses in use in 1940 had been built before 1900. The chief changes to older farm dwellings would be the slow installation of electricity, running water, and (in some places) central heating. However, as the chart below shows, relatively few farms in the Great Valley had these conveniences even by 1940. Two-thirds of Cumberland County houses lacked indoor toilets and bath facilities, while a fifth lacked electricity as late as 1945. Notably, 23 percent of Cumberland County farm dwellings in 1945 housed more than one family – probably reflecting kinship based farm tenancy. As far as architectural style was concerned, few houses documented in field study appeared to have been updated during this period. The stability in architectural form and fashion can be attributed to Pennsylvania German cultural conservatism; economic stress, particularly after

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84 Paul I. Wrigley, “Farm Tenancy in Pennsylvania,” Pennsylvania Agricultural Experiment Station Bulletin #383 (September 1939).
1920; and the basic soundness of the 19th century house. Since family and household size probably declined, and less agricultural work was performed there, these Pennsylvania Farmhouse types probably sufficed well in the 20th century.

Those few new houses documented for the period were bungalows and foursquare houses. These were popular forms in the early 20th century, and their appearance in the countryside shows that Great Valley farm families didn’t always reject new styles.

Figure 76: Bungalow, Hamilton Township, Franklin County.
Figure 77: Bungalow, Lurgan Township, Franklin County.
Figure 78: Foursquare house, Heidelberg Township, Lebanon County.

Barns, c. 1900-1940

Few new barn types were documented that date securely to this period. Rather, 19th century Pennsylvania forebay barns continued to serve. They were often extensively altered. Two main alteration strategies were documented in the Great Valley region. One was adaptation of the Pennsylvania forebay barn for poultry. The other was renovation to comply with dairy sanitation standards. Each renovation has a distinct and recognizable architectural signature.

As poultry increased in numbers and importance, barn adaptations for chickens became more common. Barns adapted for poultry are easy to spot; their walls have been pierced by numerous small openings for light, and often they are clad with shingle or other material to keep out drafts. Inside they may be fitted with nesting boxes, perches, and facilities for waste collection and disposal.

Figure 79: Barn in Berks County adapted for poultry.
Figure 80: Pennsylvania forebay barn remodeled for poultry.

As agricultural conditions changed, dairy farmers were encouraged, and eventually required, to remodel their barns. By the 20th century, scientists had connected diseases like bovine tuberculosis to human illness, and efforts began to find ways to test herds and move towards decreasing (if not eradicating) animal diseases. The germ theory of disease helped to foster an emerging critique of the Pennsylvania Barn as unsanitary and unhealthy. The forebay and lower-level basement animal quarters were now regarded as liabilities: the forebay because it kept out germ-killing light from an already dim interior, and wood stalls because they were thought to harbor germs. The short crosswise ranks of stalls were also criticized as inefficient for farm labor. These views were expressed through reform literature and eventually legislation. In the 20th century, increasing concerns about the safety of the milk supply prompted municipalities and states to legislate sanitation requirements for producers. At the end of 1932, the Berks County agricultural extension agent reported that “The New Jersey milk law which goes into effect January 1, 1933, affects several hundred producers in Northern Berks. More light in the stables, all floors concrete, horse stables separated by tight partitions, and a number of other requirements are resulting in a hardship to these producers at this time.” Other recommended or mandated changes might include installing
manure alleys and metal stanchions, and improving ventilation. Some regulations required that pigsties be located at a distance from cow stables. Gradually these requirements extended over a larger and larger number of dairy farms. Their cumulative impact can be seen on the landscape.  

Figure 81: Pennsylvania brick-end barn adapted for dairy, Lurgan Township, Franklin County.
Figure 82: Pennsylvania forebay barn adapted for dairy, Washington Township, Franklin County.
Figure 83: Decorative barn ventilator, Guilford Township, Franklin County.
Figure 84: Pennsylvania Barn interior, Washington Township, Franklin County.
Figure 85: “Extra light for Stables,” 1936 Berks County Agricultural Extension report.

Smokehouses, c. 1900-1940
Butchering and meat smoking continued to have a strong presence in local life and thus in the landscape. New smokehouses from this period are relatively common.

Figure 86: Smokehouse, Jackson Township, Lebanon County.
Figure 87: Smokehouse, Peters Township, Franklin County.

Summer Kitchens, c. 1900-1940
Summer kitchens continued to be intensively used, so new ones were built during this period. 20th century summer kitchens tended to be light frame structures, clad in beaded board or plain board siding. They lacked fireplaces, but often might have a built-in brick housing for a set-kettle. Documented examples also tended to be a bit farther from the house than their 19th century predecessors, though too few examples were surveyed to detect a consistent pattern. Otherwise, their function was the same as in the 19th century.

Figure 88: Summer kitchen, Antrim Township, Franklin County.
Figure 89: Summer kitchen, Heidelberg Township, Lebanon County.

Privies, c. 1900-1940
Indoor toilets were rare in the rural Great Valley well into the 20th century. The privies documented in field study dated to about 1925-50.

Figure 90: Privy, Washington Township, Franklin County.
Figure 91: Privy, North Annville Township, Lebanon County.

Pigsties, c. 1900-1940

During field study, anecdotal evidence from property owners indicated that pigsties were more numerous before dairy regulations forced their removal away from cows and milk. At some sites, then, pigsties were moved or torn down. However, examples were nonetheless documented from this period. Swine occupied such an important place in Pennsylvania German agriculture and cultural life that housing them continued to be necessary.

**Figure 92:** Pigsty, South Londonderry Township, Lebanon County.
**Figure 93:** Pigsty, South Annville Township, Lebanon County.

**Machine Sheds, c. 1900-1940**

The second wave of agricultural mechanization brought with it a renewed need for shelter to conserve these expensive implements.

**Figure 94:** Machine shed, Antrim Township, Franklin County.
**Figure 95:** Machine shed with corn cribs, added bays, and poultry windows, Swatara Township, Lebanon County.

**Silos, c. 1900-1940**

A significant new outbuilding to appear on the agricultural landscape in this period was the silo. A silo is an airtight structure that holds fresh organic matter (moisture content 50-65 percent) destined for winter animal feed. It is filled with shredded or chopped grass, corn, or sometimes other plant material, which ferments into a highly nutritious and palatable feed. Silage feed resulted in significant productivity increases for dairy cows, and also permitted marginal farms to carry more animals. Ensilage was first publicized in the US in the late 19th century when the results of experiments in Europe became known. In the Great Valley, its adoption occurred over a long period. In the Great Valley in 1927, some counties had more silos than in Pennsylvania as a whole, while others had fewer; but in any case, no more than a quarter of farms in any county had silos. Overall, silos were not as prominent a feature in the Great Valley as they were in more heavily specialized dairy areas such as the Northern Tier. The number surely increased by 1940, but no data are available to determine exactly how much.

**Figure 96:** Great Valley silo farm ratio, 1927.

Silos can be constructed horizontally in pits, or vertically. Most silos of the first half of the 20th century were vertical. Early silos were sometimes placed inside the barn, rectangular in shape, and of wood construction. These were quickly supplanted by round vertical silos located outside the barn, usually in a spot that would permit efficient filling (usually from holes in the top) and unloading (usually from a tier of doors from which silage was thrown down an exterior chute, which contained a ladder for access to the doors). Early silos were unloaded by hand, from the top. The land-grant establishment published many “how-to” brochures aimed at helping farmers build their own silos of wood or concrete. A 1918 Pennsylvania State College *Circular* mentioned wood stave, hollow tile block, poured concrete rings, concrete staves, concrete blocks, metal, and bricks.
as silo construction materials.\textsuperscript{87} Commercial organizations marketed many types of silos too. Some sold special curved brick; others made tiles; still others advertised systems depending on interlocking rings of poured concrete. Cement staves became popular after about 1910 and continued in popularity for several more decades. Galvanized iron was a less important but not uncommon material.\textsuperscript{88}

In the Great Valley, the earliest extant exterior silos documented in field study date from this 1900-1940 period.

\textbf{Figure 97}: Tile silo, Washington Township, Franklin County.
\textbf{Figure 98}: Metal, concrete stave, and poured concrete silos, Straban Township, Franklin County.
\textbf{Figure 99}: Tile silo, South Annville Township, Lebanon County.

\textit{Milk Houses, c. 1900-1940}

Sanitation regulations resulted in important architectural changes. The milk house was a major new form on the early 20\textsuperscript{th} century dairy farm. It wasn’t a big building, but is an important reminder of the new role of the state and the agricultural establishment in agriculture. The state (meaning the government at any level) influenced the construction of milk houses in the first place, because during the Progressive and New Deal eras, legislatures and municipalities passed sanitary codes that required inspection not only of milk, but of dairy herds and milk production facilities.\textsuperscript{89} New York City pioneered in these efforts, and also seems to have been more effective at enforcement than other areas. In Pennsylvania, according to Stevenson Fletcher, a very few municipalities had inspection laws starting in the late 19\textsuperscript{th} and early 20\textsuperscript{th} centuries; however, enforcement was patchy. The first statewide dairy inspection law was passed in 1929, with a revision in 1933. This law provided for inspection of farm sanitary conditions, including facilities for sterilizing dairy equipment and milk houses for isolating milk.\textsuperscript{90} It is not clear how well these were enforced. These regulations were one facet of the assault that was launched on bovine tuberculosis and other diseases in this period, aiming at ensuring a fresh, uncontaminated milk supply. In order to market milk, increasingly farm producers had to comply with regulations that required them to install easily cleaned surfaces (like concrete) in barns, remove milk storage areas from dirt and odors (by building milk houses), cool milk, sterilize equipment, and the like. In the Great Valley, these regulations took effect over a protracted period. The milk house was one product of these new laws. In turn, its form and construction were influenced significantly by the agricultural establishment (meaning the complex that included state departments of agriculture, the land-grant university and extension apparatus, and agribusinesses). This new element in the farm landscape,

\textsuperscript{87} S. I. Bechdel, “Suggestions for Selecting and Building a Silo,” Pennsylvania State College Agricultural Extension Circular # 72 (February 1918).
\textsuperscript{88} I.F. Hall, “An Economic Study of Farm Buildings in New York,” Cornell University Agricultural Experiment Station \textit{Bulletin} #478, 1929, 60.
therefore, illustrates the growing influence of the “agricultural establishment” on everyday farming practices and landscapes. Agricultural extension agents regularly disseminated plans for milk houses. Likely, for every farmer who followed a plan exactly there were more who either copied his building, or who adapted the basic guidelines using available materials and expertise. The overall result was a new level of homogeneity and standardization.

Figure 100: Milk House #1341, from 1929 USDA information series.

Milk houses provided a place to store and cool fluid milk before it was transported to market; to store milk cans not in use; and to wash containers (and sometimes other equipment like separators). Plans offered by the USDA for farm milk houses typically gave dimensions ranging about 10 by 13 feet up to around 12 by 20 feet. Interior plans for a 10 by 13 milk house with ell (#909, “capacity 20 to 30 head market milk”) show a two-room plan with door leading to a wash room; milk room to one side, which contained a cooling tank and led to raised loading/unloading platforms and sunning racks, mounted on the outside. The ell contained a boiler room with its fuel supply, and back door. Larger milk houses had the same basic three spaces, only larger, and sometimes equipped with testers and separators. One (#1337) had a churn, butter worker, ripening vat, and refrigerator, and another (#1339) had quarters for workers. Another small, 12 by 14, one-room milk house (#1341, Figure 100) was designed for “butter making by hand” for 20 cows. It contained the same basic spaces, but not divided. The very smallest, at 7 by 9, had a concrete foundation with a sunken vat for cooling cans of milk. All of these plans had sloping floors with drains, and provision for ventilation and light. After about 1950, milk houses were sometimes altered to accommodate bulk tanks. The figures below show a selection of milk houses documented in field study in the Great Valley.

Figure 101: Milk house, Jackson Township, Lebanon County.
Figure 102: Beveled block milk house, North Cornwall Township, Lebanon County.
Figure 103: Milk house, Antrim Township, Franklin County.

Poultry Houses, c. 1900-1940

With the increasing importance of poultry in the farm economy came greater attention to poultry housing. Renovated barns accommodated poultry in some cases, but separate houses were also common. Poultry housing in the area tended to be frame, shed-roof buildings, usually one story, with south-facing windows. These sheltered both layers and broilers. The agricultural extension agents promoted designs distributed by the land-grant colleges. The 1926 report from the Dauphin County agricultural extension agent, for instance, described a demonstration poultry house built by the extension office:

92 L. W. Morley, “Building the Farm Dairy House.”
Quite a few farmers were aided in the item of poultry house construction and one demonstration poultry house was built which we feel was typical of what a farm poultry house should be. Taking into consideration the item of economical construction, the use of the building in case poultry was dropped on the farm and it was patterned after the Missouri type house with the exception of more overhead room for storage, and the farmer can put in this poultry house all the feed, straw, and green feed needed for 300 hens for the Winter. This house has in addition electric lights, special mash feeding troughs and running water. The cost… per bird for housing in this house was $2.25.93

In this period, total confinement systems had not yet developed. On many farms, chickens were pastured at least part of the time, in what would today be called “free range” systems. Often poultry houses were designed to be movable, because it was recognized that the birds needed to be moved to fresh ground periodically, not only to get benefit of fresh plant growth and insect populations, but also to avoid the spread of disease. The shed-roof house on skids and the colony house were two types of movable poultry related buildings. Another specialized type of house was the “peepy house,” a small heated building that provided warm temporary shelter for newly hatched chicks. No historic turkey houses were documented in field study.

Figure 104: Poultry housing, from 1927 Berks County Agricultural Extension agent report.
Figure 105: Penn State Poultry house floor plan from 1922 Agricultural Extension Circular.
Figure 106: Poultry house, Montgomery Township, Franklin County.
Figure 107: Poultry house, Bethel Township, Lebanon County.
Figure 108: Colony house, South Annville Township, Lebanon County.
Figure 109: “Peep” house, Peters Township, Franklin County.
Figure 110: “Chicken and brooder houses,” Stamm Farm, Penn Township, Berks County.

Corn Crib, c. 1900-1940
The corn crib continued to be an important storage building on Great Valley farms during this period. Often, as before, the crib was integrated into another structure, usually a machine shed.

Figure 111: Corn crib, Heidelberg Township, Lebanon County.
Figure 112: Corn crib, Heidelberg Township, Lebanon County.
Figure 113: Corn crib, Mill Creek Township, Lebanon County.

Garages, c. 1900-1940
Even by 1927 virtually every farm family in the Great Valley had at least one motor vehicle. These valuable machines needed protection. Often a pre-existing building was adapted for a garage, but early purpose-built garages also appear on quite a few farms documented in the Great Valley. Their architectural characteristics include small scale (one or two bays); siting near the house and on a driveway; materials such as concrete block, rock face concrete, and beaded board; large hinged doors (“garage” style doors are later insertions); and gabled, hipped, or pyramidal roof. Like its

93 It is not clear what the agent meant by “Missouri type” house.
predecessor the carriage house, the garage tended to have a little more in the way of architectural finish or decorative materials than would a farm machine shed.

**Figure 114**: Garage, Washington Township, Franklin County.

**Figure 115**: Garage, Heidelberg Township, Lebanon County.

**Figure 116**: Garage, Heidelberg Township, Lebanon County.

**Figure 117**: Garage, North Cornwall Township, Lebanon County.

**Less Common Outbuildings and Structures, c. 1900-1940**

In field and archival research, other buildings and structures were encountered infrequently. They are not “representative” of farmstead architecture in the Great Valley in the sense of being typical buildings found on a majority of historic farmsteads. Yet they do illustrate important, region-wide trends in Great Valley agriculture in this period, so they are described here.

Chop house: At site 075-HE-004 (Figure 118 and 119) in Lebanon County a “chop house” was documented. This was a small, frame gabled building with two gable-end hinged doors opening in opposite directions. The chop house was sited at the end of the barn’s gable-end shed-roof extension, at one corner of the barn yard. Here a hammer mill attached to a tractor belt chopped feed for the family’s dairy cows and steers. According to an interview with the current owner, the family kept dairy cows and sold milk to the Hershey Company; and they fed a dozen or so steers (oats, corn, wheat, barley, and hay) and sent them to the Lancaster Stockyards and to a local butcher. Corn cobs were chopped to provide litter for the several hundred chickens kept by the informant’s mother, who sold eggs to a traveling huckster. Though the chop house was an uncommon building, it related directly to important livestock enterprises in Great Valley agriculture of the time.

**Figure 118**: Chop house, Heidelberg Township, Lebanon County.

**Figure 119**: Chop house interior.

Pump House: On several farms, a well with pump was protected from the elements by a small building housing the pump itself and the well housing. Water for stock and humans was critical and so the pump house protected this important resource. Architecturally the pump house can be differentiated from other small outbuildings (milk houses, most notably) by its smaller size and by its location – dictated by the well’s site and not, as with milk houses, necessarily near the barn or roadside.

**Figure 120**: Pump house, South Annville Township, Lebanon County.

**Figure 121**: Pump house (foreground) and summer kitchen, Antrim Township, Franklin County.

Milk Station: Two sites (one in Berks and one in Lebanon County) had a building which has been tentatively identified as a milk station. A milk station was a building where farmers brought milk in cans. At the station it was weighed, tested, cooled, and held for shipment in refrigerated rail cars.
The building depicted in Figure 122 had elevated receiving doors; ample light for work within; and a covered “pay” window where record keeping and paperwork could occur. A rail line once went past the building only a few yards away. State Route 501 runs past the Berks County station.

Figure 122: Milk station (?), Mill Creek Township, Lebanon County.
Figure 123: Milk station, Tulpehocken Township, Berks County.
Figure 124: Floor plan of a milk station.

Sash Greenhouse: The Agricultural Extension reports for Northampton, Berks, Dauphin, and Cumberland Counties all mentioned sash greenhouses in their reports, especially in the 1920s and 1930s. In Cumberland County, for example, the agent reported that a 10 by 30 “Plant growing house” had been erected on a farm owned by John Weitzel of Hampden Township. These small buildings would be used by truck farmers to raise vegetable plants from seed. They would have supported huckstering activity. None were documented in field study.

Figure 125: Sash greenhouses, from 1928 Berks County Agricultural Extension report.

Windmill: Technical improvements in the late 19th century made windmills affordable on farms, and several 20th century models were documented in field study. The farm windmill primarily provided power for such tasks as pumping water and running small equipment. Usually they were located near the house, but sometimes they were housed within the barn.

Figure 126: Farm windmill, Antrim Township, Franklin County.
Figure 127: Aermotor USA A-702 windmill, Bethel Township, Lebanon County.

Cistern: Before electric-powered pumps provided running water, farm buildings were often equipped with cisterns designed to collect water runoff from a barn or house roof. Extant cisterns are not plentiful, nor are they always visible, but they do illustrate what probably was a common solution to obtaining water.

Figure 128: Cistern, North Newton Township, Cumberland County.
Figure 129: Cistern, Antrim Township, Franklin County.

**Landscape Features, c. 1900-1940**

Farmstead landscaping: During this period, landscaping on the farmstead grounds began to receive more attention. Winslow Fegley’s Berks County photos from the early 20th century, for example, show houses and vegetable gardens surrounded by picket fences. Few if any of these fences survive, but some large evergreen and deciduous shade trees planted in this era still remain.94 Lawns began to appear, further setting the house apart from the other farmstead buildings. The traditional Pennsylvania German garden was organized into squares separated by boarded walks. These features are long gone.

94 Fegley, *Farming, Always Farming*, 34, 35, 36, 37, 40.
Figure 130: Farm house with shade trees, Antrim Township, Franklin County.
Figure 131: Strock farm, Cumberland County, showing picket fence, farm lanes, yard trees.
Figure 132: Farmhouse with shade trees and picket fence, Straban Township, Franklin County.

Allées: Two different sites documented in field study featured deliberately planted, equally spaced rows of trees on opposite sides of a farm lane. These “allées” created a distinctive landscape feature.

Figure 133: “Allee” of deciduous trees, Antrim Township, Franklin County.
Figure 134: “Allee” of deciduous and evergreen trees, Antrim Township, Franklin County.

Orchard: Despite the troubles facing fruit growers, orchards were still very common in the early 20th century. Some sources note that fruit trees were planted along field boundaries and hedgerows. More visible on historic aerials and in the contemporary landscape is the traditional orchard planting of regularly spaced trees.

Figure 135: Orchard planting (lower right), 1939 Berks County agricultural extension report
Figure 136: Orchard, Guilford Township, Franklin County.
Figure 137: 1938 aerial photo, Tatamy, Forks Township, Northampton County.

Field patterns: Pasture and woodlots took up a small percentage of farm land in the Great Valley. Larger scale farm machinery sometimes occasioned the removal of field boundaries and consolidation of smaller fields into a single large one. Crop rotation systems still dictated multiple small polygonal fields, divided by hedgerows, fences, or treelines. Though the agricultural extension agents frequently discussed contour plowing and strip cropping during this period, the aerials show almost no evidence for contour plowing. Neither is there much evidence for strip cropping; though many long, narrow strips appear, they are not repeated. This suggests that they were part of traditional rotations rather than some systematic plan for strip cropping. Treelines were prominent in the Great Valley as dividing devices between the crazy quilt of open fields.

