
Agricultural Resources of Pennsylvania, c 1700-1960

**River Valleys Tobacco
Culture, 1870-1930**

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This document is a parallel to the official National Register MPDF narrative. The two versions are not identical, but they contain the same information differently organized. National Register policy prohibits embedded images in official documentation. These PDF versions re-integrate the images for the reader's convenience. The National Register documentation was completed and submitted piecemeal. This PDF document reflects the updates made during the process of making statewide coverage together, again for the reader's convenience.

Conceptualization: Historical Farming Systems and Historic Agricultural Regions

Pennsylvania presents interesting intellectual challenges for the agricultural historian and archaeologist. The watchword for Pennsylvania's agricultural history is "diversity." The widespread transition to a relatively specialized monocrop or single-product system did not really take hold until after the Second World War in Pennsylvania. Beginning in the settlement era and stretching well into the 20th century, diversity of products was a hallmark of nearly every farming region as a whole, and of individual farms too. As late as 1930, the state Agricultural Experiment Station Bulletin proclaimed "the largest number of farms in Pennsylvania are the farms with some diversity of crops and livestock production."¹ According to the 1930 Federal census, nearly 53 percent of the state's farms were either "General," "Self-Sufficing," or "Abnormal" (mainly part-time) farms. "Specialized" farms were defined as those where at least 40 percent of farm income derived from a single source. These included types labeled variously as "dairy," "cash grain," "fruit," "poultry," and "truck farms."

Over time, regionalism declined in significance within Pennsylvania, yet farming across the state remained surprisingly diverse. Along with other eastern states, Pennsylvania agriculture shared in the general shift more towards specialization, commercialism, state oversight, industrialization, decline in farming population, and the like. This trend is recognized in the context narrative. However, it is

important always to keep in mind that existing literature on Pennsylvania agriculture exaggerates the degree of change before 1950. In 1946, Penn State agricultural economist Paul Wrigley identified “Types of Farming” areas in Pennsylvania. Only the Northeast and Northwest were given descriptors that implied specialization; these were dairying areas. The rest were given names like “General Farming and Local Market section.” Equally significant was the fact that statewide, the top source of farming income – dairying -- only accounted for a third of farm income. To be sure, there were pockets where individual farms specialized to a greater degree (in terms of the percentage of income derived from a single product), but these were the exception rather than the rule; overall even in the mid-20th century, Pennsylvania agriculture was remarkably diversified both in the aggregate and on individual farms.²

Even many farms defined as “specialized” by the agricultural extension system were still highly diversified in their products and processes. This was because so many farm families still engaged in a plethora of small scale activities, from managing an orchard, to raising feed and bedding for farm animals, to making maple sugar or home cured hams. Many of the resulting products would not necessarily show up on farm ledger books because they were bartered, consumed by the family, or used by animals, or sold in informal markets. In other words, they fell outside strictly monetary calculations of “farm income.” Yet they were important aspects of a farm family’s life and took up a good deal of family members’ time. Indeed, we can’t understand the historic agricultural landscape without acknowledging these activities, because they so often took place in the smokehouses, poultry houses, potato cellars, summer kitchens, springhouses, and workshops that appear so frequently in the rural Pennsylvania landscape. These spaces might not be well accounted for (if at all) in a conceptualization that emphasizes commodity production, but they become more readily comprehensible when we take into account the broader diversity of farm productions. Another important benefit of this perspective is that it preserves—indeed reclaims—contributions that a preoccupation with specialized market commodities tends to obscure, for example those of women and children.

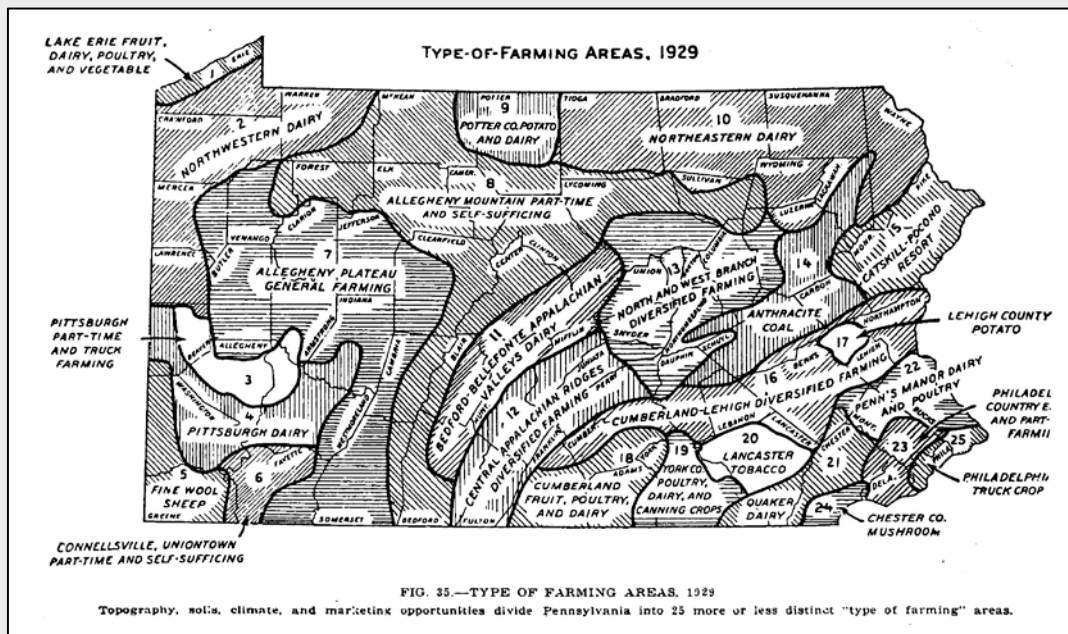
Acknowledging the historic diversity of Pennsylvania farm productions helps to clarify much, but it also raises a fundamental challenge for conceptualizing an approach that will faithfully convey Pennsylvania’s agricultural history, and make

it possible to understand the landscape that was created as people farmed in the past. How can we make sense of this sometimes bewildering variety? Added to diversity of products we must consider a diversity of cultural repertoires; a diversity of labor systems; diversity of land tenure arrangements; varied levels of farm mechanization; 93 major soil series; ten different topographic regions; and growing seasons ranging from about 117 to over 200 days. The concept of a “farming system” was found to be particularly helpful as a framework for understanding how agriculture in Pennsylvania evolved. A “farming system” approach gathers physical, social, economic, and cultural factors together under the assumption that all these factors interact to create the agricultural landscape of a given historical era. Physical factors like topography, waterways, soils, and climate set basic conditions for agriculture. Markets and transportation shape production too. Other components, equally important but sometimes less tangible, form part of a “farming system.” For example, cultural values (including those grounded in ethnicity) influence the choices farm families make and the processes they follow. So do ideas, especially ideas about the land. Social relationships, especially those revolving around gender, land tenure, labor systems, and household structure, are crucial dimensions of a farming system. Political environments, too, affect agriculture.