Farm forestry: the agricultural extension reports of the period for Berks County mention very extensive forest plantings using seedlings provided by the Pennsylvania Department of Forestry. In 1933 the Berks County agent wrote that “The seedlings planted since 1921 “cover about 6000 of the 25,000 waste acres reported in the census of 1920...This year 97 planters set out about 1/4 of a million seedlings secured from the state.” In 1939, he noted that “the state record shows 531,900 seedlings sent to the County this year, of which number 290,000 were planted on farm woodlots, by 108 planters, and 241,900 on water sheds and game reserves, planted by 10 planters.” The accumulated impact of these plantings must have been significant, unless drought killed many trees. Possibly these plantings were not in the most level areas of the Great Valley, but they definitely were within the boundaries of Great Valley counties.
Utility lines were a new landscape feature in the rural Great Valley.

Fencing: Barbed wire came into use toward the end of the 19th century and still can be found in the Great Valley. Fegley’s photos show that wood “worm” and board-and-rail fences were still used in the early 20th century, but these do not remain in the landscape.

Figure 141: Barbed wire fencing, Jackson Township, Lebanon County.

Specialization, Petroleum Based Production, and Off-Farm Labor, 1940-1960

Introduction: A relentless cost-price squeeze during and after World War II shaped many farming trends. Competition intensified within a global marketplace. Urban sprawl exacerbated stresses on farms. The decline in farm numbers and increase in average farm size both accelerated. Farming rapidly became more capital intensive, large-scale, mechanized, science-driven, petroleum dependent, and specialized. Diversity of production and processes declined. Consumption replaced investment of time and labor for household food production. Off-farm work continued to play an important role in the farm economy.

Products, 1940-1960

The Second World War period brought fundamental changes to farming in the Great Valley. The agricultural extension agent annual reports give a picture of the key changes. Capital investments rose rapidly for cattle, feed, equipment, fertilizer, pesticides, sanitation equipment, and labor. Expenses rose as milk companies switched to bulk tanks and sanitation regulations tightened. The Berks County agricultural extension agent wrote in 1959: “Economically the dairy industry in Berks County is the highest source of farm income...Pipe line milkers, loose housing, milking parlors, bulk milk tanks, automatic gutter cleaners, and silo unloaders enable one man to take care of more animals and produce a better quality product than ever before.” Purebred livestock, artificial insemination, hybrid crops, and petroleum derived fuel, plastics, fertilizers, and pesticides all boosted productivity, but raised costs. Meanwhile prices for farm commodities did not keep pace. Indeed, with productivity rising so rapidly, surpluses accumulated and prices sometimes even dropped. This cost-price squeeze forced out all but the biggest and best capitalized farms. As the Northampton County agricultural extension agent explained in 1959: “Lower farm prices for farm products has produced a very tight cost squeeze for the farmers. A definite trend toward the operation of larger units either owned or leased is continually underway. This trend necessitates more careful planning and better over-all farm management.”

95 Almost every agricultural extension agent report from the period discusses the cost-price squeeze.
These trends occurred everywhere. Indeed, a hallmark of the post 1940 Great Valley agricultural economy is the extent to which it was so much more shaped by forces beyond the local or regional scale. Of course, farming had never been completely local; after all, Great Valley farmers had been eager to sell on the global market already in colonial days. The change was not in the fact of global impact, but in the proportion and extent of it. The economic environment for mid 20th century agriculture challenged the viability of small scale diversified regionally oriented farms. Great Valley fruit and vegetable growers struggled to compete with inexpensive produce trucked in from California and the Pacific Northwest. Dairying was still geographically constrained to some extent, but even so the “milk sheds” were larger than before and milk prices low because of overproduction. Poultry farming faced stiff competition from the rapidly developing Delmarva peninsula and Lancaster County.

In the Great Valley, urban and suburban development exacerbated challenges posed for agriculture. In 1958 the Cumberland County home economics extension agent noted that “Cumberland County is fast moving from a rural county to an urbanized one.” The Berks home economics agent lamented that there “Many farming areas are becoming suburban housing developments.” The pressure was not as great as in the immediate vicinity of Philadelphia, but it was still perceptible.

All of these factors combined to result in a steady drop in farm numbers. In Berks County, for example, there were 4,337 farms in 1950 and just 3,138 in 1960 – a 28 percent decline in a single decade. Because of their relative isolation, Franklin and Lebanon Counties were less hard hit than the others; suburbanization in the Allentown/Bethlehem/Easton and Reading areas was probably greater. Even Cumberland (despite the home economist’s statement) had not yet become suburban Harrisburg.

Figure 142: Great Valley percentage decline in number of farms, 1950-1960.

As farm numbers dwindled, the remaining farms specialized more heavily. The percentage of income from dairy cattle rose during the 1950s, in many cases to over half. This was true throughout the Great Valley. The postwar period witnessed the final dominance of the Holstein cow, perpetuated through artificial insemination. All but the prize bulls were redundant now.

By 1960 poultry farming was a much larger scale business than it had been before, and in most Great Valley counties (for example Northampton) it accounted for the second greatest portion of farm income and (in many individual instances) the top income generator.

Swine production continued in the Great Valley. There seems to have been a geographic differentiation within the valley; in Cumberland, Franklin, and Dauphin Counties in 1960 the average farm had ten or more hogs, while further east the numbers had declined markedly, down to only supplying household needs. Where swine were still produced, it seems that neighbors, local butchers, or farmers’ markets were being replaced by packing houses and large-scale auction organizations. For example, the Cumberland county agent noted in 1960 that “the swine industry is on the increase in the county, due to demand of packers for local fed animals, and due to the feeder
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pig sales started in the State within the last few years. Increased requests were answered on farrowing house and other swine building construction.”

The horse was now disappearing quickly. Even so, many farms still had horses. On average in 1960 most Great Valley counties had between .3 and .6 horses per farm, so it seems reasonable to assume that every second or third farm still had a team.

Crop farming – now mainly wheat, hay, and corn – was still important, especially west of the Susquehanna. Hay and corn were still fed on the farm, mainly to dairy cows. The old crop-and-livestock cycle was fraying, though. Per-farm acreage of wheat, oats, and minor grains had dropped drastically since 1927, while corn and hay increased. More and more feed and fertilizer were being purchased from off the farm.

During a brief period in the Second World War era, cannery crops were intensively produced. However, as the national and global transport grid delivered vegetables from afar, Great Valley truck farmers ironically found it difficult to compete, and by the mid 1950s this activity waned.

Family subsistence activity diminished. Families still kept gardens, butchered, and sold produce in local markets; but purchased food accounted for a higher proportion of the diet. Home canning did not disappear overnight but slowly declined. Freezing home grown foods became popular.

The net effect of these trends was to change the face of farming. It was no less complex than before, but required quite different types of expertise. In place of a broad general knowledge, farm operators needed more technical knowledge about fewer products, and they had to have sophisticated financial skills.

**Figure 143**: Great Valley farm livestock, 1960.

**Labor and Land Tenure, 1940-1960**

In the Great Valley between 1940 and 1960, the percentage of farms reporting hiring labor fluctuated. Census respondents were asked if they hired labor in the week preceding the enumeration, so seasonal variations would distort the figures on an annual basis. In any case, no more than a third of farms reported hiring labor, so it seems reasonable to conclude that only a minority of farms used hired workers, and that labor was mainly hired on a short-term basis rather than by the year.

During and immediately after the Second World War, farm labor shortages were acute in the Great Valley. Farm labor needs were filled through improvisation. High school students, Conscientious Objectors, Prisoners of War, “independent migratory workers,” migrants from the Bahamas and Jamaica on government-sponsored programs, Puerto Ricans, and even “vacationists” worked on Great Valley farms. They harvested potatoes, picked fruit, ran farm machinery, and performed other farm chores.
Most work was still done by the farm family. During the war, household labor patterns changed, as teenaged girls filled in for their absent brothers and fathers by driving tractors and operating farm machinery. The Berks County home economics extension agent noted in 1945: “The problems of rural families were quite similar all over the county. A shortage of farm help meant that the farm women and girls were needed to assist with outside work in the field and barn. Nearly all the farm family vegetable plots are part of the homemakers’ responsibilities but with the shortage of labor, more women assumed the jobs in connection with: 1. Raising Poultry 2. Caring for the Dairy Herds. This meant longer hours outside the home and less time for the usual tasks of homemaking.”

An important aspect of the rural economy during this period was off-farm labor by farm operators. Between 1940 and 1960 the percentage of farm operators who reported working off the farm fluctuated quite a bit, from around a third to as much as half. Some of the swings may be attributed to changes in information-collecting; in 1960 sampling techniques may have been skewed toward larger-scale commercial farms. This would under-report for the very farms on which off-farm labor was most crucial. As well, it is important to note that the statistics may underestimate the impact of off-farm labor because they tally employment by farm operators, and usually this meant the male household head. Yet, women’s employment was increasing during the postwar years and ultimately would come to play a big role in supporting farm household income. For example, in 1952 the Cumberland County home economics extension agent noted extensive off-farm labor by women in her constituency. The Berks County home economics extension agent noted in her 1956 report that “Small knitting mills, shirt factories, etc. have sprung up and both rural and farm women have gone to work. It is not unusual for a farm woman to work the 6 to 2 shift, then go home and do her housework and help with the farm chores.” No quantitative data on farm women’s off-farm labor were available until much later.

All in all, there was an unmistakable trend for households to supplement farm income with off-farm employment. Off-farm labor continued a longstanding tradition of combining farming with other income-generating activities; commuting and working for wages differentiated it from earlier artisan or trading activity.

Figure 144: Great Valley farm electrification, 1940-1960.

Labor-saving technologies were much more common than before 1940. Electrification approached one hundred percent. Indoor plumbing, home freezers, and other appliances became much more common. Scholars have debated the relationship of farm women to the new technologies. Katherine Jellison, for example, has argued that farm women resisted the agricultural establishment’s attempts to promote an urban middle-class gender model. Others have argued that “domestic” technology created labor rather than saving it. On a raw, day to day level, though, basic amenities like running water and electric lighting indisputably saved both time and physical effort for all rural household members.

96 Katherine Jellison, Entitled to Power: Farm Women and Technology, 1913-1963 (Chapel Hill, 1993).
The fossil-fuel revolution was now in full swing. Numerous new farm machines rapidly reduced the need for human or animal muscle power. Even so, adoption was uneven. The chart below shows 1950 patterns in one county – Berks, the Great Valley county with the largest number of farms. Notably, a fifth of farms lacked either tractors or horses. Presumably these were mostly small or part-time operations. Berks County farms were more highly mechanized than in the state as a whole; over 45% had dispensed altogether with draft animals. Yet another 25% combined tractor power with animal power. In a telling move, though, by 1960 the agricultural census no longer linked questions about horse numbers with tallies of tractors.

Figure 145: Berks County farm tractors and horses, 1950.

Farm tenure patterns had changed significantly. Tenancy rates had fallen from previous highs, both in the Great Valley and throughout the state. Likely the general drop in tenancy was because the “agricultural ladder” – the series of steps from farm hand to tenant to owner – had broken down. Thus a decline in tenancy is not necessarily a positive sign; it means that one means of access to land was closed off.97 In the Great Valley, another factor may have been that the traditional system of kinship-based share tenancy did not work well with increased capital requirements and a shift away from reliance on crops.

Figure 146: Pennsylvania farm tenancy, 1927 and 1960.

Buildings and landscapes, 1940-1960

Houses, 1940-1960

Few new farm houses built during this period were documented in field study.98 After building supply shortages eased, home economics extension specialists chronicled a wave of renovation activities. In 1944, for example, the agent in Northampton reported that "Four result kitchens have been carried on during the past year, three of which are completed and the fourth in the process of completion. Mrs. Vernon Hester made plans for remodeling her kitchen in 1948. Because at that time the money was needed for other purposes, the kitchen plans were shelved. Again this year Mrs. Hester began working on plans for her kitchen and carried through. Improvements included hot and cold water in the kitchen, sink, new cupboards, new gas stove, new linoleum, heating unit, a lavatory, and improved lighting at work centers." A Mrs. Whitaker installed an electric stove, moved her refrigerator from dining room to kitchen, and put down new linoleum. Mrs. Weidman at Stone Church got a new sink, new counter space, and rewiring for electricity. Painters from town painting the house said “Your kitchen is nicer than they have in towns.”99 Extension specialists worked with these projects, but probably many other similar ones were being undertaken.

The Northampton home economics report for 1945 contained valuable information about rural housing. It is not clear whether these conditions were typical, but the results are notable

98 The lack of postwar houses in field study records may result from the need to focus on farms with varied complexes of extant historic farm buildings.
nonetheless, because even at this late date a survey in a fairly prosperous Great Valley township showed that many families still cooked and heated with wood, and some even lacked hot running water.

A summary of the 25 kitchens [surveyed in Mt Bethel] shows that the average family…consists of four people living in six rooms. The average kitchen has three windows and four doors. Seventeen families have built in cabinets in their kitchens, 18 have electric refrigerators. Fifteen homemakers work on kitchen tables while 9 on cabinets. Eight women cook with coal, one with oil, three with bottle gas, while six use electricity. The rest use combinations of wood and coal. The families are evenly divided on kitchens and dining rooms. Twelve have kitchens and dining rooms together, while 13 use separate rooms. Only four homemakers take care of milk equipment in the kitchen. The other 20 have special milk houses. Only 9 families do the family wash in the kitchen, the remaining 15 have laundry rooms. Twelve women can sit when they work because they have kitchen stools. The nine others do not have stools. There is lots of carrying of wood and ashes because 13 use stoves only, while 12 have a furnace. In most of the homes, the water does the running because 19 have running water under pressure and 5 have pitcher pumps at the sink, while 24 have kitchen sinks. Fifteen get their water from a drilled well and have a good supply while 9 have cisterns and must use water carefully during dry spells. Running hot water is a joy in 16 homes. Nineteen families’ homes are lighted with electric from the power plant. Five use gasoline and kerosene, while one uses kerosene.100

Figure 147: Living room designs, 1945.
Figure 148: Kitchen designs, 1949.
Figure 149: Kitchen photo, Northampton County home economics extension report, 1949.

In Lebanon County, the percentages weren’t too different; 95% had electricity, just over half had telephones, 70% had running water, and only 60% had bathrooms.101

Barns, 1940-1960

Adaptations to earlier Pennsylvania forebay bank barns continued in this period. Poultry adaptations continued to be made. Typical dairy modifications include cementing floors; substituting metal stanchions in lengthwise rows for crosswise wooden stalls; separating pigs, horses, and cows more carefully; installing rows of windows in the basement wall; and installing ventilation systems. In Dauphin County, for example, the 1950 agricultural extension agent report mentioned creating “maternity stalls” in barns, to prevent spread of infection to newborns. Some were installed where bulls used to be, now that artificial insemination rendered them redundant.

100 Northampton County Home Economics Extension Archives, Narrative Report, 1945, page 33. It is not clear what the author meant by "gasoline" in a lighting context.
101 Lebanon County Home Economics Extension Archives, Narrative Report, 1953.
In surveyed properties, the most common barn built new in this period was the stable barn. A stable barn is a type of 20th century barn whose essential characteristics consist of ground-level stabling, usually in the form of stanchions for dairy cattle, accessed by a gable end opening and separated by a lengthwise aisle, and served by ample hay upper-level storage space created by a round or "Gothic" roof, or a gambrel roof. The barns are well-lighted with rows of windows along each eaves side. Usually they are built with 20th century materials; rock face concrete block, cement block, and wood balloon framing are especially common. The original flooring is usually concrete as well. They were popularized through the national agricultural press, agricultural extension publications, and even commercial catalogues from companies like Sears, Roebuck and the James Manufacturing Company in Wisconsin. These barns, notably the bigger examples, reflect large scale dairy production, and a break from traditional forms and materials. The larger examples accommodated not only bigger herds, but larger Holstein cows and the huge amounts of feed they required. The 20th century stable barn also represent a response to stepped-up state regulation of the dairy industry, which mandated (among other things) ample light, easily cleaned surfaces, no manure basement, and ventilation for dairy cows.

Stable barns made their initial appearance in the early 20th century, but documented examples in the Great Valley tend to date after 1940. As elsewhere, the stable barn in the Great Valley reflects greater specialization in dairying, new construction technologies and building materials, and state regulation.

Figure 150: Pennsylvania barn transformed into a gambrel-roof stable barn, South Annville Township, Lebanon County.
Figure 151: Stable barn, Lurgan Township, Franklin County.
Figure 152: Interior framing of barn above.
Figure 153: Stable barn, Straban Township, Franklin County.

Another type to appear after World War II was the freestall barn. Research at the University of Wisconsin in the early 1950s showed that cattle actually did better in these open, light structures than when they were confined in conventional stanchion arrangements. Newer free stall barns in the Great Valley are independent structures, often metal, which date after 1960, but a few free stall additions were made to existing barns. They tend to be simple, open shed roof pole-built structures, usually placed on the forebay side.

Figure 154: Pennsylvania Sweitzer barn with shed-roof freestall addition, Antrim Township, Franklin County.
Figure 155: Pennsylvania barn with shed-roof loafing area addition and rainbow-roof stable barn addition, Mill Creek Township, Lebanon County.

In the mid-20th century tobacco growing came to parts of Lebanon County. Tobacco barns in Lebanon County are later than those in Lancaster County because of this timing. Though the materials were contemporary (narrow vertical board, balloon framing, concrete-block foundations, metal cased windows, etc.), the form kept to 19th-century precedents. That is, these were banked
buildings with the signature slatted siding. Inside there were tiers of lath in the upper level where tobacco was hung, and a basement level where stripping and packing occurred.

**Figure 156**: Tobacco barn, Jackson Township, Lebanon County.

**Silos, 1940-1960**

As dairying became more important in the Great Valley, more silos appeared. Concrete-stave and poured-concrete silos were the most common types in this period. The agricultural extension reports mention trench silos, but the census data show that these were uncommon.

**Figure 157**: Great Valley farm silos, 1940-1950.
**Figure 158**: Concrete block silo, Peters Township, Franklin County.
**Figure 159**: Concrete stave, poured concrete, and Harvestore silos. Mill Creek Township, Lebanon County.

**Milk Houses, 1940-1960**

With more dairying came more milk houses. Milk houses are difficult to date; mid 20th century ones probably tend to be built of concrete block and are a little larger than earlier ones.

**Figure 160**: Milk house, South Annville Township, Lebanon County.

**Milking Parlors, 1940-1960**

With the new freestall animal shelter practices, a separate milking parlor was often used. The cows stayed in their freestall area and at milking time they walked to the milking parlor in groups, then returned to the stalls. Milking parlors tend to be small, one-story buildings sited near the barn, equipped with 8 to 12 milking stations.

**Figure 161**: Milking parlor, Peters Township, Franklin County.

**Machine Sheds, 1940-1960**

New machine sheds continued to be built in this era of expansion. They tended to be larger than prewar ones, and to be built of concrete block or pole construction oftener than frame.

**Figure 162**: Machine Shed, North Cornwall Township, Lebanon County.

**Poultry Houses, 1940-1960**

In keeping with its greater role in the farming economy, the postwar poultry house was bigger than its predecessor. Often poultry houses from this period would be more than one story. As before, barns were adapted for poultry; one Dauphin County farmer renovated his bank barn in 1947 to house 4,000 birds. 102

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102 Dauphin County Agricultural Extension Archives, Narrative Report, 1947.
Pigsties, 1940-1960
Since swine continued in a modestly important role in the Great Valley, new pigsties continued to be built. Their form, proportions, and size was not too different from those of earlier pigsties, but they can be distinguished by materials: narrow or beaded board; balloon framing; concrete foundations.

Figure 166: Pigsty, Antrim Township, Franklin County.

Garages, 1940-1960
Garages and machine sheds are difficult to differentiate, but garages probably tend to be built of more durable materials, and to be enclosed on all sides; machine sheds are often open on one or more sides.

Figure 167: Garage, Guilford Township, Franklin County.

Landscape Features, 1940-1960
Contour plowing and strip cropping were widely instituted during this period. The two aerial photos from Franklin County show the changes especially clearly. In some areas (for instance the crop strips on the right of the 1957 photo) fields were consolidated and treelines eliminated, probably to accommodate larger machinery. However, many features from 1937 remain in 1957, including orchards, crop fields, treelines, and woodlots.

Ponds were much mentioned in the agricultural extension reports after the war. The Northampton County extension agent, for example, claimed that 200 farm ponds were built in 1955 alone. The pond boom was attributed to the availability of heavy excavating equipment; insurance price discounts for farms with ponds; new interest in recreation; and the need for water to irrigate, especially cannery and truck crops. Water for mixing sprays was also needed.

Dynamited ditches for drainage were mentioned in the agricultural extension reports, but it is not clear that these were created in any great numbers. The blasting spectacle drew crowds.

Crop fields, pasture, woodlot, and hay land were still the main farm land uses.

Concern began to rise about loss of farmland during this period. Suburban development begins to appear on period aerials in some places.

Figure 168: Historic aerial view, Northwest of Waynesboro, Franklin County.
Figure 169: Historic aerial view, Northwest of Waynesboro, Franklin County.
Bibliography: The Great Valley

This bibliography is specifically for the Great Valley. A more extensive general bibliography is available with the other Pennsylvania Agricultural History Project narratives online. http://www.portal.state.pa.us/portal/server.pt/community/pennsylvania%27s_agricultural_history/2584

Unless otherwise noted, the statistics cited in the narrative are from the U. S. Census of Agriculture. Manuscript data for 1850, 1880, and 1927, are available on the Pennsylvania Agricultural History Project website. Figures and charts are based on these manuscript data. Summary data are available for 1927 and will be available for the other years early in 2012.


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1: Map of Pennsylvania’s physiographic provinces, showing the Great Valley section.
2: Relief map of Pennsylvania. The Great Valley is clearly visible. DCNR Map 65.
3: Immel house, Jackson Township, Lebanon County, 1759. Site 075-JA-004

5: House, Jackson Township, Lebanon County, c.1789. Site 075-JA-003.

6: House, Jackson Township, Lebanon County, 1838. Site 075-JA-005.
7: Casper Maul barn, Oley Township, Berks County, 1796.

8: Abraham Bertolet ancillary house, Oley Township, Berks County, c.1740. This building had a first story kitchen.
9: Keim Homestead ancillary building, Oley Township, Berks County, c.1760. This banked structure had a spring in the basement and accommodated a wood-turner shop on the upper level.

10: Bakehouse, Bertolet-Herbein homestead, Berks County, reconstructed, date uncertain. The bake oven was situated in the rear, but a “squirrel” tail ran the smoke back into a chimney on the roof ridge. A sheltered area protected workers and products.
11: Dairy or wash house, Schaefferstown, Lebanon County, late 18th or early 19th century. The interior is lined with shelves.

12: Spring house, Cumberland County, late 18th or early 19th century. This combination building has a spring in the basement and a fireplace on the upper level.
13: Smokehouse, Tulpehocken Manor, Jackson Township, Lebanon County, late 18th century. This large structure held large amounts of meat and was secured with a hand wrought iron bar.

14: Alexander Schaeffer House, Lebanon County, mid 18th century. Historians are fairly sure there was a still in the lower level.
15: Berks County crops per farm, based on 1850 census data.

Figure 16: Franklin County crops per farm, based on 1850 census data.
17: Berks County crops per farm, based on 1880 census data.

**Figure 18:** Franklin County crops per farm, based on 1880 census data.
Figure 19: Lebanon County livestock per farm, based on 1850 census data.

Cumberland County livestock per farm, based on 1850 census data.
21: Lebanon County livestock per farm, based on 1880 census data.

![Lebanon County Livestock, Animals per Farm, 1880 (ten percent sample)](image)

22: Cumberland County livestock per farm, based on 1880 census data.

![Cumberland County Livestock, Animals per Farm, 1880](image)
23: Five-bay house with center door and walk-in lower level, South Annville Township, Lebanon County, 1855. The lower level has a spring house and kitchen, and is connected to the first floor by a dumbwaiter. Site 055-AN-005.

24: Three-bay house with side door, Antrim Township, Franklin County, 1825-45. Site 055-AN-011.
25: Four over four house with one door, Mill Creek Township, Lebanon County, 1843. Site 075-MC-008.

26: Four over four house with two doors, Bethel Township, Lebanon County, c.1845-60. Site 075-BE-002.
27: Floor plan, four over four house, Oley Township, Berks County, c.1870. This is the floor plan for the house shown in the next figure. Note the lack of hallways, kitchen hearth in one rear room, and “stove” room opposite.

28: Four over four house, Oley Township, Berks County, c.1870. The corner quoins, window trim, 2/2 sash, and porch ornament give the form an updated look.
29: Four over four house with Victorian trim, Bethel Township, Lebanon County, c.1875-90. Site 075-BE-001.

30: House with formal Georgian front and informal gable end entry. The porch and tree obscure it a little, but the gable-end entrance leads to a kitchen and the front is symmetrical and more formally trimmed. Mill Creek Township, Lebanon County, c.1855. Site 075-MC-011.
31: House with formal Georgian front and informal gable end entry, South Annville Township, Lebanon County, built by Commodore Perry Steinmetz in 1852. South eaves side (see below). This was the “public” front. Site 075-SA-006.

32: House with formal Georgian front and informal gable end entry, South Annville Township, Lebanon County, built by Commodore Perry Steinmetz in 1852. West gable end (see above). This was the kitchen side and faced the working part of the farm. Site 075-SA-006.

34: Brick-cased log house, Washington Township, Franklin County. The main section was built around 1820 and cased with brick around 1850; the ell was added later in the 19th century. Site 055-WA-003.
35: Ancillary house, possibly a tenant house, Montgomery Township, Franklin County, early to mid 19th century. Site 055-MO-004.

36: Log tenant house, Antrim Township, Franklin County, early to mid 19th century. The house has a three-room floor plan. Site 055-AN-009.
37: Angstadt farm tenant house. PA CRGIS files.

38: Pennsylvania barn, Oley Township, Berks County, early 19th century.
Figure 39: Pennsylvania barn, near Moselem Springs, Berks County, date unknown, photographed 1941. The paint scheme on this barn included red, yellow, blue, and white. HABS, digital ID [http://hdl.loc.gov/loc.pnp/hhh.pa1541](http://hdl.loc.gov/loc.pnp/hhh.pa1541).

Figure 40: Knabb barn, Oley Township, Berks County, 1829.
Figure 41: Jacob Plank barn, Cumberland County, 1853. This barn has rear granary outsheds (see below).

Figure 42: Floor plan, Plank barn, see above. CHAD.
Figure 43: Waggoner Barn, Cumberland County, 1858.

Figure 44: Frame Pennsylvania barn, Jackson Township, Lebanon County, 1895. The basic form continued to be built all the way through the century. Site 075-JA-009.
Figure 45: Boyer-Mertz farm (aka Angstadt), Maxatawney Township, Berks County. The shed-roof structure on the barn bank side housed a horse power. PA CRGIS files.

Figure 46: Springhouse, Heidelberg Township, Lebanon County, c.1850. Site 075-HE-003.
Figure 47: Combination springhouse and summer kitchen, Jackson Township, Lebanon County, mid 19th century. Site 075-JA-011.

Figure 48: Smokehouse, South Annville Township, Lebanon County, c.1860-75. Site 075-SA-006.
Figure 49: Bake Oven, Straban Township, Franklin County, mid 19th century.
Site 055-ST-002.

Figure 50: Butcher house, North Lebanon Township, Lebanon County, c.1900.
Site 075-NL-001.
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Figure 51: Butcher house, Heidelberg Township, Lehigh County, c.1900. The interior has a brick housing and two round receptacles for set-kettles. Site 077-HE-007.

Figure 52: Summer kitchen and springhouse, Mill Creek Township, Lebanon County, c.1860. Site 075-MC-008.
Figure 53: Summer kitchen, South Annville Township, Lebanon County, c.1850-70. Site 075-SA-004.

Figure 54: Summer kitchen, Southampton Township, Franklin County, c.1875. Site 055-SO-001.
Figure 55: Privy, Tulpehocken Manor, Jackson Township, Lebanon County, c.1875.

Figure 56: Pigsty, Heidelberg Township, Lebanon County, c.1870. Note the low doors to the right (pens are gone) and human door on the gable end. Site 075-HE-003.
Figure 57: Pigsty, Heidelberg Township, Lebanon County, c.1865-75. A rare stone example with decorative brick arches over the doors. Site 075-HE-006.

Figure 58: Machine Shed and corn crib, Heidelberg Township, Lebanon County, late 19th century. Site 075-HE-009.
Figure 59: Machine Shed and corn crib, Mill Creek Township, Lebanon County, late 19th century. Site 075-MC-001.

Figure 60: Machine Shed and corn crib, North Annville Township, Lebanon County, late 19th century. Site 075-NA-001.
Figure 61: Root cellar, Straban Township, Franklin County, late 19th or early 20th century. Site 055-ST-001.

Figure 62: Root cellar, Schaefferstown, Lebanon County, date unknown. This cellar has a vaulted ceiling.
Figure 63: Root cellar, Keim homestead, Oley Township, Berks County, early 19th century.

Figure 64: Lime kiln, South Annville Township, Lebanon County, date unknown. Site 075-SA-003.
Figure 65: Fence and tree windbreak, Mill Creek Township, Lebanon County. The fence has an incised date of 1851, but it is cut into a later concrete reinforcement. Site 075-MC-001.

Figure 66: Stone fence, Antrim Township, Franklin County, date uncertain. Between sites 055-AN-006 and 007.
Figure 67: Evergreen fence line, Montgomery Township, Franklin County, date uncertain. These appear to have been deliberately planted; they are probably Eastern Red Cedar, really a juniper (Juniperus virginiana).¹

Figure 68: Family burial ground, Franklin County. The stones date mainly from the 1850s.

¹ Email communication with Cecilia Rusnak, Associate Professor of Landscape Architecture, PSU, April 14, 2009.
Great Valley, PA Farm Crops, 1927

Figure 69: Great Valley crops, based on 1927 census data.

Great Valley, PA Farm Livestock, 1927

Figure 70: Great Valley livestock, based on 1927 census data.
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147: Living room designs, 1945. Note that the "after" (approved) design has eliminated the farm record center and desk, and the milkman’s desk, thus removing "farm" and finance-related spaces and making the room more "domestic."

148: Kitchen designs, 1949. Modern appliances and counter spaces are new, but the "eating center" remained.

149: Farm kitchen photo, Northampton County home economics extension report, 1949.

150: Pennsylvania barn transformed into a gambrel-roof stable barn, South Annville Township, Lebanon County. Original construction probably c.1850; modified in the mid-20th century. Site 075-SA-002.

151: Stable barn, Lurgan Township, Franklin County, c.1950. Site 055-LU-001.

152: Interior framing, barn at site 055-LU-001. Note the light, short members and lack of posts.

153: Stable barn, Straban Township, Franklin County, mid to late 20th century barn built on earlier stone foundation. This barn retains the barnyard wall characteristic of the Pennsylvania forebay barn, only it is built of concrete block and metal pipe. Site 055-ST-003.

155: Pennsylvania barn with shed-roof loafing area addition and rainbow-roof stable barn addition, Mill Creek Township, Lebanon County, 19th century original with mid 20th century modifications. Site 075-MC-006.


157: Great Valley Farm Silos, 1940-50. These data are predictable except for the Dauphin County figures.

158: Concrete block silo, Peters Township, Franklin County, mid 20th century. Site 055-PE-003.

159: Three types of silo: from left to right, concrete stave, poured concrete, concrete stave, and Harvestore. The concrete stave silos are probably mid 20th century and the others more recent. Mill Creek Township, Lebanon County. Site 075-MC-006.

160: Milk house, South Annville Township, Lebanon County, mid-20th century. Site 075-SA-001.

161: Milking parlor, Peters Township, Franklin County, mid-20th century. Site 055-PE-002.


163: Poultry house, Guilford Township, Franklin County, mid-20th century. It was later adapted for a garage. Site 055-GU-003.

164: Poultry house, Montgomery Township, Franklin County, mid-20th century. Site 055-MO-005.

165: Poultry house, Jackson Township, Lebanon County, mid-20th century. The building has since been turned into a workshop. Site 075-JA-005.

166: Pigsty, Antrim Township, Franklin County, c.1950. Site 055-AN-010.

167: Garage, Guilford Township, Franklin County, mid-20th century. Site 055-GU-003.

168: Northwest of Waynesboro, Franklin County, 1937.

169: Northwest of Waynesboro, Franklin County, 1957.
XVIII. Southeastern Pennsylvania, 1750-1960

Location

The Southeastern Pennsylvania Historic Agricultural Region consists of the entire counties of Bucks, Montgomery, and Chester; and southern Lancaster County (south of the Lancaster Plain). Historically Delaware County would be included, but almost no agricultural resources remain there. The region is bounded on the west by the Susquehanna River; on the north by South Mountain and the southern edge of the Lancaster Plain; on the east by the Delaware River; and on the south by the urban counties of Delaware and Philadelphia and the state line. The boundaries reflect both geographic and historical factors which shaped the region. The Piedmont region, for example, extends beyond these boundaries, but historically the Susquehanna River, which cuts through it, constituted a barrier. The cities have long been very developed and lacking much agriculture.

Figure 1: Southeastern Pennsylvania Historic Agricultural Region

Climate, Soils, and Topography

Southeastern Pennsylvania has an average temperature between 50 and 52 degrees Fahrenheit, and between 42 and 44 inches of precipitation annually. It is wetter and warmer than the rest of Pennsylvania, with fairly long growing seasons. Most of the soils are alfisols derived from igneous or metamorphic rock; in the northeastern section of the region they are underlain by sandstone and shale. Specific soil types are quite varied and include such soils as the Bucks silt loam, Codorus silt loam, Manor loam, Croton silt loam, and Conestoga silt loam. The soils vary in their agricultural quality but many are excellent. Topographically, the region includes most of the Pennsylvania Piedmont, characterized by geographers as “a gently rolling, well-drained plain rarely more than 500 feet above sea level.”

Northern Bucks County is part of the Triassic Lowland, which has a similar topography.

Historical Farming Systems

Overview: This region is quite diverse in topography and soils. Though these did play a role in the choices farming families made, the historic unifying factor that shaped production in the region was proximity to Philadelphia and other large cities. Philadelphia’s size and its accessibility has historically driven agricultural choices and land use decisions. In the very beginning, settlers used its port to send products to distant destinations including the British Isles, continental Europe, coastwise to other North American colonies, and to the Caribbean. A little later, Philadelphia itself became the major regional market for farm products. Production patterns shifted away from less perishable products for long-distance trade, to stall feeding cattle and raising other livestock, and to fresh produce. In the early nineteenth century, western competition challenged these enterprises, and home butter dairying emerged in southeastern Pennsylvania. By the late nineteenth century,

1 E. Willard, Miller, ed. A Geography of Pennsylvania (University Park, PA, 1995), 19.
fluid milk dairying, market gardening, and ornamental horticulture were important farm income sources. In the twentieth century, these three pursuits continued, along with a rising role for poultry.²

Chester County is noted for its mushroom industry. This major sector of Pennsylvania’s agriculture already has its own separate National Register context and so it will not be discussed here.

The urban hinterland also became noted for recreational “gentleman’s” farms. These are not discussed here since they are a special category.

Diverse Production with wheat as an export crop, c. 1730 to about 1780

Note: This section of the narrative follows the one for the Lancaster Plain closely, but not entirely.

Products, c 1730-1780
This context is more heavily based on secondary sources than other narratives in this series, but primary material still informs the analysis to some extent. Colonial southeastern Pennsylvania has attracted considerable attention from scholars, and a body of secondary work has accumulated which will serve well to identify important agricultural trends for the colonial and revolutionary war period. The literature diverges somewhat in historiographical interpretation, with recent work modifying earlier conclusions.

Geographer James T. Lemon’s account of The Best Poor Man’s Country (1972) is still the place to begin for analysis of colonial southeastern Pennsylvania. Lemon’s primary source base was vast, and included contemporary accounts, family papers, tax records, probate records, real estate records, and published materials. His account has held up quite well except for a few points which will be discussed below.

Chester, Montgomery, and Bucks Counties, as well as southern Lancaster County, were among the earliest of the Penn land acquisitions, being deeded by 1684. The region was settled by about 1730. By about 1760, the population in southeastern Pennsylvania (Lancaster, Chester, Berks, Bucks, Delaware, and Philadelphia Counties) exceeded 100,000. This population was very diverse: settlers came from German-speaking Europe, French-speaking Europe, the Netherlands, Sweden, and the British Isles, not to mention a few slaves from Africa and the Caribbean. The region was long noted

for its English Quaker influence. Welsh place names (Gwynned, Bryn Mawr, etc) still remain as well.  

Agriculture in southeastern Pennsylvania took shape amid constant flux in population movement and makeup, land tenure arrangements, and economic development. Land prices rose, and the average size of land holdings dropped between 1730 and 1760. The tenant class grew, to about a third of taxables. Most people were engaged in agriculture.

Farming in southeastern Pennsylvania was conducted along the lines of what Lemon calls “general mixed farming and extensive use of the land.” By “extensive,” Lemon meant that land was cropped “superficially,” without much in the way of fertilizer or sophisticated techniques. The cleared area was very small, but rather than husband it intensively to get the most from it, farmers simply cleared more to increase production. Fallow land, woodlot, and meadow (hay lands, often mown from whatever plants took root without deliberate seeding) took up a relatively large proportion of cleared land. Soil was “rested” through fallows rather than replenished through rotations, liming, and fertilizers. Scholars agree that in general, productivity was stagnant or even negative throughout the eighteenth century. Livestock were few and usually found their own forage, roaming unfenced. Orchard and gardens rounded out the typical farmstead land-use organization.

Historians have often connected extensive farming with small-scale self-sufficing or non-market agriculture. However, colonial Pennsylvania’s farms were rarely as self-sufficient as period observers such as Hector St. John de Crevecoeur claimed. Indeed, the often-made distinction between subsistence and market farming does not work well at all in the colonial Pennsylvania context. For one thing, likely the most self-sufficient farms were also the largest. More importantly, very early on, Pennsylvania farming families participated in the global commodities trade. Around 1730, historian Brooke Hunter notes, in Europe population growth, war, and crop failures stimulated an “explosive growth in demand” for grain, and Pennsylvania farmers were well positioned to respond. They raised wheat to sell to Philadelphia millers, who in turn exported flour. The burgeoning West Indies plantation economy soaked up all sorts of provisions including flour, butter, and meat. Joan Jensen notes that even before the Revolution, huge quantities of butter left Philadelphia for the coastal and foreign trades. Pennsylvania-produced foodstuffs were sent along the coastwise trade from New England to the Carolinas, and overseas as far as China. A network of

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roads, supplemented by waterways such as the Schuylkill, connected the rural hinterland to Philadelphia.  

The wheat crop was important as a source of farm income, and highly visible as well, because so much of it was exported. Also, wheat contributed to economic development because it stimulated industry (mills for processing) and transport infrastructure. However, viewed from the perspective of the individual farm, wheat was by no means the only farm product. Wheat yields were low (as little as 10 bushels per acre), and Lemon estimates that a 125-acre farm in 1760 would have only eight acres planted in wheat. Thus wheat production was but one element in most farm families’ diversified market and subsistence strategies. Lemon and others have noted a variety of farm products, evidence for which appeared in wills, journals, travelers’ accounts, and other sources. Besides wheat, crops included rye, barley, oats, buckwheat, Indian corn, potatoes, turnips, cabbage, apples, peaches, cherries, flax, flax seed, hemp, and hay. Pork, beef, mutton, eggs, wool, and butter were typical animal products. Fruit and grain were processed into cider and liquor. Barley was sold to Philadelphia maltsters. Farmers raised and sold small numbers of cattle, sheep, swine, horses, poultry, and bees. They gathered nuts and berries, and made maple sugar, lumber, cordwood, and potash from their woodlots. Fish and game provided vital protein in their diets.  

Michael Kennedy, in a well-researched 2000 article, has modified some of Lemon’s arguments about local markets in colonial Pennsylvania. Lemon, as a historical geographer, assumed that central places (i.e. towns) were necessary to the creation of local markets for farm produce; he was preoccupied with testing von Thünen’s famous hypothesis about how distance from a central place determines the nature of agricultural production. Because of this perspective, Lemon’s work left unanswered questions. There were few such population centers in mid 18th century Pennsylvania; indeed, Lemon himself noted that the colonists preferred dispersed settlement. At the same time, the percentage of non-farmers – i.e. consumers -- was growing, and clearly farmers were marketing  

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products. So, where did they sell their wares if not in towns? Kennedy has solved this puzzle convincingly; he shows that the central place function was served not by towns but by stores located at rural ironworks and mills. These stores were liberally and widely distributed, and virtually every southeastern Pennsylvania household was situated near at least one. Kennedy explains not only where the markets were located physically, but also links them to the growing population of landless consumers.

Kennedy also adds to the list of products marketed. Beans, onions, wood, veal, parsnips, venison, cucumbers, molasses, greens, peas, leather, limestone, tallow, wax, straw, hops, hides, and feathers were raw farm products mentioned in mill and ironwork store records. Others included processed items such as stockings, clothing, linen, baskets, soap, thread, cheese, vinegar, shingles, charcoal, and candles. In all, Kennedy enumerated 118 different farm products traded at these outlets. Kennedy concludes that “many more Pennsylvanians produced more crops for markets than previously assumed.” His work is persuasive because, unlike Lemon, he is able to document actual sales rather than needing to rely on extrapolation as Lemon often did. Kennedy also makes other important observations. His estimate for average farm acreage is significantly lower than Lemon’s (88 vs. about 125 across the region); and he contends that given their limited space, a typical farm family would have less diversified production than Lemon assumed. In other words, all southeastern Pennsylvania farms were diversified, but they didn’t all produce the same broad mix. It was the collective total that created the overall diversification.8

It is important to keep in mind Kennedy’s observation that even though colonial Pennsylvania farms collectively produced an astonishing variety of items, typically on an individual farm agriculture took place on a quite modest scale. In the first instance, clearing took a long while, and well into the eighteenth century most southeastern Pennsylvania farms still had large uncleared spaces. Farm families might actually be tilling perhaps only half of the total. Lemon estimates that on a farm of 125 acres, about 46 would be cleared and planted with small grains, fiber plants, vegetables, and fruit. Hay meadow or pasture were probably not deliberately planted, just alternately mown and grazed, but they counted as cleared land. Advertisements from the Pennsylvania Gazette describe farms for sale that had anywhere from just a quarter to over half the acreage cleared. For example, an April 30, 1761 advertisement read: “To be SOLD by the Subscribers, A Valuable Tract of Land, in Haverford Township, Chester County, late Rowland Parry, consisting of 101 Acres, 60 of which Woodland, 6 of good Meadow, and a great deal more may be made...” No farm described in Gazette ads from the mid eighteenth century to the 1780s was more than three-quarters cleared.

Labor and Land Tenure, 1730-1780
Labor and land tenure were intertwined during this period. Tenancy was a pervasive institution in southeastern Pennsylvania during the colonial period. Lemon estimated that “... in 1760 and 1782 about thirty percent of Lancaster’s and Chester’s married taxpayers were landless, and about the same number of farmers fell into the tenant category, possibly half of them sharecroppers.” These

8 Michael V. Kennedy, "Cash for His Turnups": Agricultural Production for Local Markets in Colonial Pennsylvania, 1725-1783,”Agricultural History 74 No. 3 (Summer, 2000), 587-608. Quote is from page 606.
figures pertain only to taxables, not representing even all household heads. Lucy Simler’s detailed research has shown that in colonial Chester County, an important unit of society was the large farm with its associated tenants. There was a hierarchy among the tenantry. Farm tenants leased a large property, bringing with them considerable resources such as livestock and implements. Less well-off “smallholders” leased small acreages (usually less than twenty) from the landowner, keeping a few animals, growing food, and following a trade. They “held” land even if they didn’t own it. “Inmates,” on the other hand, were married nonlandowners living in a landlord’s house. Inmates often were allotted only a garden plot, worked for the landowner, and/or followed artisan trades. Single freemen did not even head a family; they were usually young men residing in another’s household and working for wages.9

Below these were others whose poverty and low status often meant they could not even belong to the ranks of “taxables.” Farm workers were often “bound” or “unfree” in some way: some were family members, and others were un-free redemptioners, indentured servants, cottager tenants, or (infrequently) slaves. In 1753, for example, Jacob Clemens recorded in his account book that he and his brother “freed a carpenter from the ship and each of us paid one-half of his freight... he belongs to each of us in equal shares.”10 The master of a runaway servant, the “Welchman” Thomas Davis, conceded that he was “very handy on a farm” in advertising in 1768 for Davis’s apprehension and return. Notices in the Pennsylvania Gazette advertised slave women who knew dairying, and slave men who knew farming.

Much farm work did not even involve raising crops or livestock at this early time. During the eighteenth century, agrarian families and hired workers applied their energies to the basic tasks of making a farm: clearing, plowing, and fencing, before any planting could take place. Clearing generally involved felling massive trees and cutting them into logs, making potash or lumber, and pulling stumps – all done without major mechanical aids.11 Breaking land was done with rudimentary equipment as well. Early fencing laws put the onus for fencing on the crop grower, so crops had to be enclosed, rather than animals. Probably most fencing was the “worm” type, with split rails stacked in a zigzag pattern. Again, making the fence and erecting it was almost all done by hand. The clearing process continued long into the 19th century.

In southeastern Pennsylvania, laborers spent a good deal of time making meadows. Eighteenth-century advertisements frequently made a point of discussing farm meadow acreage, both actual

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11 "Threshing with the Flail,” in William J. Buck, Local Sketches and Legends Pertaining to Bucks and Montgomery Counties, Pennsylvania (Printed for the author, 1887), 234-239. See also Alfred Sharpless, “Ye Olden Times in Chester County,” Proceedings of the Chester County Historical Society 9th mo. 15th, 1898, 10-14.
and potential. Notably, they emphasized that meadow was “made.” Robert Bucher, in an article on “Meadow Irrigation in Pennsylvania,” explained how this was done in the 18\textsuperscript{th} and early 19\textsuperscript{th} centuries. Meadows occupied low lying areas along streams. Using the stream waters, farm people dug irrigation ditches, made dams, and cut outlets into the ditches at intervals. They diverted water from a stream along a ridge and let the water run back down along the slope by gravity. Bathing the grasses in water increased the productivity of these meadows and thus of the farm animals that ate the resultant hay. At haying time, the dam was shut and the meadow allowed to dry out before the hay was made. These works required large outlays of labor in initial construction, and then also they demanded continual maintenance. As well, often animals had to be fenced out of the meadow area.\textsuperscript{12}

Once cultivating and livestock raising got underway, men and women worked together in complementary tasks. Michael Kennedy, Joan Jensen, and Lucy Simler have persuasively documented that women performed a very large portion of agricultural labor, not only in tasks traditionally associated with women (spinning, dairying, needlework, cooking, poultry keeping, gardening, food preservation, baking) but field work as well. At haying time, for example, the men cut the grass, while women followed and raked it. Women and men worked together in other tasks such as rye harvest, flax pulling, and apple gathering.\textsuperscript{13} The dairy deserves special mention because the foundations of an important industry were established during this period. Joan Jensen has explained how colonial-era Chester County women developed butter making into a lucrative business during the eighteenth century, not just supplying their own households but selling large or small quantities. The setting was being created for later expansion.

Another notable aspect of rural labor patterns was nonagricultural work carried on by landowners. In Bucks County, for example, a study of estate papers and tax lists indicated that “the farmer-craftsman was a common figure in Bucks County...” Both Simler and Duane Ball, author of a dissertation on colonial Chester County, noted that farmers practiced other trades and occupations. Ball detected a “growing tendency for [farmers] to take on relatively specialized non-farming activities, undertaken concurrently with their farming...” over the eighteenth century. He and Simler attributed the trend to relatively plentiful “down” time in the wheat farming cycle. However, this interpretation now seems open to question since the diversity of early southeastern Pennsylvania production has been better documented since the thesis was written. It is more likely that the farming regime demanded much labor, spread out over the seasons. It seems more likely that multi-occupationalism was another aspect to economic diversification. Indeed, it makes equal sense that rather than being retained for one frenzied harvest season, “inmates” could labor year-round farm and thus free up landowners to pursue nonfarming occupations.\textsuperscript{14}

Agricultural Resources of Pennsylvania, c1700-1960
XVIII. Southeastern Pennsylvania, 1750 1960

Buildings, 1730-1780

Houses, c. 1730-1780

Rural houses of southeastern Pennsylvania have been so well documented and analyzed that there is little need for further comment. See the Bibliography for further references. Two examples are offered here.

Figure 2: Yost log house, Whitpain Township, Montgomery County.
Figure 3: "Penn Plan" house, Lower Oxford Township, Chester County.

Barns, c. 1730-1780

Few barns survive from this period. As we have seen, crop acreage was limited. Farm animals often were let loose to graze in forests and pastures, finding their own forage. One historian notes that since animals found their own feed, colonial era livestock numbers were relatively high even though pasture and hay lands were limited. However, it seems that few must have been kept over the winter, because shelter was so limited. Relatively small log barns were the norm, if indeed a farm had one at all. A local history of Bucks County described a farm complex around 1760 that contained a “barn with a threshing floor...” and a “crib for Indian corn.” The barn must have been small, because the hay and even grain were stacked outdoors. The author noted: “Before 1790, our commodious cellar barns were unknown, as grain was generally stacked.”

The Zook log barn (Figure 4) in Chester County is a rare example, documented by the Historic American Buildings Survey in the early twentieth century. The Zook barn is an early “Sweitzer” barn, and at 86 by 25 feet was large for its day. Its two log cribs and central threshing floor accommodated hay and straw storage and threshing. Below were stables.

Figure 4: Zook log barn, East Whiteland Township, Chester County.
Figure 5: Abiah Taylor Barn, Chester County.

Though it is a high-end barn for its day, the Abiah Taylor barn (Figure 5) in Chester County still reflects relatively modest needs for barn space at the time. This early three-bay English threshing barn dates to the mid 18th century. It was not banked, and had three bays: one for grain and hay storage, one for threshing, and one for livestock stables. The William Moore Barn in Doylestown Township, Bucks County, 1797, is a one-level barn documented by HABS in the early twentieth century. The photographs do not reveal the barn well so they are not reproduced here.

Figure 6: Log crib barn, Lower Oxford Township, Chester County.

Outbuildings, c. 1730-1780

Few outbuildings can definitively be dated to this period. The HABS documented Lundale spring house in South Coventry Township, Chester County, has an estimated 1713 date. It was a two and a half story stone structure with living space in the upper portions and spring house below. It reflects the early importance of dairying in Chester County.

Figure 7: Probable smoke house, Kennett Township, Chester County.
Figure 8: Jerman-Walker spring house, Tredyffrin Township, Chester County.

Landscape features, c. 1730-1780
The rural landscape has been so thoroughly reworked that its eighteenth century features have been largely erased. Irrigation ditches, for example, so important two and a half centuries ago, are long effaced. It is likely, however, that in a few cases the old metes-and-bounds property divisions may be reflected in field shapes and boundaries.

Livestock Feeding and Home Dairying in a diversified system, 1780-1870

Introduction: Several important agricultural developments occurred in the years between the Revolutionary War and the Civil War. In 1850 Pennsylvania still led the nation in total wheat production, but the new West was mounting a strong challenge and Pennsylvania farmers were already responding to the competition by reorienting their business. Overseas markets became less important as domestic markets burgeoned. The nonagricultural population grew and furnished more consumers. Philadelphia, New York City, and points west were made accessible by new highways, canals, and rail links. Rural southeastern Pennsylvania farm families turned to producing beef cattle, butter, hay, truck garden produce, and pork for sale to city dwellers and townsfolk. Their farming system reoriented away from a diversified crop based system, to a diversified livestock based system. Pasture and “domesticated” upland hay grasses were its centerpieces; cash grain took a secondary role and feed grain rose in importance. Farming mechanized and the overall proportion of farmers in the work force declined.

Products, 1780-1870
The 1842 Farmer’s Register described the standard “cropping system” in southeastern Pennsylvania: farmers “plough a sod field, in the fall or spring, for corn, which is cut up at the ground, following crop oats or barley, then manured and put into wheat; after which it is put down to grass, generally clover, without and with timothy...” The article noted that many farmers practiced what he called “mixed” farming, combining grass and livestock production.

In 1861, the editor of the Cultivator toured Chester County. He gave his impressions in a four-part series on “The Agriculture of Chester County, Pennsylvania.” His descriptions reveal how Chester County agriculture had changed since the colonial period. In the opening column, he offered this overview:

The Agriculture of Chester County is exclusively of a grazing and dairying kind, including only about a sufficient extent of wheat land for the bread of those who cultivate it; enough
oats, straw and hay for the farm and village horses, and enough of the two latter and Indian corn for the cattle and sheep which make the butter or are fattened for the Philadelphia butchers.

Colonial Chester County residents might have been surprised to see wheat demoted to such an extent. The old crop-oriented system had given way decisively to integrated farming which combined crop and livestock production.\textsuperscript{16}

Numerous accounts agree that systematic rotations, manuring, and liming had become standard practice. The cropping system followed an “apparently unvarying rotation of corn, oats and wheat, followed by grass...” with the grass often being pastured for several years after it was mown. The “grass” actually, according to the author, consisted of a mix including clover, timothy, Kentucky bluegrass, two grasses vaguely identified as “smooth-stalked meadow grass” and “green grass,” and white clover. These plant mixes (especially the timothy and clover) were quite different from the lowland meadow grasses of the earlier era. Clover played a role in maintaining fertility as a nitrogen fixing legume. These pastures were manured and limed so that they lasted several years before needing to be turned over. Animals were essential in the new regime, because they consumed the crops and produced manure, thus creating a renewable cycle.\textsuperscript{17}

The precise timing and nature of this shift are very difficult to ascertain. Local tax assessors ceased systematically to collect agricultural data late in the 18\textsuperscript{th} century, and the federal government did not begin its agricultural census effort until 1840. So there is a half-century gap in quantitative data. For a time after the Revolutionary War, the reckoning was postponed because a resurgent demand for wheat, flour, and other foodstuffs stimulated Pennsylvania production for export, into the first decade of the new century. The available data confirm at any rate that farming systems had decisively changed by about 1840.\textsuperscript{18}

There were multiple reasons for this major change. The infamous Hessian fly invaded southeastern Pennsylvania in the 1790s and caused widespread devastation, prompting farmers to reconsider their overreliance on wheat. In 1807, Thomas Jefferson's Embargo delivered another blow to grain producers. The Panic of 1819 and ensuing depression also forced readjustments. Some histories


\textsuperscript{18} Steven Stoll, Larding the Lean Earth, Soil and Society in Nineteenth-Century America (New York, 2002), 82, notes the general trend in the Northern states.
mention problems with soil exhaustion. Newly opened wheat lands in the Genesee River Valley of New York State and in the nascent Midwest brought low priced grain into competition with Pennsylvania wheat. Though painful, these disruptions were eventually overcome, because the much anticipated “home market” was becoming a reality, as the nonagricultural population in the young republic expanded. The emergence of nearby Philadelphia and the general affluence of American consumers turned farmers’ attention to producing meat, as well as bulky items that could be marketed locally. Thus livestock, dairy products, and hay became attractive. The Lancaster Pike opened in 1795; it was the first well maintained and paved road in the region. Southeastern Pennsylvania soon was laced with roads and eventually with railroads, and was ideally positioned to participate fully in economic development.

Hay was a premier item in the new regime. Production and acreage were much higher than average throughout all of southeastern Pennsylvania. Chester County farms, for example, averaged over 20 tons of hay in 1850, when the typical Pennsylvania farm produced only 13 tons. Together with pasture, hay lands took up as much as three-quarters of the improved acreage on a typical southeastern Pennsylvania farm. Both the composition and location of hay meadows had changed decisively since the colonial period. The new pastures and meadows tended to be on upland slopes and to be deliberately set in timothy and clover. Not only were they just as productive, perhaps even more so, but they did not need the time and labor-consuming irrigation works.

Of small grains in the rotation, southeastern Pennsylvania farms produced substantially more corn and oats than average, and about average quantities of wheat – a notable shift in the relative importance of these grains, both within the local farming system and with relation to the rest of the state. Corn and oats rose in importance because they were fed to cattle, oxen, horses, pigs, and chickens.

**Figure 9:** Chester County crops per farm, 1850.

In turn the grass and grain eventually became butter, eggs, and meat. Butter was a very important product in nineteenth-century southeastern Pennsylvania agricultural schemes. Overall, farms – even though smaller than average – had relatively large numbers of milk cows and produced well beyond the state average of 312 pounds of butter per farm. By 1860 Montgomery County led the state in total farm butter production (3 million plus pounds) and per-farm butter production (about 660 pounds). Chester and Bucks County each produced over 2 million pounds and well over 400 pounds per farm. Joan Jensen’s account of butter making in Chester County ends around 1850, but it is clear that southeastern Pennsylvania farm women found themselves making more butter than ever in the next decades. In Chester County, the average farm in 1850 produced 433 pounds of butter; by 1880 that figure was close to 700. Many farms were producing over a thousand pounds. Chester, Bucks and Montgomery occupied second, third, and fourth place respectively in state butter production totals.

20 Cheese, on the other hand, was a minor product. Some local histories claim a leadership role for southeastern Pennsylvania, but this is incorrect.
This production increase was accomplished in two ways. Adding cows to the herd was one important strategy. Chester County’s dairy herd more than doubled in size between 1850 and 1880. Herds in Bucks and Montgomery also grew, though not as much; only in Chester did the herd size rise on a per-farm basis. This was because overall the number of farms was still rising and consequently the average farm size was declining, so even though Montgomery and Bucks added cows to their totals, individual farm butter production averages did not rise as much. The second strategy for increasing dairy production was to feed and shelter milk cows better than before. Crop rotations and stepped-up hay production served this end. Cows consumed more and better quality feed and thus produced more milk. Better shelter (i.e. barns, discussed below) protected their health and meant that they need not expend energy just staying warm. Breeding was not yet a prime factor in dairy productivity. The *Cultivator* editor lauded a few Chester County farmers who kept Alderney cows, but likely most dairy cattle were not pure bred or even “grades” at this time. A critic in the same journal thought that Bucks County cattle were “of mixed blood, and mixed too, without regard to any particular rules or object...”

The increase in butter production was only one component in overall dairy production. By 1870, in the three southeastern counties a considerable percentage of milk produced did not go to home butter production, but instead was diverted to centralized creameries. These are further discussed below under “Labor and Land Tenure.” As far as production is concerned, the important thing to note is that farm-made butter does not account for all dairy production; the amount of milk being produced was even higher.

Finishing beef cattle was a very important farm enterprise in the mid nineteenth century, particularly in Chester County. (Montgomery and Bucks Counties had more dairy cattle than beef cattle in 1860, but all three counties did produce beef animals.) At the time the 1860 agricultural census was taken, for example, of Chester County’s roughly 50,000 cattle, half were for dairy and the other half for beef purposes. Chester was well situated to receive young cattle that had been driven from further west, fatten them, and then send them east to the cities and towns. These animals were “purchased in autumn, wintered on hay with little or no grain, and fattened on the pastures to go to the butcher along about harvest time.” Observers stressed that grazing could only be profitable if cheap cattle were purchased from the west – not raised on the farm. The 1842 *Farmer’s Register* described how cattle from Greene and Mercer Counties (in western Pennsylvania) were being driven east and “sold in Lancaster and Chester counties, to be fed off.” In 1846, another author noted the “...example of Chester” in fattening beef animals; this writer attributed the trend to the decline in distilling as a destination for grain.

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N. Linton, letter, United States Patent Office Annual Report, Agriculture, 1853, 17, reported that Chester County feeder cattle cattle came from Ohio, Virginia, and Illinois. See also H. S., “Raising Wheat and Cattle,” *The Farmers Cabinet and American Herd Book*, December 15, 1845, 155 (American Periodicals Series online), a description of the Chester...
Horses and oxen provided transportation and draft power. Oxen were still relatively popular in the region; the 1850 census shows that in Chester County, for example, many farms still had a team of oxen, often in addition to horses.

The 1861 Cultivator series gave undue prominence to sheep in southeastern Pennsylvania; in fact, Chester and the other southeastern counties were not major sheep producers in the nineteenth century. The abundance of pastures made sheep a logical choice at first glance, but competition with the West was too severe.

Hogs, on the other hand, did occupy an important niche in the local agricultural economy. While not quite at state averages on a per-farm basis, most farms here had at least half a dozen hogs, and some had far more. The hog’s significance for southeastern Pennsylvania is twofold. First, as the Cultivator editor noted, hogs complemented home dairy production nicely. They could consume butter making by-products, excess milk, kitchen slops, and corn meal, and also benefited from abundant pasturage. The 1861 author noted: “where so much butter is manufactured, there must of course be many a populous sty to consume the buttermilk to advantage.” The resulting pork could be consumed in the household or easily marketed nearby.23

Second, some farm families in the region raised breeding animals, a profitable business in itself. The Chester White pig was claimed as an American breed developed beginning in the early 19th century in the Chester County and northern Delaware by the efforts of several breeders working with imports having various characteristics. The Chester White was prized for its large frame, compliant nature, good mothering qualities, fecundity, and above all for its ability to lay on more pork and lard for a given amount of feed than any other breed. Chester County stockmen made a national reputation as breeders and sold foundation animals throughout the country. Chester County breeder Thomas Wood wrote in 1860 that he had sold animals to every state in the Union except Oregon. Demand was allegedly so great that imposters took to passing off ordinary white “land pike” swine as the genuine article, and the agricultural press boiled with disputes about the purity of various animals. In the end, especially after various breed associations were consolidated in the early twentieth century, the Chester White was an enormously successful American breed. Chester Whites are still raised today.24

Figure 10: Chester County livestock per farm, 1850.

Poultry was only modestly important on southeastern Pennsylvania farms during this period. Virtually every farm had a flock of two or three dozen, which mainly supplied the household.

23 See also Albert Hoopes, letter, United States Patent Office Annual Report, Agriculture, 1855, 63.
The nursery and seed business in the region began in the mid 19th century. These were substantial businesses, but did not yet have a significant presence in the overall agricultural economy.

Family subsistence and market activity intertwined on southeastern Pennsylvania farms during this period. Most farm products had multiple uses: they could be sold at market, exchanged with neighbors, or consumed by family members or livestock. So for example, families would slaughter one steer and sell the rest; they would preserve meat from one or two pigs for family use and sell others. A large vegetable garden and potato patch supplied food, and every farm had an orchard planted mainly with apples but also other fruit trees. Poultry were kept for meat and eggs. Over time, orchards matured, vegetable garden varieties increased, and dietary standards rose. Canning was not yet very important, but pickling, drying, and smoking were important food preservation methods. Fiber processing demands lessened as factory made cloth became available, but it seems likely that food preservation work grew more time consuming than before.

**Labor and Land Tenure, 1780-1870**

Family still predominated as the main labor force, though hired hands and “apprentices” supplemented the family members on a seasonal or sometimes annual basis. During this period, wage labor replaced various types of bound labor. Available data seems to suggest that while some farms had one or even two hired hands, most only hired on a seasonal basis.

The new intensive farming practices of crop rotation, manuring, and liming – on larger acreages -- probably took more work. Corn was an increasingly important crop, but harvesting and processing it was not yet extensively mechanized. Feeding regimens were more complicated, and storage for feed received more attention and care. Clearing continued, even well into the nineteenth century, and slowly the woodlands disappeared.

Stepped-up dairy production meant important changes in farm labor patterns. One analyst remarked: “... it is a bitter pill to the stockmen whose business has been based on beef cattle, swine, and sheep to descend to the continuous and laborious work of caring for dairy cows and their products...” For men, perhaps, the change was noticeable. Men were becoming more involved in dairy work. For example, one large Chester County operation described in 1861 had a spring house “with a neat cottage residence over it, for the dairyman and his family...” Yet women still did most

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of the dairy work; for them the changes in the post Civil War period were more in quantity than in new skills. One observer remarked that “there is nothing of an agricultural or domestic nature, with which the Chester County farmers’ wives are not thoroughly cognizant, ‘from baking a buckwheat cake to milking a dozen cows...”

Home butter making reached a peak in southeastern Pennsylvania after the Civil War. Meticulous cleanliness and care were required to produce “gilt edge” butter. The milk was set in shallow pans to allow the cream to rise. Shelves ranged around the cool interior walls of the spring house accommodated milk pans. Once the cream had risen, it was skimmed off the top and placed in a churn. Various patent churns appeared during the period, but vigorous action was invariably required until the butter “came.” It was “worked” to remove the buttermilk; salted; and put into containers, sometimes finished off with a decorative “print.”

Gender patterns in dairying in the region began an important transition towards the end of this period. Creameries were introduced by the 1870s. Creameries were centralized processing plants where cream was made into butter for marketing in quantity. (In this period, creamery processing rather than fluid milk for direct consumption accounted for most milk sold from the farm.) Overall in the region, by about 1880, about half of farm milk went to home made butter and the other half was sold. The manuscript census reports for 1880 suggest that most farm families either sold milk OR made butter. Relatively few did both. This means that on milk selling farms, women’s dairy labor was significantly and rather suddenly reduced, and men’s probably increased. Conversely, on farms where families kept on making butter, everyone’s labor must have increased.

In some cases, tenants may have furnished needed labor. Tenancy rates in the region were at or above state averages, around 25 percent. The 1850 agricultural census recorder in Sadsbury Township, Chester County, noted “Tenant,” “Agent,” or “Manager” in his list, so it seems that various arrangements were made for managing farms when they were not owner-operated. The 1861 Cultivator correspondent said that “the butter in Chester county (sic) is very commonly made by contract. The proprietor rents a tenement to a family, who milk the cows and prepare the butter for market, for three cents per pound, having generally included in the bargain, house rent, fire wood, and such other privileges as may be agreed upon between the parties at the time of making the contract. An additional price is also paid the tenant for other labor, such as for feeding and taking care of the cows – sometimes as much as $200 per annum extra.”

Mechanization helped to offset some of the labor demands of the new regime. Southeastern Pennsylvania farms were heavily mechanized, with average implement values well above state figures, even accounting for a greater amount of improved land per farm. Animal powered

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29 “The Agriculture of Chester County, Pennsylvania -- IV,” The Cultivator August 1861, 254 (American Periodicals Series online)
30 Jensen, Loosening the Bonds, 98-113, has an excellent discussion of butter making in the late 18th and early 19th century.
31 “The Agriculture of Chester County, Pennsylvania -- IV,” The Cultivator August 1861, 254 (American Periodicals Series online)
stationary machines, plows, and mower machines attracted a great deal of attention, since there was so much hay to be cut and moved.\textsuperscript{32} A popular implement, for example, was the horse powered hay lift. In Chester County, oxen continued to be popular at mid century, but thereafter the shift to horses took place everywhere. Chester County farmers fashioned improved hay-forks and threshing-machines, for example. In Bucks County, clover hulling mills and wheat drilling machines were in use in the 1840s. The Montgomery County Agricultural Society in 1857 had on exhibit mowers, reapers, threshing machines, and “a great variety of smaller agricultural implements.” Business directories indicate that there were a great many agricultural implement dealers in the region, selling drills, ploughs, threshing machines, grain fans, corn shellers, corn planters, cradles, and mowing machines.\textsuperscript{33}

**Buildings and Landscapes, 1780-1870**

**Houses, 1780-1870**
As for the colonial period, houses are well documented for southeastern Pennsylvania. See the Bibliography for references. Many fine farm houses were erected during the prosperous years of the early national period. The c.1815 house pictured in Figure 11 is a good example.

**Figure 11:** Farm house, West Bradford Township, Chester County.

**Detached kitchen, 1780-1870**
Some farms had detached kitchens. These structures housed facilities for heavy cooking, food processing, and washing.

**Figure 12:** Slifer log kitchen, Meadowbrook Farm, Springtown, Bucks County.

Tenant houses appeared frequently on southeastern Pennsylvania farms. Usually they were smaller and simpler than the main farm house.

**Figure 13:** William Miller tenant house, Avondale Borough, Chester County.

**Barns, 1780-1870**
During this period, southeastern Pennsylvania became famous for its substantial barns. The so-called “Pennsylvania barn” emerged in the late eighteenth century and gained popularity. The discussion here makes use of research from the Lancaster Plain context; the analysis is applicable for southeastern Pennsylvania since early Pennsylvania barns appeared throughout the region, for


essentially the same reasons. This famous type has as its main diagnostic feature the projecting 7-8 foot forebay, or overshoot. The barn is banked, and organized such that the upper level consists of central threshing floor(s), flanked by mows for hay, straw, or unthreshed grain; and one or more granaries (sometimes in the forebay, sometimes next to a mow on the bank side). The Pennsylvania Barn almost always has a gable roof. On the lower level, stable and stalls (organized crosswise to the roof ridge, separated by alleyways for humans) housed horses, milk cows, beef cattle, and sometimes sheep or hogs. The Pennsylvania Barn has been clearly traced back to Switzerland and in Pennsylvania was originally associated with Pennsylvania Germans; but its advantages were such that all groups built in the design.

The Pennsylvania Barn was a highly flexible form. It ranged in size from just twenty feet long to over over a hundred. It could also accommodate features such as an "outshoot" or "outhed" that would extend back from the bank side; multiple threshing floors and haymows 34; a root cellar; a corncrib/machinery shed extension; a machinery bay on the lower level; or a 'horse power' on the bank side, or sometimes in the basement. The forebay might project unsupported, or it might have supporting end walls or posts. Nomenclature for these various features varies, too. But, it is important to remember that in order to considered a Pennsylvania Barn, a barn must have these essential features: a projecting forebay and banked construction, almost invariably with the eaves side in the bank.

The Pennsylvania Barn exemplified and facilitated the new grain-and-livestock agriculture. That is why it appeared when it did. Historian Steven Stoll has compared the Pennsylvania Barn to a cow – taking in raw materials and producing milk, meat, and manure. Indeed, the barn promoted productivity in several ways. Its stable level and yard functioned to collect the valuable manure (generated with feed stored in the upper levels) and to combine it with straw to make it the perfect dressing for crop fields. A local historian wrote that “straw, grain, corn stalks, and refuse from the stables” were “trampled under the feet of fattening cattle during the winter. The barn-yards were cleaned once a year... and this refuse was spread over the fields and plowed under the soil.... the farmer who had a large barn-yard full of manure to haul out, after harvest, was looked upon as a model.”35 The barn’s thick walls and sheltering overhang kept animals comfortable in bad weather and made them more productive simply because they could devote body energy to making meat or milk instead of keeping warm and dry. With its rational, centralized organization and gravity-fed multi-level arrangement, the Pennsylvania Barn also represented a response to an increased need for labor efficiency. Provision for horses reflected mechanization.

**Figure 14:** Pennsylvania Barn, West Nantmeal Township, Chester County.

Especially in Chester County, a distinctive local variation appeared. The forebay was stretched out to a proportionately much larger size, and often supported with large conical stone posts.

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34 Some local historians use the term “double threshing floor barn” to denote Pennsylvania barns with added threshing floors. Here, the Pennsylvania Barn with extra threshing floors is not considered a separate type.

35 Levi Huber, “Two Hundred Years of Farming in Lancaster County,” *Journal of the Lancaster County Historical Society* 34(1930), 99. See also *New England Farmer* September 25, 1829, 80 (American Periodicals Series online)
Another important variant found more frequently in the region than elsewhere is the “double decker.” In the “double decker,” the Pennsylvania Barn principle is extended vertically. There are three levels rather than two (confusing, given the nomenclature). In the lowest level are the stables, as in all Pennsylvania Barns. In the uppermost level there is the threshing floor, also typical of all Pennsylvania Barns. But instead of having the mow floor even with the threshing floor, there is a third level between these two. It contains the lower portion of each mow, plus space for grain storage. In order to provide access to this middle level, the barn is built with a bridge to the upper level, rather than a bank. Under the bridge there is a door to the granary storage space. The “double decker” design permitted hay to be tossed down from the threshing floor level, and it also significantly increased the storage capacity of the mows. This type of mow is called a “sunken” mow or “sink mow.”

**Figure 15:** Pennsylvania Barn with large posted forebay, West Nantmeal Township, Chester County.
**Figure 16:** Pennsylvania Barn with large posted forebay, West Bradford Township, Chester County.

Often, barns in the region have a feature that can be regarded as being like a very large forebay with a gabled second story. It often extends across the entire lower side eaves side. The lower level beneath is not enclosed, but rather remains open, so in this respect it continues and further exaggerates the forebay function. Upstairs, there is ample hay and straw storage.

**Figure 19:** Pennsylvania barn with gabled ell open beneath, Londonderry Township, Chester County.
**Figure 20:** Pennsylvania barn with gabled ell open beneath, Lower Oxford Township, Chester County.

Finally, in this region a great many Pennsylvania Barns sprouted narrower gabled ells off the forebay side. Historical accounts sometimes call these straw sheds.

**Figure 21:** Pennsylvania Barn with ell extensions off the forebay, Buckingham Township, Bucks County.
**Figure 22:** Walter Pyle Barn, Kaolin vicinity, Chester County, c 1768.

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36 For a contemporary description, see “The Agriculture of Chester County, Pennsylvania – III,” *The Cultivator* August 1861, 252 (American Periodicals Series online). For a well illustrated HABS example, see the 1810 stone barn in Newtown Township, Bucks County, and the stone barn on Stoopville Road in Bucks County.

In southeastern Pennsylvania, another type also appears which is banked and has two levels with stabling and mow/threshing floor respectively, but no forebay. These have been characterized as "English Lake District" barns because they have important formal features in common with barns from that region; and because some immigrants to southeastern Pennsylvania came from that part of England. Many have a pent roof where a standard Pennsylvania Barn would have a forebay.

**Figure 23:** “Standard English Lake District” barn, Franklin Township, Chester County.

**Figure 24:** “English Lake District” barn, West Nottingham Township, Chester County.

The barns described in the foregoing discussion – standard Pennsylvania barn, Pennsylvania barn with extended posted forebay, double-decker barn, “English Lake district” barn -- are often treated separately as distinct types. Excellent scholarly works analyze formal, stylistic, ethnic origins, and construction nuances of each type. For our purposes, however, we may gain different insights if we consider what they have in common rather than their differences. These common features are significant because they served and thus reflect the emerging regional agricultural system.

These barns all have at least two and sometimes three levels arranged vertically. In all cases, the vertical arrangement increased hay and straw storage space, and made labor more efficient. The “double decker” barn enhanced, but did not fundamentally diverge from, the functions of the regular Pennsylvania Barn. The “sink mow” feature permitted more hay storage, and this was an important consideration in Chester, Bucks, and Montgomery Counties, where the average hay production was so high. The average farm in the region put up 20-25 tons of hay per year; but it was not uncommon for a farm to report 60 or more tons of hay. This was in loose form, not baled, so it took up considerable volume. One Bucks County historian estimated that some barns could hold 100 tons of hay. The sunken mow afforded the extra volume needed for such large outputs. Another important consideration is straw. Straw (the stalks left over after grain harvesting) was an essential component of animal bedding and was ultimately returned to the land mixed in with manure. It was therefore carefully saved in barn spaces along with hay, and often had its own shed. One observer noted of Chester County double-decker barns that “there are very often sheds around three sides, perhaps open through into the barn, ... for they generally have a large loft for the storage of straw.” The granary feature efficiently stored grain and “chaff” beneath the threshing floor, and made the grain more accessible too.

All of these barn designs facilitated manure collection very efficiently. As we have seen, the standard Pennsylvania barn was praised for this feature; the extended forebay and ell with open stable level improved on it. As the 19th-century plans in Figure 25 show, they allowed for orderly management of livestock and manures.

**Figure 25:** “Plan of a Three Story Barn” from *The Cultivator*, March 1861.

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Figure 26: Plans for Pennsylvania farm barns from *Ohio Cultivator (1845-1866).*

A barn plan submitted in 1855 to the *Ohio Cultivator* by Chester County farmer Thomas Wood give an excellent idea of how these barns functioned. It has a “sheltered yard” extended and supported with posts. This yard took the forebay concept and expanded it to create a space that not only sheltered animals, but facilitated the important process of collecting manures. Straw could be distributed here to mix with the animal waste, and the resulting valuable fertilizer would not lose nutrients through exposure to the elements.

The narrower gabled ells extending from the forebay side of a Pennsylvania Barn served the same function as the extended, posted forebay: they provided more space for hay and/or straw storage, and sheltered horses, cattle, and manure. Thus they were variations on the theme.

Figure 27: Sheltered yard, Walter C. Pyle Barn, 1768, Chester County PA.
Figure 28: Tom Clark barn, Pocopson Township, Chester County.

We may conclude that regardless of their cultural origins, the 19th-century barns in the region reflected the farming system that had taken shape there. They facilitated hay and straw storage, grain storage, cattle feeding (whether dairy or beef), and manure handling on a large scale with sophisticated architectural accommodation. Some barns had cow houses for milking and shedding along the barnyard periphery.40

Outbuildings, 1780-1870:
Typical southeastern Pennsylvania farmsteads of the period had multiple outbuildings, but the scale and intensity of agricultural change and other development since then has eliminated many. However, good examples remain of the most important types.

Spring Houses and other dairy related buildings, 1780-1870:
The spring house was a key building in the home dairying farming system. Southeastern Pennsylvania spring houses got larger and more elaborate during this period. Historian Joan Jensen studied the 1798 Direct Tax for Chester County and found that about half of Chester County farms had spring houses, averaging 125-150 square feet. By about 1830, spring house size in Chester County had doubled. Jensen writes:

> Water flowed into a paved sunken trench about two feet wide and three inches deep around a raised center platform. Milk pans were placed in the water to cool, while wooden or stone shelves and benches lining the walls provided space for tubs, bowls, and other processing equipment. Shelves on the outside provided space for drying containers and churns after they had been cleaned. Larger springhouses had two or three compartments, one of which

40“The Agriculture of Chester County, Pennsylvania – IV,” *The Cultivator* August 1861, 254 (American Periodicals Series online)
usually housed the spring with the others devoted to processing. ... [and] overhanging roof... gave an additional outdoor work space.

Spring houses still survive on many southeastern Pennsylvania farms. They were very definitely women’s work spaces.

**Figure 29:** Springhouse, West Caln Township, Chester County.

**Figure 30:** Springhouse, West Bradford Township, Chester County.

**Figure 31:** Spring house, West Bradford Township, Chester County.

**Figure 32:** Spring house interior, High Farm, Perkasie, Bucks County.

An engraving of the “Farm and Residence of James Abraham” from 1877 shows a large-scale butter making operation. A two story building sits along a road, across from a cow pasture. Off the eaves side is a long, open shed roof area where women are depicted at work. A horse powered barrel churn is in use. The 1880 agricultural census for Upper Merion Township shows that Abraham reported 2,600 pounds of butter from sixteen milk cows.41

**Figure 33:** “Farm and Residence of James Abraham” from *Combination Atlas Map of Montgomery County Pennsylvania*.

HABS documented spring houses in the region include the fell spring house, Buckingham, Bucks County; one at the Varnum Headquarters, Valley Forge National Historical Park, Chester County; and a large two-story example at the William and Rebecca Bones farm, Charlestown Township, Chester County.

**Root Cellar, 1780-1870**

Root cellars were important subsistence spaces for storing root crops and other vegetables over the winter. They took advantage of a constant below ground temperature of about 55 degrees Fahrenheit.

**Figure 34:** Root Cellar entrance, Craven Hall, Johnsville, Bucks County.

**Smoke House, 1780-1870**

Smoke houses were also important subsistence structures for preserving meat, mainly pork. For an interior view, see the HABS documented Lakeside farm smoke house, Yardley, Bucks County, PA. Other HABS documented smoke houses include one at the Lowndes Taylor farm, West Goshen Township, Chester County; and the 1815 Hause log smoke house in East Nantmeal Township, Chester County.

**Figure 35:** Brick smoke house, Franklin Township, Chester County.

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41 U. S. Census of Agriculture, 1880, Upper Merion Township, Page 2 line 3. Available online through the Pennsylvania Agricultural History Project website.
Carriage/Wagon Sheds, 1780-1870
As roads improved, prosperous southeastern Pennsylvania farm families acquired horse drawn carriages and wagons. These were housed in carriage houses or wagon sheds. They are distinguished from farm machinery sheds by their generally better level of finish, and by siting near the house and farm lane.

Figure 36: Wagon Shed, Lower Oxford Township, Chester County.
Figure 37: Wagon Shed, Upper Oxford Township, Chester County.

A HABS documented carriage house and wagon shed can be viewed at the Lakeside farm, Yardley, Bucks County, PA; and a c. 1850 “cart shed” at the Woodward-Pennock farm, London Grove, Chester County.

Corn Cribs, 1780-1870
Corn cribs were important buildings on southeastern Pennsylvania farms in this period. Corn production rose significantly both in absolute and per-farm terms, so storage space was much needed. Often corn storage was combined with machinery storage. Few extant corn cribs in the region can be definitively dated before c. 1870.

Figure 38: Drive through machine shed with corn crib, West Nantmeal Township, Chester County.

Machine Sheds, 1780-1870
Southeastern Pennsylvania farms had a lot of equipment. Machine sheds soon appeared to house it.

Figure 39: Machine Shed, West Brandywine Township, Chester County.

Pig Pen, 1780-1870
Since hogs were not especially numerous in Chester County, examples of hog houses are limited. This pig pen in Londonderry Township, however, is a good example. It has a tiny forebay at the front (not visible here). Above the forebay are windows, presumably for poultry; below are the small openings typical of hog houses. They lead to a small formerly enclosed yard.

Figure 40: Pig pen, West Nantmeal Township, Chester County.

Outdoor Bake Oven, 1780-1870
Subsistence activities continued to be varied and important on southeastern Pennsylvania farms. This outdoor bake oven is a particularly good example of the type. It has a “squirrel tail” oven.

Figure 41: Outdoor Bake Oven, West Nantmeal Township.

Summer Kitchen, 1780-1870
Throughout Pennsylvania in the late nineteenth and early twentieth centuries, farm families elaborated and diversified their diets. Of course rural people had long possessed numerous and subtle skills relating to food preparation and processing; but now newly available supplies and technologies reworked the possibilities. Orchards matured, garden patches expanded, products from far away became available, and to the old staples of corn mush, meat, and sauerkraut, farm families added more cakes, pies, preserves; made more poultry dishes; and slowly shifted away from pork to beef. There were several key ingredients to this change. One was the cook stove. Reliable, affordable coal-burning cook stoves were now far more widely available, just as the wood supply for traditional outdoor ovens diminished. As the cook stove replaced the open hearth and the outdoor bake oven, two important consequences followed. Cook stoves generated intense heat in the farm kitchen, so summertime cooking became difficult. Second, food preparation changed. More separate dishes could be prepared simultaneously. Expectations rose for dietary variety.

Another important change was in the increased availability of cheap sugar, produced on Caribbean and Latin American sugar plantations, and later US possessions in Puerto Rico and the Philippines. Consumption rose and the repertoire of jams, jellies, preserves, cakes, and puddings expanded. Tropical fruits became available too. A recipe in the *Lancaster Farmer* for 1884, for example, explained how to make a “Cream Cake”:

One teacup cream, two teacups sugar, three well-beaten eggs, teaspoon saleratus, dissolved in wineglass of milk, butter size half an egg, flour to make as thick as pound cake; add raisins and spice to taste; wine and brandy if you like.

It is impossible to know how many people actually made "cream cake," but the instructions in themselves are revealing for what they assume about ingredients the farm wife might have on hand.

To accommodate the intensified subsistence activity, and to get the hot summertime cooking out of the house kitchen, more summer kitchens appeared. The summer kitchen was not a new building type, but it became more common in this period. In southeastern Pennsylvania, the summer kitchen is less common than in more heavily Pennsylvania German regions, and it tends to be associated with Pennsylvania Germans within the region. (At site 029-WN-004, for example, where there is a summer kitchen, the 1860 map lists a “Handwork” family.) The typical summer kitchen would be a small detached building, usually gabled and made of frame. It would have ample windows for light, at least one door for access, a stove, and sometimes a set-kettle for heavy work. It was usually very close to the main kitchen. Often a decorative cupola with dinner bell sat on the roof ridge. The summer kitchen facilitated increasingly complex and demanding women's productive work. The work was productive because it resulted in tangible articles to consume, sell, or trade. The summer kitchen's siting near the main house reflects its preeminence as primarily a women's space.

*Figure 42*: Summer Kitchen, West Nantmeal Township, Chester County.

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42 William Woys Weaver, *Sauerkraut Yankees* (Mechanicsburg, PA, 20020, 116, 150.
43 *Lancaster Farmer* April 1884: 63. Lancaster County Historical Society digitizing project.
Lime kilns were important landscape features in nineteenth-century southeastern Pennsylvania. Lime kilns were dry laid masonry structures which tapered from base to top and had openings in the base. Limestone was deposited into the stack through a hole in the top; the fire was built in the hearth below. The intense temperature caused a reaction which converted limestone (calcium carbonate) to lime (calcium oxide). After cooling, the lime was raked from the bottom. Lime in turn had many uses, not only agricultural, but also for whitewash, masonry mortar, etc. None were documented on farms in southeastern Pennsylvania field work, but other historical evidence is plentiful.44

Pasture and cropland, as we have seen, took up most of the southeastern Pennsylvania rural landscape. Fencing was needed for pasture; atlas views show stone, board, “worm,” and picket fences. See the atlas views above for typical examples.45

Cropland was divided into irregularly shaped small fields, often bounded by tree lines. Remnant fields occasionally survive and can be identified in aerial photographs.

Farm woodlots typically would also be small and irregularly shaped and usually at the farm’s periphery.

Fluid Milk Dairying, Poultry, Truck Farming, Nurseries, and Specialty products, 1870-1940

Introduction: In the three southeastern counties, the number of farms dropped significantly after 1880. The acreage of land in farms also declined.46 These trends took place everywhere. In the southeast, the declines resulted not only from periodic agricultural depressions as elsewhere, but also from urban expansion, which not only removed farmland from production but offered nonfarm employment. Farms that managed to continue adjusted to new economic circumstances. Except for Chester County, the average farm size held more or less steady during this period. Farms were quite small in Montgomery and Bucks Counties, and closer to the Pennsylvania average in Chester. The average farm sizes reflect the small scale, intensive nature of farming in Bucks and Montgomery, and the emergence of diversified fluid milk dairying in Chester County.

Figure 43: Southeastern Pennsylvania farm numbers, 1850-1960.
Figure 44: Southeastern Pennsylvania average farm size, 1850-1960.

From the late nineteenth century up until the Second World War, a new farming system evolved in southeastern Pennsylvania. As before and as elsewhere in the state, overall farming strategies were diversified, but products, crop mix, and processes changed. Several features contributed to the distinctiveness of the southeast with respect to other Pennsylvania agricultural regions. Above all, proximity to huge population centers more than ever shaped the region’s agriculture. More than any other place in Pennsylvania, the southeastern counties enjoyed excellent, relatively affluent nearby markets combined with good soils and climatic conditions. Conditions in the southeast contrasted markedly with other agricultural regions in the state. The Lancaster Plain had prime farmland but it was just far enough away from major cities to reduce (though by no means eliminate) their effect relative to the impact in the nearer counties. Around the other two large metropolitan areas in Pennsylvania (Pittsburgh and Scranton), poor soils, rugged topography, and unfavorable climatic conditions prevented nearby farmers from being able to take full advantage. They practiced a diversified system, but on a small and relatively unremunerative scale. Conversely, in the northeast and northwest, farming was more specialized than the southeast, because there were so few profitable alternatives to dairying. Nowhere else were prime farmland and proximity to large markets combined as in the counties bordering Philadelphia.

Fluid milk, poultry products, potatoes, vegetables, corn, wheat, and hay formed the foundation of the typical southeastern Pennsylvania farm enterprise. Prices (especially for milk) were relatively high in the region, and farm incomes were also higher than average for the state.\(^{47}\) Southeastern Pennsylvania farm families were often able to invest in new methods and technologies, and to maintain and renovate their physical plant. To its already distinctive historic fabric the rural landscape in the southeast added a modern layer.

Dairying and poultry raising were the most important, but far from the only, farm enterprises in the southeastern Pennsylvania. A 1935 study of “Types of Farming in Pennsylvania” defined different types in terms of the proportion of farm income generated. To qualify as a specialized dairy, poultry, etc. farm, a single product had to account for at least 40 percent of farm income. According to this definition, in 1929, 46 percent of Chester County farms were dairy farms; eighteen percent of farms in Bucks and Montgomery were classed as poultry farms. In all three counties, dairy farms were the “predominant type” of farm. These figures suggest that while these two specialties were important, farming in southeastern Pennsylvania was still quite diversified. For one thing, a farm could qualify as a “dairy” farm with more than half of its income not coming from dairy products. Moreover, among the “second most predominant types,” “General” and “Abnormal” farms were well represented in the southeast. On “general” farms, no one item accounted even for as much as 40 percent of farm income. These farms made up the “second most predominant” type in southern Lancaster County, western and northern Chester County, and northern Bucks County. The “abnormal” category was a catch-all which included widely dissimilar operations: part-time farms, where the operator worked off the farm; institution farms; and country estates, defined as “those where the value of the residence was $25,000 or more on farms of 10 acres and over. These farms averaged 192 acres.... in several counties, such as Chester and

Montgomery, institution farms and country estates occupied nearly as much area as the part-time farms."[^48]

Chester, Bucks, and Montgomery Counties also claimed some important agriculture-related enterprises that did not take up large acreages. Mushrooms were one; they are treated elsewhere. Nursery businesses, greenhouses for flower production, and truck farming did not take up great acreage or account for a large percentage of farms, but nonetheless ranked high in the state for their type, and produced large revenues in proportion to acreage occupied.

**The Southeastern Pennsylvania Farming System, 1870-1940**

**Products, 1870 – 1940**

**Dairy Products:**

In 1884, Theodore W. Bean published a *History of Montgomery County, Pennsylvania*. In typical fashion for the day, he offered a colorful assessment of the county’s important personages and economic successes. After the usual survey covering topography and colonial history, Bean turned to the present.

> Our proximity to the great cities and large manufacturing towns has also nearly revolutionized agriculture in another particular. The farmers of Montgomery County, instead of raising beef, pork, and mutton for Philadelphia market, as formerly, have to some extent come to consuming meat grown and fattened on the great plains of the far West, and it is no unusual thing to see beef-cattle driven through our streets bearing the brands of herders of Texas or Arizona. Thus transformed, husbandry in our county largely takes the exclusive type of ‘the dairy,’ boys and men doing the milking, while the product is worked into marketable shape at ‘creameries,’ now recently built and furnished all over the county, the latter worked also by men and boys, while many of our mothers and sisters only ply the needle and sewing-machine, or perhaps finger the piano or harp.[^49]

Bean’s reference to idle women may be discounted as a hackneyed trope for the period. Otherwise his picture was quite telling. He did identify an important change in southeastern Pennsylvania agriculture for this period – the shift in livestock farming to fluid milk dairying, in which milk was sold off the farm rather than processed on the farm. This shift had far reaching implications.

[^48]: Emil Rauchenstein and F. P. Weaver, “Types of Farming in Pennsylvania,” Pennsylvania Agricultural Experiment Station Bulletin # 305, April 1934, 41. The agricultural extension agent in Bucks County reported in 1937 that “the buying of farms by city folks continued to increase this year.”

[^49]: Theodore W. Bean, ed., *History of Montgomery County, Pennsylvania* (Philadelphia, 1884), 118. Other observers explained the changes in more specific if duller language. In 1878, a Montgomery County correspondent of the state agricultural society reported that “raising hay and grain, making butter and milk for the Philadelphia market, is their chief avocation or livelihood... hogs... are only raised for domestic use...” In 1882, another report from Montgomery added that “Many of the farms are mainly used for dairying. Some of the farmers retail their milk from their wagons in Philadelphia... others sell to the retailers at the farm, or send by railroad to the city. Others make butter, and sell it in Philadelphia. (Agriculture of Pennsylvania 1878, 220; Agriculture of Pennsylvania 1882, 372.)
A tipping point was reached between 1880 and 1890. In 1880 around half of the milk produced on southeastern Pennsylvania farms went to home butter production; by 1890 that percentage was under two. (Statewide, it was around 30). The introduction of the “dairy centrifuge” (separator) in 1879 accelerated the rise of creameries. An 1884 report noted that there were 25 creameries and butter factories in Chester county. Also, increasingly milk was consumed in its fluid form rather than as butter or cheese. Southeastern Pennsylvania dairy farmers found markets in Philadelphia, New York, Pottstown, and Norristown. By 1924, agricultural economist George Fiske Johnson wrote that “few farm enterprises in Pennsylvania have changed so completely in both their production and marketing aspects during the past 40 years as the dairy industry.” This trend occurred first and fastest in the southeast.

Figure 45: Chester County dairy production, 1880.

The shift to fluid milk had many important implications for labor, landscape, and even breed choice. Total milk production and milk cattle numbers in the region actually dropped because total farm numbers and acreage were down, but per-cow productivity rose. Not surprisingly, southeastern cows were among the highest producers in the state. With a shift away from on-farm butter production, different priorities took hold. Income depended no longer so much on “value added,” but on sheer quantity of milk produced. Attention therefore focused on quantity production and somewhat less on butterfat content. Pure blooded dairy cattle commanded more attention. Independent associations devoted to Holstein, Guernsey, Jersey, Ayrshire, and “Suburban Cattle” flourished in the area. Even so, it is very important to note that even in this sophisticated dairy region, the transition to purebred herds happened slowly and was not thoroughgoing until after artificial insemination was introduced in the World War II period. Pure blood dairy cows were

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comparatively rare. The agricultural extension agent reports in the 1920s, for example, frequently mention efforts to interest local farmers in "systematic" breeding programs, with mixed results. The average dairy cow was usually a “grade” or even a “native” with no definite bloodlines; a 1919 study of southeastern Pennsylvania dairy farming noted that “the pure bred stock industry has not been highly developed on any of the 50 farms selected for study, the farmers having depended... on buying grade animals to replace discarded ones...”55 “High feeding,” improved shelter, and disease control contributed as much to improved milk cow productivity during this period as did breeding. Feed ingredients and feeding methods are discussed below in the section on crops.

Horses, swine, and poultry rounded out the complement of farm livestock. Horses still provided most farm power and if anything were more important as mechanization intensified, even well into the new century. Swine numbers had fallen; swine were now mainly raised for household use. Their role in consuming butter dairy by products had disappeared with the farm butter dairy. Also by this time, beef feeding had virtually disappeared from the region.56

The poultry business was profitable in this region because local markets were abundant and relatively affluent. Bucks and Montgomery ranked at the top in Pennsylvania (next to York) for commercial poultry farms. An 1877 description of the Bucks County poultry business already boasted that the Bucks poultry business was “worth $2,000,000 a year.” The 1905 Montgomery County soil survey reported that the local poultry market was excellent and increasing. The Montgomery and Bucks agricultural extension agents focused on poultry increasingly in the 1920s and onward. They reported flocks numbering up to a thousand. The total value of poultry products in the three counties actually exceeded the value of dairy products in 1924. The average farm in 1927 in the southeast had from 100 to 200 hens. In some areas poultry production was “under the radar” for many agricultural economists because of its association with women and the perception that it was merely a “sideline.” Yet clearly it was an important component of the overall farm economy. By the early 1930s the business was growing more elaborate; electric lights were sometimes used in winter to increase production, and by 1932, a Tri County cooperative egg auction had been established.57

Figure 46: Chester County farm livestock, 1927.

Biographical annals of Montgomery County, Pennsylvania (2 vols. New York, 1904), volume 1, 242, mentions a Henry K. Boyer who has some thoroughbred Guernseys. The Montgomery County Agricultural Extension agent report for 1929, boasts of performance by the local Holstein Bull Association. By 1945, the Montgomery County Agricultural Extension agent is helping farmers with Guernsey and Holstein breeding. The Chester County Agricultural Extension agent report for 1921 reported sponsoring Holstein and Ayrshire sales and in 1914 mentioned an independent Holstein breeders’ association in the county.


Figure 47: Chester County crops, 1927.

Crops:
A 1919 study of “Dairy Farming in Southeastern Pennsylvania” estimated that about twenty percent of farmland was in pasture, eleven percent in woodland, ten percent in farmstead and lanes, and the rest in crops. (The 1925 federal census confirms this distribution.) The author examined “representative” Chester County dairy farms. He chose “representative” farms based on average size and above average labor income, so his sample wasn’t based on averages. However, the study is still instructive. He noted that the principal crop was hay, accounting for 44 percent of crop acreage. Hay was crucial, not only because it was fed to dairy cattle, but because there was a robust market nearby, at least until the early twentieth century when urban transit and some industrial concerns switched from horse power to electricity and gasoline engine powered vehicles. The Montgomery County Soil Survey of 1905 reported that hay was the “principal money crop.” Commercial presses sprang up along the routes into the city. One historian noted that the “heavy demand for hay in Philadelphia livery stables” prompted farmers in Franconia to sell their best hay off the farm. After the horse era, Chester County farmers found new markets to make up for the loss of the livery trade. As the mushroom industry developed, hay sometimes was sold to make mushroom compost. They also sold hay to dairy farms in the anthracite regions. Meanwhile the ingredients of southeastern Pennsylvania were changing and its quality was probably increasing. By the 1920s and 1930s, alfalfa was increasingly popular for its high quality hay. In Chester County, the agricultural extension agent reported a rapid increase in alfalfa acreage between 1919 and 1930.58

The second most important field crop in the region was grain corn. Grain corn acreage and yield had both risen significantly in the region since the late nineteenth century. Against a backdrop of declining farm size, this was an important trend, as it meant that corn was far more prominent in the crop mix. This reflected more intensive feeding; corn made up “a large part of the poultry ration,” for example. By far the majority was fed as grain, not silage. Silage corn in 1927 in the region accounted for about 20 percent of all corn acreage as compared with around 17 percent statewide. Silage corn was gradually replacing oats in the crop rotation, now that there were fewer horses to feed. Wheat production and yield rose, though acreage declined, and potatoes increased substantially. The potato crop was not especially large, but it was growing and it attracted attention from agricultural extension agents in the region. Good markets for table potatoes were right nearby. Pasture grass, though not strictly a “crop,” was very important in the southeast. According to the 1919 study, most dairy farmers still turned their cows out to pasture for the summer. Agricultural extension reports for the following decades also noted the importance of pasture.59

59Rauchenstein and Weaver, “Types of Farming,” 36; Montgomery County Agricultural Extension agent report, 1936; Billings, “Dairy Farming in Southeastern Pennsylvania.” On pasture, the Chester County agricultural extension agent reports for the period give a general picture of the importance of pasture.
Despite the immense quantities of feed grown on farms, it seems as though the region’s farming system relied increasingly upon feed and fertilizers not raised or produced on the farm. In other words, the “farming system” was probably less self-sustaining than before. For example, an 1882 report from Montgomery County claimed that “Most of the farmers not only feed all the corn, oats, &c., that they raise, but, in addition, buy large amounts of corn-meal, bran, brewers’ grains, malt-dust, &c, in many cases to two or three times the amount of feed their farms produce.” In 1895 a farmer from Jarrettown, Montgomery County, wrote that “My plan is to use stable manure on all crops, but it so happens sometimes that we have not enough” and so he purchased fertilizers such as “South Carolina rock” or “bone.” Many farmers reportedly hauled manure from Philadelphia on the return journey from delivering hay to market. The Montgomery County Soil Survey of 1905 held that reliance on purchased fertilizers increased with proximity to the city, since further away there were more livestock to supply manure and pasture was more plentiful because of lower land values. The extension reports and census data further corroborate the importance of purchased fertilizer and feed. In 1880, for example, the federal agriculture census shows that all of the southeastern Pennsylvania counties spent substantially more on average than in the state as a whole, on a per-farm basis. By 1925, around ninety percent of farmers in the region used commercial fertilizers, applying well above average amounts except in Montgomery County.60

Although dairy production received much attention, the overall agricultural scene was still rather diverse. The agricultural extension auto tour for 1917-18 gives a sense of the variety in Bucks County: “the first stop was made at the poultry farm of A. O. Histand, Second, the orchard of S. L. Paxson. Third, orchard and poultry combined, Ed. Johnson. Fourth, soybeans and hogs, George Mason. Fifth, truck and market gardening, ... Sixth, potatoes and asparagus, ... Seventh, dairy...” A “History of Silver Lake Farm, Blue Bell, Pennsylvania” (in Montgomery County) noted the many activities engaged in by this successful farming family: selling raw Guernsey milk on a retail route; selling cream to a local confectionary; custom combining and silo filling; raising broilers, selling eggs, and raising turkeys.61

The Bucks tour itinerary gives clues as to other important agricultural enterprises in the region. In some townships, especially lower Bucks County, vegetable production for canneries and fresh sales assumed an important place in the farming regimen. Even as early as the 1870s, Bristol Township in Bucks County was noted for “trucking and grazing” and for the “hundreds of acres” belonging to the concerns like the Landreth Agricultural Seed Farm.62 A photo in the 1914 Wilmer Atkinson directory of Bucks County shows irrigated vegetable fields in Middleton Township. The county had 19,000 acres in commercial vegetable production by 1940. By the mid 1940s truck farming

60Agriculture of Pennsylvania 1882, 372; 1895, 394; 1896 part 2, 262; 1895, 355-401.
61 Bucks County Agricultural Extension report, 1918; Merrill Zimmerman Family Papers, Penn State Special Collections, HCLA, Folder 10.
62 S. Hersey, Business Directory and Gazetteer of Bucks County, PA (Wilmington, Delaware, 1871), 62, 111; Farm Journal Farm and Business Directory of Bucks County, Pennsylvania (Philadelphia, 1914), 95; Burke, R.T.A. ed. Soil Survey, Bucks County Pennsylvania. USDA (In cooperation with Penn State College – School of Agriculture and Experiment Station), Oct 1946. (Series 1936, No. 25), 11, 78, 79, 2; Bucks County Agricultural Extension agent reports, 1937, 1938.
was the third leading source of income for Bucks County farmers. Truck gardening was also followed in Chester and Montgomery Counties. The Montgomery County soil survey mentioned tomatoes, sweet corn, asparagus, rhubarb, cabbage, and small fruits.

Often truck farmers used direct-marketing techniques. In Montgomery County, for example, a local history notes that “Over the years many farmers improved their profit margin by marketing their own farm products, either at a stall or on a door-to-door route in Philadelphia or on a route in Lansdale or another local town. Additionally, storekeepers in the Franconia Township villages of Franconia Square, Morwood, Elroy, and Earlington took farm products in exchange for store goods. Often farmers not engaged in direct marketing sold their products to other market men. Philadelphia markets where Franconia Township products were sold (and sometimes continue to be sold) included Reading Terminal, Germantown, Girard Avenue, Spring Garden Street, and Olney Avenue. Markets outside Philadelphia included Sharon Hill, Broomall, Sixty-ninth Street, Narberth, Chester, Glenside, Orelad, and Allentown. Farm products sold in these places included chickens and other poultry, butter, cottage cheese, apples, beef and pork products, flowers, vegetables, and potato chips.”

In all three counties, nursery and greenhouse businesses achieved some importance. Probably there was some overlap with truck farming, but these businesses generally stressed plants, trees, and flowers rather than produce. Raising flowers for the city market was a profitable enterprise. In the 1890s, rose growers came into the Roslyn, Montgomery County area. In Montgomery County, Roberts’s *Biographical Annals* lauded Thomas Foulds, who founded the Gwynedd Rose Nurseries, with its “seven large houses embracing 22,000 feet of glass.” Horsham in Montgomery County became a flower growing center in the 1920s, one nursery having 20,000 rose bushes. Carnations and roses were also raised in greenhouses in West Grove, Chester County. Nurseries in the region also grew plants and trees. In 1910 Bucks County reported nine nurseries covering 500 acres. Altogether in the mid 1920s there were about 1,000 acres in nurseries in Chester county – a quarter of all the acreage in the state. Hoopes Brothers, Thomas Company, Morris Nurseries, Isaac Thomas Nurseries, and Longwood Gardens were important nursery concerns in the region. Even today, Chester County is a state leader in value of this business.

The mushroom industry in Chester County was beginning to develop by the 1920s. This industry has been covered in a separate context. However, it is worth noting that mushroom production and other farming frequently overlapped. Some farms carried on mushroom production as a

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63The nursery and truck farming businesses sometimes overlapped. In 1892, Edwin Satterthwait had a 90 acre nursery near Jenkintown in Montgomery County; “He conducts nursery, fruit and trucking business on a large scale here...”(S. F. Hotchkin, *The York Road, Old and New*, 192).


65Toll and Schwager, eds. *Montgomery County: The Second Hundred Years*, 182, 326, 711. It is interesting to note that some of these products (butter, cheese, “pork products,” potato chips) must have been processed on the farm.

complementary business. The mushroom industry provided a growing market for hay and horse manure. In 1927 the Chester County extension agent noted that “A large number of our mushroom growers are growing potatoes in conjunction with their mushroom business as they have a surplus of manure to be used up...”

Tobacco was a minor crop in the region between about 1875 and 1890. Bucks County census returns, for example, listed 150,000 pounds in 1870 and over a million pounds in 1880. However, compared with Lancaster County’s production, these were tiny quantities. It is likely that the numerous cigar factories in the southeast imported most of their raw materials from Lancaster County.

Finally, subsistence activities still took up significant time and labor on the average southeastern Pennsylvania farm throughout this period. In Hatfield Township, Montgomery County, for instance, a local historian writes that in the late 19th century, “some local farmers’ operations made them almost self-sufficient. They grew wheat, oats, rye, corn, potatoes, turnips, cabbage, beets, and other vegetables. They raised cattle, sheep, and poultry to supply their own meat, milk, and eggs. They churned butter. Their farm products, especially milk and eggs, were traded for cloth and other necessities. Practically the only things they had to purchase or barter for were sugar, coffee, tea, spices, and molasses. The entire family (even preteen children) helped with the household and farming chores.” A Montgomery County man who grew up in early twentieth-century Limerick Township described numerous and elaborate subsistence activities. The family made sausage and cured other cuts of meat. He continued, “In most attics, bags of dried corn, dried soup beans, and dried lima beans were stored. Lime was added to the dried beans to prevent bugs from eating them. Dried apples were hung on a string from rafter to rafter...Canning was a big chore, but most cellars were fitted with shelves and cupboards from floor to ceiling to hold the season’s canned goods—as many as one hundred jars of tomatoes, string beans, cauliflower, eggplant, red beets, and other vegetables. Fruits might include jars of peaches, applesauce, cherries, plums, raspberries, rhubarb, and strawberries, to mention a few. Sours could include chow-chow, apple butter, cucumber rings, Indian relish, mince meat, spiced peaches, pears, watermelon rinds, and sweet and sour pickles.” Subsistence activity took on particular urgency during lean years; during the Depression an Agricultural Extension sponsored relief garden program engaged 6,000 people in Montgomery County, according to the agricultural extension agent in 1931.

**Labor and Land Tenure, 1870-1940**

Southeastern Pennsylvania farm labor continued to be drawn mainly from family and neighbors, supplemented by seasonal or year-round wage hands and in some instances by tenancy arrangements. Mechanization was high, and scarcity of wage laborers is evidenced in anecdotal sources as well as in census manuscripts. Family labor included men, women, and children. The

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68 Toll and Schwager, eds. *Montgomery County: The Second Hundred Years,* 228, 1278; Montgomery County Agricultural Extension agent report, 1931.
Montgomery County soil survey in 1905 noted: “...it is necessary to hire much less farm labor than the amount of the agricultural products would lead one unacquainted with the conditions to expect. This is because the women and girls, particularly in the northern and western parts of the county, do so much work, not only about the barns in caring for stock and milking, but also in the fields, that the amount of labor performed by a man and his family may be very large.” Men’s involvement in milking and feeding dairy cattle continued to grow and some reports indicate declining women’s involvement. Women’s work likely shifted to some extent to rising fields such as poultry raising.69

New jobs such as silo filling appeared; this work was often done by neighborhood groups exchanging work. For example, a 1914 photo of “silo filling” in Bucks County shows two men and a boy feeding stalks into a cutter. Sometimes neighborhood groups would make use of machinery owned by itinerant silo fillers. A 1904 biography of George Dean Murphy of Montgomery County noted that he made a business of filling silos, “for which purpose he furnishes the machinery and power that is necessary.”70

Off-farm employment showed both continuity and change from earlier years; where before perhaps trades might be practiced, now wage labor took the place of these other nonfarm occupations. The home economics extension agent in Bucks County reported in 1936 that “a good share of those that live on farms belong to families who derive much of the income from factories or mills.” A history of Green Lane Borough in Montgomery County noted that farmers worked in the “ice industry” in the winter months. 71

High mechanization levels attracted firms to the area. Heebner and Sons of Lansdale (Montgomery County) became a nationally noted farm machinery firm, selling “level tread horse powers, Little Giant threshers and Union feed cutters.” They also supplied creameries with “engines and boilers.” The 1905 soil survey for Chester County declared the machinery situation “excellent. Besides tillage implements farmers are well supplied with grain drills, mowing machines, hay rakes, tedders, and horse forks. Hay loaders and corn harvesters are not uncommon, and self-binding reapers are on nearly every farm.” Traction engines provided stationary power. The 1914 Wilmer Atkinson Company Directory for Bucks County shows a photo of a reaper. By the early twentieth century, gasoline powered stationary engines were frequently used. A photo from the Atkinson directory of Bucks County, 1914, shows “threshing with gasoline power.” Stationary gasoline engines were much more common than were tractors. Around half of farms had stationary engines, but only about a quarter of farms in the region had tractors in 1927. Even so, this was double the state average.72

70 Farm Journal Farm and Business Directory of Bucks County, Pennsylvania 1914, 17; Roberts, Biographical Annals of Montgomery County, 141.
71 Bucks County Home Economics Extension agent report, 1936; Toll and Schwager, eds. Montgomery County: The Second Hundred Years, 193.
72 Francis Blaise, Jr., Heebner and Sons Pioneers of Farm Machinery in America 1840-1926 (Hatfield, Pennsylvania, 1984), 44;
Tenancy rates in the region were now actually lower than the state averages. Only 15-20 percent of farms were run by tenants. Where it was used, it seems that farm tenancy in the region took distinctive forms. The 1905 soil survey for Bucks County that “married men are given the use of a tenant house, a garden, the crop grown from 1 bushel of seed potatoes... and from $25 to $35 a month.” This description bears a striking resemblance to the “house and garden” arrangements dating all the way back to the colonial period.

The rise of “country estates” brought with it another form of tenancy, the farm manager system. The 1943 Bucks County agricultural extension report noted the rise in “city folks buying farms as a home and hiring a farm manager.” The Montgomery County agricultural extension agent in 1920 declared that “in the lower half of the county we have many farms owned and occupied by businessmen who do not depend on the farm for a living...” These operations were highly visible, but their numbers were quite small in the overall context.

Figure 48: Percentage of Pennsylvania farm land rented.

Buildings and Landscapes, 1870-1940

Houses, 1870-1940
Houses are well covered in standard architectural histories. See the Bibliography section for references. In general, during this period new houses exhibited stylistic features fashionable for the time, and older ones were often updated. The early house pictured in Figure 49, for example, was updated with a mansard roof, new windows, and a wraparound porch in the late 19th century.

Figure 49: House, East Brandywine Township, Chester County.
Figure 50: House, West Bradford Township, Chester County.
Figure 51: House.
Figure 52: Tenant house, West Bradford Township, Chester County.

Barns, 1870-1940
The types developed in the earlier period continued to be built and used. Adaptations to older barns and the emergence of new forms are the important story in barns for the period.

As agricultural conditions changed, farmers were encouraged to remodel their barns. An emerging critique of the Pennsylvania Barn, for example, condemned it as unsanitary and unhealthy. The

Wilder et al, Soil Survey of Chester County, Pennsylvania, 168-9; Farm Journal Farm and Business Directory of Bucks County, Pennsylvania 1914, 34, 177; Roberts, Biographical Annals of Montgomery County, 242; Montgomery County Agricultural Extension agent reports, 1918-19; mention tractor demos and sales. Toll and Schwager, eds. Montgomery County: The Second Hundred Years, 690; . says the tractor came in after WWI, but they worked side by side with horses/mules “into the fifties or later.” 100th Anniversary, Chester County’s Daily Local News, 1872-1972: Centennial Edition Volume 2, November 14, 1972
forebay and lower-level basement animal quarters were now regarded as liabilities. The forebay kept out light from an already dim interior. Wood stalls were thought to harbor germs. The conventional short crosswise ranks of stalls were criticized as inefficient. Manure collection, too, was now thought to be difficult in the traditional Pennsylvania barn. Reformers recommended that barns be renovated to admit more light; increase and reorganize stable room; cement the stable floors and create manure alleys; install metal stanchions; and improve ventilation. Southeastern Pennsylvania barns illustrate these changes.  

**Figure 53:** Barn with dairy adaptations, West Brandywine Township, Chester County. 
**Figure 54:** Lower Level interior, twentieth century dairy alterations to forebay barn, above.

The two preceding images show a good example of dairying alterations to a Pennsylvania forebay barn. One forebay wall section and one Dutch door are all that remain of the original forebay wall. The rest of it was removed, a large gabled addition put on, and the entire lower level redone with concrete floors, manure gutters, metal stanchions, and metal framed windows, essentially just as recommended.

**Figure 55:** Twentieth century forebay addition, West Nantmeal Township, Chester County.  
**Figure 56:** Forebay addition, Highland Township, Chester County.

The preceding two images show a different strategy for meeting the increasingly stringent demands of the dairy markets. Neither barn had a forebay originally; these represented the earlier type of a banked two level barn with no forebay. To accommodate bigger herds and sanitary requirements, each of these nineteenth century barns received a large shed roof addition in the twentieth century, and at the same time window openings were created in the original lower level foundation wall.

**Figure 57:** Gambrel roof barn, Lower Oxford Township, Chester County.

The barn in Figure 57 shows a third strategy for altering barns in the early twentieth century. It has a gambrel roof. The gambrel roof was a popular choice for situations where increased hay storage was needed; its framing permitted much greater upper level storage volume.

**Figure 58:** Stable barn, Londonderry Township, Chester County.

Finally, entirely new types appeared. The barn depicted in Figure 58 is a stable barn with a rainbow roof, concrete block wall, and multiple square windows on the lower level. It has a bank in the eaves side, with a hay door leading to the cavernous upper level storage space. The stable barn represents new sources for design and specialized function. The stable barn was a type developed and promoted by the emerging “agricultural establishment.” State agricultural extension services (especially in Wisconsin) and even commercial firms such as Sears, Roebuck publicized floor plans and designs. Materials were industrially produced and nationally distributed. The interior

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organization now focused on dairying alone; the lower level was organized lengthwise for efficient feeding and manure removal, and the upper level was designed just to hold hay.

Figure 59: Stable barn floor plan from The Farmer His Own Builder, a Guide and Reference Book.

Figure 60: Stable Barn, John Kimble Farm, West Nottingham Township, Chester County.

Figure 61: Stable Barn, Lamborn Farm, West Nottingham Township, Chester County.

Granary, 1870-1940
Though many farms had granary storage space within large barns, some freestanding granaries did appear. Granaries can be identified by tight, windowless cladding; foundations raised off the ground to keep vermin out; pass doors in the upper gable; and interior bins.

Figure 62: Granary, Curtis McCullough Farm, West Nottingham Township, Chester County.

Milk Houses, 1870-1940
The milk house was another major new form on the early twentieth-century dairy farm. It wasn’t a big building, but is an important reminder of the new role of the state and the agricultural establishment in agriculture. The state (meaning the government at any level) influenced the construction of milk houses in the first place, because during the Progressive and New Deal eras, legislatures and municipalities passed sanitary codes that required inspection not only of milk, but of dairy herds and milk production facilities. New York City pioneered in these efforts, and also seems to have been more effective at enforcement than other areas. In Pennsylvania, according to Stevenson Fletcher, a very few municipalities had inspection laws starting in the late 19th and early 20th centuries; however, enforcement was patchy. The first statewide dairy inspection law was passed in 1929, with a revision in 1933. This law provided for inspection of farm sanitary conditions, including facilities for sterilizing dairy equipment and milk houses for isolating milk. It is not clear how well these were enforced. These regulations were a facet of the assault that was launched on bovine tuberculosis and other diseases in this period, aiming at ensuring a fresh, uncontaminated milk supply. In order to market milk, increasingly farm producers had to comply with regulations that required them to install easily cleaned surfaces (like concrete) in barns, remove milk storage areas from dirt and odors (by building milk houses), cool milk, sterilize equipment, and the like. In Pennsylvania, these regulations took effect relatively early in the southeast. The milk house was one product of these new laws. In turn, its form and construction were influenced significantly by the agricultural establishment (meaning the complex that included state departments of agriculture, the land-grant university and extension apparatus, and agribusinesses). This new element in the farm landscape, therefore, illustrates the growing influence of the “agricultural establishment” on everyday farming practices and landscapes. Agricultural extension agents regularly disseminated plans for milk houses. Likely, for every farmer who followed a plan exactly

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there were more who either copied his building, or who adapted the basic guidelines using available materials and expertise. The overall result was a new level of homogeneity and standardization.

Figure 63: Milk House #1341, USDA design.

Milk houses provided a place to store and cool fluid milk before it was transported to market; to store milk cans not in use; and to wash containers (and sometimes other equipment like separators). Plans offered by the USDA for farm milk houses typically gave dimensions ranging about 10 by 13 feet up to around 12 by 20 feet. Interior plans for a 10 by 13 milk house with ell (# 909, “capacity 20 to 30 head market milk”) show a two-room plan with door leading to a wash room; milk room to one side, which contained a cooling tank and led to raised loading/unloading platforms and sunning racks, mounted on the outside. The ell contained a boiler room with its fuel supply, and back door. Larger milk houses had the same basic three spaces, only larger, and sometimes equipped with testers and separators. One (#1337) had a churn, butter worker, ripening vat, and refrigerator, and another (#1339) had quarters for workers. Another small, 12 by 14, one-room milk house (#1341, see Figure 63) was designed for “butter making by hand” for 20 cows. It contained the same basic spaces, but not divided. The very smallest, at 7 by 9, had a concrete foundation with a sunken vat for cooling cans of milk. All of these plans had sloping floors with drains, and provision for ventilation and light. After about 1950, milk houses were sometimes altered to accommodate bulk tanks. Milk houses are ubiquitous in the southeast.

Figure 64: Hip roofed milk house, New Garden Township, Chester County.
Figure 65: Two milk houses, West Brandywine Township, Chester County.

Silos, 1870-1940
A significant new outbuilding to appear on the agricultural landscape in this period was the silo. A silo is an airtight structure that holds fresh organic matter (moisture content 50-65 percent) destined for winter animal feed. It is filled with shredded or chopped grass, corn, or sometimes other plant material, which ferments into a highly nutritious and palatable feed. Silage feed resulted in significant productivity increases for dairy cows, and also permitted marginal farms to carry more animals. Ensilage was first publicized in the US in the late 19th century when the results of experiments in Europe became known. Some of Pennsylvania’s earliest silos appeared in the southeast. However, its adoption took a long time. Even in Chester County, less than a third of all farms had silos in 1927, and fewer than a fifth of Montgomery County farms had silos that year.

Silos can be constructed horizontally in pits, or vertically. Most silos of the first half of the twentieth century were vertical. Early silos were sometimes placed inside the barn, rectangular in shape, and of wood construction. These were quickly supplanted by round vertical silos located outside the barn, usually in a spot that would permit efficient filling (usually from holes in the top)

77 L. W. Morley, “Building the Farm Dairy House.”
and unloading (usually from a tier of doors from which silage was thrown down an exterior chute, which contained a ladder for access to the doors). Early silos were unloaded by hand, from the top. The land-grant establishment published many “how-to” brochures aimed at helping farmers build their own silos of wood or concrete. A 1918 Pennsylvania State College circular (#72) mentioned wood stave, hollow tile block, poured concrete rings, concrete staves, concrete blocks, metal, and bricks as silo construction materials. Commercial organizations marketed many types of silos too. Some sold special curved brick; others made tiles; still others advertised systems depending on interlocking rings of poured concrete. Cement staves became popular after about 1910 and continued in popularity for several more decades. Galvanized iron was a less important but not uncommon material.

Figure 66: Wood Stave Silo, Lamborn Farm, West Nottingham Township, Chester County.
Figure 67: Square stone silo, Londonderry Township, Chester County.
Figure 68: Interior view of the square stone silo depicted above.
Figure 69: Tile silo, West Brandywine Township, Chester County.
Figure 70: Concrete stave silo, Londonderry Township, Chester County.
Figure 71: Remains of a circular silo, West Bradford Township, Chester County.

Cow Houses, 1870-1940
Sometimes a one-story structure for housing and/or milking cows was either erected separately or added to an existing barn. In Upper Oxford Township, Chester County, for example, a farm family erected a separate cow house in 1936 when regulations forbade housing horses and cows in the same stables (Figure 72). The horses remained in the main barn and the cows were moved to this concrete block shed.

Figure 72: Cow house, Upper Oxford Township, Chester County.

Corn Cribs, 1870-1940
As corn became much more important, corn cribs also grew more elaborate. The three depicted in the figures noted below all have machinery storage and upper level storage in addition to large slatted cribs. All date to about 1935-50.

Figure 73: Corncrib and machine shed, West Nantmeal Township, Chester County.
Figure 74: Drive through corn crib, Lower Oxford Township, Chester County.
Figure 75: Drive through corn crib, Lower Oxford Township, Chester County.

Machine Sheds, 1870-1940
As farm machinery became even more important, still more dedicated machine sheds appeared.

Figure 76: Machine shed, West Nantmeal Township, Chester County.

Figure 77: Machine shed, West Nantmeal Township, Chester County.

**Windmills, 1870-1940**
Relatively few windmills remain on farms, but at one time they were common. Farm windmills were used mainly to raise water for human or animal consumption. They are often found near the farm house. Sometimes their power also drove small machines.

Figure 78: Windmill remains, Upper Oxford Township, Chester County.
Figure 79: Two windmills on a Montgomery County farm from the 1877 *Combination Atlas Map of Montgomery County*.

**Garages, 1870-1940**
By 1927, virtually every southeastern Pennsylvania farm had either an auto or a truck. Many had more than one motor vehicle. Hence the need for garages, which began to appear after about 1925.

Figure 80: Garage, Lower Oxford Township, Chester County.

**Poultry houses, 1870-1940**
Poultry houses in Chester County reflected their place in the farm economy. Chickens were important enough to demand dedicated buildings, but not raised on a scale that would necessitate really large poultry houses. Probably larger multistory houses would be found in Montgomery and Bucks Counties.

Figure 81: Poultry house, West Brandywine Township, Chester County
Figure 82: Poultry house, Londonderry Township, Chester County
Figure 83: Pine Run Poultry Yard from 1876 *Combination Atlas Map of Bucks County*.

**Privies, 1870-1940**
In 1927, close to half of southeastern Pennsylvania farm households had running water. Fully operational bathroom and toilet facilities probably lagged behind. Extant farm privies do still remain. However, they are less common than in other parts of the state, reflecting the relatively early access to indoor plumbing.

Figure 84: Privy, Upper Oxford Township, Chester County, c. 1930.

**Workshops, 1870-1940**
Only a few farms surveyed had identifiable workshops. Farm workshops might be found on especially prosperous farms where “progressive” farmers could afford a dedicated space to house tasks like harness or machinery repair. Or, they might represent non-farming economic activity. The late 19th century workshop depicted below has a forge for blacksmithing.

Figure 85: Carpenter and blacksmith shop, Newlin Township, Chester County.
Farm Creameries, 1870-1940
Creameries usually were located at a central crossroads or in towns, especially in later years. However, field survey definitely documented one creamery on a farm, and tentatively identified several others. Moreover, print sources confirm that there were creameries on farms.\(^8\)

Creameries are described as ideally having a supply of cold water, either naturally running or pumped; a hillside location so the milk could be easily unloaded into separators or vats; separator room; and sometimes a room cooled with ice. A separate room for boiler was sometimes recommended.

Figure 86: Creamery floor plan from 1887 Pennsylvania State Board of Agriculture Report.  
Figure 87: Farm creamery, Highland Township, Chester County.  
Figure 88: Possible creamery, Londonderry Township, Chester County.  
Figure 89: Possible creamery, Lower Oxford Township, Chester County.

Greenhouses and nurseries, 1870-1940
Further field study may locate extant nursery, truck farming, or greenhouse facilities. These historic images are provided in order to furnish information about these building types.

Figure 90: Greenhouse and nursery from 1876 Combination Atlas of Bucks County.  
Figure 91: Nursery and greenhouse from 1876 Combination Atlas of Bucks County.  
Figure 92: Greenhouses, Newtown, from 1893 Bird’s Eye View.

The Historic American Buildings Survey recorded a disused greenhouse at the Normandy Farm in Franklinville, Montgomery County.

Packing House, 1870-1940
Field survey did not document any packing houses, and it is unlikely that very many survive. However, the Farm Security Administration photo below shows a packing house in Bucks County. Packing houses would have ample lighting and often be organized with tables or shelving inside or around the edges.

Figure 93: "Italian workers from Trenton and nearby areas grading and bunching asparagus in packing house. Starkey Farms, Morrisville, Pennsylvania" 1941 photo.

Ice House, 1870-1940
No ice houses were positively identified in field documentation. One possible ice house was located. This was a little surprising in light of the importance of cooling materials in the era before mechanical means.\(^8\)

\(^8\) Creameries on farms are mentioned in Agriculture of Pennsylvania, 1896, 688; 1884, 132-7; and Roberts, Biographical Annals of Montgomery County, 161, 242.
Landscape Features, 1870-1940

Pasture, 1870-1940
As we have seen, pasture was still an important component of southeastern Pennsylvania livestock management, especially in Chester County. Enclosed pasture areas were therefore common landscape features. There are still a great many pastures in Chester County, so there has been continuity of use; but now the pastures are for horses rather than cattle. Various types of fencing were used, usually in a hierarchy beginning with simple wood or barbed wire fences in outer pastures, progressing to board fences closer in and picket fences around the house.

Crop Fields, 1870-1940
Even in the late 1930s, crop fields in the region were small and irregularly shaped. Aerials show this clearly.

Farm woodlot, 1870-1940
Woodlots took up a relatively small percentage of southeastern Pennsylvania farmland. Many farms probably lacked a woodlot altogether. However, as the aerials show, there were wooded parcels scattered throughout the region.

Tree lines, 1870-1940
As the above aerial shows, tree lines often demarcated crop field boundaries and property boundaries. Many tree lines from the period are still there.

Orchards, 1870-1940
Almost any aerial from the 1930s in the region will show a few orchards. These are almost entirely gone.

Utility Poles and Wires, 1870-1940
These appeared during this period.

Ornamental Plantings, 1870-1940

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81 See a description of Nathan Hellings’s ice house near Bristol in Bucks County, Transactions of the Pennsylvania State Agricultural Society, 1876, 54.
Many farms have fine, large deciduous shade trees or evergreen windbreaks. Some may date to this period.

**Figure 98:** Cedar wind break, Kennett Township, Chester County. Site 029-KE-001

**Contour Plowing and Strip Cropping, 1870-1940**

Though the county agents heavily promoted these techniques, the aerial photographs from the late 1930s show very little evidence for the practice. Indeed, the Chester County agent noted in 1940 that there was resistance to contour plowing, as farmers voiced a fear that “crooked” rows would diminish their reputation for orderliness.  

**Truck patches and nurseries, 1870-1940**

Using landownership atlases and other sources to learn where nurseries and truck farms were located, it was then possible to find several on historic aerials. Few if any survive.

**Figure 99:** 1937 aerial photo of Andorra Nurseries Company, Whitemarsh Township, Montgomery County.

**Figure 100:** “Portable irrigation unit in bean field. Starkey Farms, Morrisville Pennsylvania” 1941 photo.

**Suburbanization and Specialization, 1940-1960**

**Products, 1940-1960**

The Second World War period brought fundamental changes to southeastern Pennsylvania farming. A local history tells the story: “The World War II years changed the family financial pattern. The small dairy farm no longer supported the average family. The dairy industry’s requirement for holding tanks and sanitary precautions forced many to seek a living in other ways. Women began to take jobs in industry. While people continued to live on the farmsteads, they worked in nearby offices or plants.” The cost-price squeeze that affected farmers everywhere fell with extra force in southeastern Pennsylvania, where suburban development encroached on farmland, drove up real estate prices and thus taxes, and compromised the viability of farming. The few remaining farms expanded and specialized to an unprecedented degree.

The agricultural extension agent annual reports and local planning reports give a picture of the key changes. The postwar cost-price squeeze forced out all but the biggest and best capitalized farms. Capital investments in cattle, feed, equipment, fertilizer, pesticides, sanitary equipment, and labor

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83 Toll and Schwager, eds. *Montgomery County: The Second Hundred Years*, 449. For planning reports, see for example the map of “built-up areas” in the Bucks County Planning Commission’s Annual Report for 1955, page 9. The Bucks County Agricultural Extension agent report for 1953-4 said “many acres have come out of agricultural production.”
rose rapidly. Some large investments were demanded as milk companies switched to bulk tanks and as sanitation regulations tightened. Many other new investments were made to allow farmers to compete. These included larger herds of purebred animals, larger silos, and larger, more expensive and more complicated farm machinery. The era of petroleum derived fuel, plastics, fertilizers, and pesticides had arrived. These made farming highly productive but also involved considerable expense. Barnyard manure was still used, but slowly it shifted from being an asset to a waste disposal problem. Hybrid corn and other seed raised the cost of raising those crops. Feed costs reached 50% of dairy expenses in Chester County by 1955. Meanwhile prices for farm commodities did not keep pace. Indeed, with productivity rising so rapidly, surpluses accumulated and prices sometimes even dropped. \(^{84}\)

These trends occurred everywhere. Indeed, a hallmark of the post 1940 agricultural economy is the extent to which it was so much more national, even global, than local. Of course, farming had never been completely local; after all, southeastern Pennsylvania farmers were eager to sell on the global market already in colonial days. The change was not in the fact of global impact, but in the proportion and extent of it. The economic environment for mid 20\(^{th}\) century agriculture challenged the viability of small scale diversified regionally oriented farms. Bucks County vegetable growers struggled to compete with inexpensive produce trucked in from California. Dairying was still geographically constrained to some extent, but even so “milk sheds” were larger than before and milk prices low. Poultry farming faced stiff competition from the rapidly developing Delmarva peninsula and beyond.

In southeastern Pennsylvania, rapid suburbanization exacerbated challenges for agriculture. One of the nation’s first mass produced postwar Levittown suburbs went up in the Philadelphia area and a rush of imitators followed. A cliché of the day was that the best farm crop was houses – an often heard statement, but accurate in this period. Given the economic challenges of farming, it is no wonder that so many farmers sold out and retired. A long train of planning documents generated in the 1950s through the present testifies to the intractability of the issues. They optimistically mapped out areas targeted for development and those designated for “open space” or even farming, but the welter of political interests and structures, class divides, and the structure of the market itself militated against efforts to protect farming from the impact of development. In the end, farm numbers dropped steadily. In Bucks County, there were 3,751 farms in 1950 and just 2,049 in 1960.

Rapid suburban expansion brought other changes to rural areas. Suburbanization and postwar economic prosperity brought nonagricultural employment opportunities for farm people and conversely attracted nonfarm workers to the country. By 1956 an estimated 60,000 Montgomery County rural residents were “retired business couples and those who prefer the open country to the city. Many of these are commuters to their jobs...” The Montgomery County home extension agent in 1955 mentioned that “a large percent of our rural families do not farm. Many supplement their farm income by working in industry.” Census figures show that in the three southeastern counties,

\(^{84}\) Bucks County Agricultural Extension agent report, 1954; Chester County Agricultural Extension agent report, 1955.
about half of farm operators reported working off the farm in 1950, and at least a third reported having family off-farm income exceed farm income. These numbers were actually not far from state averages, and they underscore the continuing importance of “multi-occupationalism” in new guises.  

**Figure 101: Decrease in Farm Acreage, 1909-1940.**

As farm numbers dwindled, the remaining farms specialized more heavily. The percentage of Chester County income from dairy cattle rose during the 1950s – an indication of specialization. Chester County in particular continued to have a strong record in dairy production and also in cattle sales. The same list of local agricultural activities obtained as before, only the level of specialization was higher. Family subsistence activity diminished and all farm labor was bent toward one or two purposes. These were, as before, dairying; poultry raising; mushroom growing; horticulture; nurseries; and vegetable growing for canneries and fresh consumption. Bucks County’s $4.9 million dollars worth of vegetables harvested for sales in 1950 led the state far and away, outdistancing second-place Lancaster and York Counties by a wide margin. Bucks was the only county to increase vegetable sales between 1945 and 1950. But by 1960 the county’s vegetable acreage was half of what it had been in 1950.

In dairying, the postwar period witnessed the final dominance of the Holstein cow, perpetuated through artificial insemination. Interestingly, pasture was still mentioned by the county agricultural extension agent even in the 1950s; and the 1950 census figures show that of Chester County’s 360,000 acres in farmland, 211,500 were pasture. The modern confinement systems were yet in the future. At the same time, the extension agent noted that feed costs now accounted for nearly half the dairy farmer’s expenses. 1960 figures were presented differently, but pasture was clearly still quite important.

The three southeastern counties continued to stand among the state’s leaders in value of poultry production in 1950 and in 1960, but in absolute dollar amounts, sales fell during that period.

As the national and global transport grid delivered vegetables from afar, southeastern Pennsylvania truck farmers ironically found it difficult to compete. Bucks County still led the state in vegetable acreage in 1950, though, with over 21,000 acres. By the late 1950s the extension agent reported a decline in growing for canny or fresh markets, and indeed Bucks county acreage had fallen by half. In 1959 the region was still first in flower growing and high in nursery business, but these were too small a proportion of land area and income to make a large difference in the overall agricultural picture. Mushroom farming continued to be profitable and to expand.

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86 Chester County Agricultural Extension agent report, 1954; US Census of agriculture

Horse raising is very important in today’s Chester County, but this is a relatively recent development. Today there are around 8,000 horses and ponies in the county; in 1950 there were only about 3,700, and in 1960, just 2,567, down from a peak of 20,000 in 1910. Only about 20 percent of Chester County farms reported horses in 1960, as opposed to a statewide average of around a third. Only 131 (just 5%) of Chester County farms in 1960 reported selling horses. While there were probably a few horse boarding and raising establishments, it seems that the revival of horse farming in Chester County happened after 1960.

**Labor and Land Tenure, 1940-1960:**
During the war, POWs, women and girls, and Caribbean migrants were all hired to work the fields and truck plots in the southeast. To an extent, this continued after the war, when a labor shortage forced greater reliance on migrants and immigrants. Occasional conflicts boiled; in 1938 the Farm Security Administration documented a strike of Italian workers at the King Farm in Morrisville, Bucks County.\(^{88}\) Family labor continued to play an important role, but with the increase in off-farm work especially among farm women, adjustments had to be made. Farm work was mechanized as never before. Expensive machinery drastically reduced human labor requirements in every aspect of farming: milking, harvesting, silo filling, and so on.

By 1950, the overall tenancy rate was low. Only 9.4 percent of farms were tenanted statewide, and in the southeastern counties the rate ranged from 8.4 percent in Bucks County to around 12 percent in Chester County. However, these rates tell only part of the story. When we consider the percentage of *acreage* tenanted, the southeastern counties exceeded state averages by a significant margin. Statewide about 19 percent of farm acreage was tenanted; in the southeast, about 30 percent. The “country estate” phenomenon complicated the tenancy picture. The agricultural extension agent reported in 1944 in Bucks County that “the past ten years have seen a very definite change in the farm program in Bucks County. City folks buying farms as a home and hiring a farm manager has added the manager operated farm to the owner operated farm and the tenant farm.” It seems likely that larger commercial farms were more likely to be tenanted, smaller farms operated part-time but by owners, and “country estates” managed.\(^{89}\)

**Buildings and Landscapes, 1940-1960**

**Houses, 1940-1960:**
Field survey work did not document any houses that were built during this period. New farm housing during this time would likely draw from the nearby example of suburban types.

**Barns, 1940-1960:**

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\(^{88}\) *Soil Survey, Bucks County Pennsylvania*, 1946, mentions immigrant labor from nearby truck farms, but also competition for labor with alternative employment. Chester County Agricultural Extension agent reports, 1941-47 mention immigrants, high schoolers, women, POWs. The King Farm strike is documented at the FSA/OWI website.

\(^{89}\) Bucks County Agricultural Extension agent report, 1944
As in the previous period, older barns continued in use, renovated and adapted to new circumstances. As well, some new barn forms appeared.

The Chester County agricultural extension reports for 1953 mentioned pole barns. A pole barn is a one-story barn constructed from lightweight, regularly-spaced vertical posts or poles, beneath a shallow-pitched, gable roof. The “poles” for which the type is named can be wood or metal. Generally they are set directly into post holes dug into the ground; there is no foundation or basement. This means that wooden poles must be treated to prevent rot and damage from insects. Creosote made from coal tar was a common preservative before about 1950. Pole barns can have concrete floors or dirt floors. Some pole barns have metal, board, or plywood sheathing; others are left open on one or more sides. Roof structures can be integrated with the pole design, but sometimes self-supporting roof trusses are used with pole designs.

Several important forces converged after World War II to dramatically increase the pole barn’s popularity. Postwar inflation forced farmers to seek cost savings everywhere, and the capital-intensive building process was one obvious target. Materials such as plywood, metal roofing and siding, and pressure-treated wood challenged the increasingly expensive traditional dimensioned lumber. Large companies, seeking to redirect their enormous wartime production capacity towards peacetime markets, developed and aggressively marketed these mass produced materials. Dow Chemical Company, for example, promoted “penta-treated” poles and posts in the farm press. Steel companies developed subsidiaries which produced poles and metal exterior paneling combining steel, aluminum, and zinc. National Steel Corporation had a division called Stran-Steel which made all-steel farm buildings, many of which were pole barns. The Douglas Fir Plywood Association countered with a claim that their plywood was “stronger than steel,” and argued, a bit defensively, that it “fits in better with your present wood structures” than would metal siding.

At the same time, research in land-grant system demonstrated the effectiveness of “loose housing” for dairy cows, and pole construction fit very well with loose housing designs. Farm mechanization accelerated rapidly, and inexpensive shelters were needed to protect the farmer’s investment; pole barns were a common choice.

Figure 102: Metal pole barn, Lower Oxford Township, Chester County.

Free Stall Animal Housing, 1940-1960:
Free stall barns were another innovation of the postwar period. In the post World War II period, free stall housing became more highly recommended by agricultural engineers. Some farmers used the system to replace the stall-and-stanchion type of arrangement. Its advantages involved financial savings (on labor and construction costs), and improved animal health and productivity. A famous University of Wisconsin study offered powerful evidence that dairy animals had fewer injuries and

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90 Toll and Schwager, eds. *Montgomery County: The Second Hundred Years*, 691.
91 *Farm Journal*, September 1957, 68D.
92 “Stran-Master” advertisement, *Farm Journal*, May 1959, 66C.
infections, and actually gave more milk under the loose housing regime. When not being milked, cows roamed freely in a large open space with dirt floor and ready access to hay or silage. This space sometimes had minimal walls, admitting plenty of air and sunlight. As long as cows were protected from winds, they were not bothered even by very low winter temperatures. This saved on labor costs in feeding (the animals fed themselves in the pen, and were fed concentrates simultaneously with milking) and stable cleaning, and it saved construction costs because the pen barn lacked full walls, expensive stanchions and full concrete floors, and was less well insulated. The free stall barn system often incorporated a milking parlor, and often the milk house then adjoined the parlor.

Figure 103: Free stall animal housing, Londonderry Township, Chester County.

Bulk Tank House, 1940-1960
Traditional milk houses continued to be built during this period, but an important new development was the bulk tank. More milk companies required that farms direct cows’ milk directly to a large stainless steel tank where it could be quickly and cleanly cooled. Milk trucks then pumped it into their own tanks. The bulk tank was an expensive innovation which eliminated milk cans and often required a larger structure to house it than the standard milk house. Bulk tank housing was usually a gabled concrete block structure next to the barn.

Figure 104: Milk house and bulk tank house, Lower Oxford Township, Chester County.

Cow shed or milking parlor, 1940-1960
These low, one story buildings fit with the free stall system of housing. At milking time, the cows were trained to walk into a milking parlor, where they ate feed concentrates while being milked, then proceeded straight ahead back into the pen or pasture.

Figure 105: Cow shed, Londonderry Township, Chester County.

Silos, 1940-1960:
Silos continued to be constructed much as before. Tile was used less, concrete and metal more. A few trench silos appeared in the 1950s, but they were rare.

Figure 106: Poured concrete ring silo, West Nantmeal Township, Chester County.

Corn cribs, 1940-1960
The new look in corn cribs was the cylindrical, wire mesh crib with conical metal roof. These gained in popularity during the postwar period. Traditional forms also continued, sometimes with mass produced wire mesh sides.

Figure 107: Corn cribs, East Bradford Township, Chester County.

Poultry Housing, 1940-1960
Poultry housing generally increased in scale during the period. New housing often had multiple stories and was constructed of concrete block. Occasionally specialty buildings such as turkey houses appeared.

Figure 108: Poultry house, Highland Township, Chester County.
Figure 109: Turkey house, c. 1970, Londonderry Township, Chester County.

Garage, 1940-1960
Garages were more than ever needed, and newer ones tended to be made of concrete block.

Figure 110: Garage, West Brandywine Township, Chester County.

Landscape Features, 1940-1960:

Ponds, 1940-1960: Farm ponds became more popular as large scale earth moving equipment got cheaper and more available. Insurance companies offered premium reductions to farms with ponds, so a small pond building boom occurred in the post-war period.

Figure 111: Farm pond, Highland Township, Chester County.

Contour Plowing and Strip Cropping, 1940-1960: Contour plowing follows the contours of hills and slopes, rather than orienting crop rows up and down a slope. Strip cropping often accompanies contour plowing, but it can be implemented in flatter terrain too. Strip cropping adds to erosion protection by alternating crops so that one slows water down and the next absorbs it. Fence rows often were taken out when strips were installed. By the postwar period, southeastern Pennsylvania farm landscapes had changed decisively to contour plowing and strip cropping. Aerials show this well, and many contours and strips remain from this period.

Figure 112: Contour strips, Highland Township, Chester County.
Figure 113: Aerial photograph of the Cochranville, Chester County vicinity, 1958.
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Figure 1: Southeastern Pennsylvania Historic Agricultural Region

Figure 2: Yost log house, Whitpain Township, Montgomery County, date unknown. HABS/HAER, digital ID http://hdl.loc.gov/loc.pnp/hhh.pa2969.
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Figure 3: "Penn Plan" house, Lower Oxford Township, Chester County, late 18th century.
Site 029-LO-003.

Figure 4: Zook log barn, East Whiteland Township, Chester County, 18th century. HABS documentation.
Digital ID http://hdl.loc.gov/loc.pnp/hhh.pa0278. The Zook barn is an early “Sweitzer” barn, and at 86 by 25 feet was large for its day. Its two log cribs and central threshing floor accommodated hay and straw storage and threshing. Below were stables.
Figure 5: Abiah Taylor Barn, Chester County, mid 18th century. Though it is a high-end barn for its day, the Abiah Taylor barn in Chester County still reflects relatively modest needs for barn space at the time. This early three-bay English threshing barn dates to the mid 18th century. It was not banked, and had three bays: one for grain and hay storage, one for threshing, and one for livestock stables.

Figure 6: Log crib barn, Lower Oxford Township, Chester County, late 18th century or early 19th century. Site 029-LO-006. This is a relatively small bank barn with double log cribs.
Figure 7: Probable smoke house, Kennett Township, Chester County, late 18th century. Site 029-KE-001.

Figure 8: Jerman-Walker Spring house, Tredyffrin Township, Chester County, 18th century. HABS photograph. Digital ID http://hdl.loc.gov/loc.pnp/hhh.pa0301.
Figure 9: Chester County crops per farm, 1850.
Figure 10: Chester County livestock per farm, 1850.

Figure 11: Farm house, West Bradford Township, Chester County, early 19th century. Site 029-WD-005.
Figure 12: Slifer log kitchen, Meadowbrook Farm, Springtown, Bucks County, 1815. HABS. Digital ID http://hdl.loc.gov/loc.pnp/hhh.pa3562.

Figure 13: William Miller tenant house, Avondale Borough, Chester County c.1800, photographed 1958. HABS. digital ID http://hdl.loc.gov/loc.pnp/hhh.pa0235.
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Figure 14: Pennsylvania Barn, West Nantmeal Township, Chester County, late eighteenth century.
Site 029-WN-003.

Figure 15: Pennsylvania Barn with large posted forebay, West Nantmeal Township, Chester County, mid 19th century. Site 029-WN-005.
Figure 16: Pennsylvania Barn with large posted forebay, West Bradford Township, Chester County, mid 19th century. Site 029-WD-003.

Figure 17: Double-decker barn, “sink mow” seen from threshing floor, West Bradford Township, Chester County, late 19th century. Site 029-WD-001. Note the opening in the floor for throwing hay down to the stables below.
Figure 18: “Double Decker” barn showing granary door under bridge, Newlin Township, Chester County, late 19th century. Site 029-NE-001

Figure 19: Pennsylvania barn with gabled ell open beneath, Londonderry Township, Chester County, late 19th century. Site 029-LN-005.
Figure 20: Pennsylvania barn with gabled ell open beneath, Lower Oxford Township, Chester County, late 19th century. Site 029-LO-005

Figure 21: Pennsylvania Barn with ell extensions off the forebay, Buckingham Township, Bucks County, date not given, photographed 1941. HABS documentation. Digital ID http://hel.loc.gov/loc.pnp/hhh.pa1570.
Figure 22: Walter Pyle Barn, Kaolin vicinity, Chester County, c.1768. Pennsylvania Barn with twin straw sheds. HABS documentation. Digital ID http://hdl.loc.gov/loc.pnp/hhh.pa1501.

Figure 23: “Standard English Lake District” barn, Franklin Township, Chester County, no date given. Pennsylvania CRGIS image.
Figure 24: “English Lake District” barn, West Nottingham Township, Chester County, no date given. West Nottingham Township files.
This "Plan of a Three Story Barn" explains in detail how the "double-decker" worked. From The Cultivator, March 1861.
Figure 26: Plans for Pennsylvania farm barns. Thomas Wood, “PLAN OF PENNSYLVANIA FARM BARNs.,” Ohio Cultivator (1845-1866): Apr 15, 1855; 114; American Periodicals Series Online

Figure 27: Sheltered yard, Walter C. Pyle Barn, 1768, Chester County PA. This “sheltered yard” shows the principle in actual execution. HABS documentation. Digital ID http://hdl.loc.gov/loc.pnp/hhh.pa1501.
Figure 28: Tom Clark barn, Pocopson Township, Chester County, c.1795. HABS documentation. Digital ID http://hdl.loc.gov/loc.pnp.hhh.pa1499. This photo shows hay spilling out of the sunken mow to the left.

Figure 29: Springhouse, West Caln Township, Chester County, c.1870. Site 029-WC-001.
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Figure 30: Springhouse, West Bradford township, Chester County, c.1850-70. Site 029-WD-003.

Figure 31: Spring house, West Bradford Township, Chester County, c.1875. Site 029-WD-006.
Figure 32: Spring house interior, High Farm, Perkasie, Bucks County, PA, no date given. HABS documentation. Digital ID http://hdl.loc.gov/loc.pnp/hhh.pa2197

Figure 33: “Farm and Residence of James Abraham.” Combination Atlas Map of Montgomery County Pennsylvania... (Philadelphia, 1877).
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Figure 34: Root Cellar entrance, Craven Hall, Johnsville, Bucks County, no date given. HABS documentation. Digital ID http://hdl.loc.gov/loc.pnp/hhh.pa3169

Figure 35: Brick smoke house, Franklin Township, Chester County, mid 19th century. Pennsylvania CRGIS record.
Figure 36: Wagon Shed, Lower Oxford Township, Chester County, c.1880. Site 029-LO-002. This board and batten shed had ornamental trim on the cornices.

Figure 37: Wagon Shed, Upper Oxford Township, Chester County, c.1880. Site 029-UO-002.
Figure 38: Drive through machine shed with corn crib, West Nantmeal township, Chester County, c.1880. Site 029-WN-004.

Figure 39: Machine Shed, West Brandywine Township, Chester County, late 19th century. Site 029-WB-001. This shed also has a corn crib at one end.
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Figure 40: Pig pen, West Nantmeal Township, Chester County, mid 19th century.

Figure 41: Outdoor Bake Oven, West Nantmeal Township, c.1850. Site 029-WN-004
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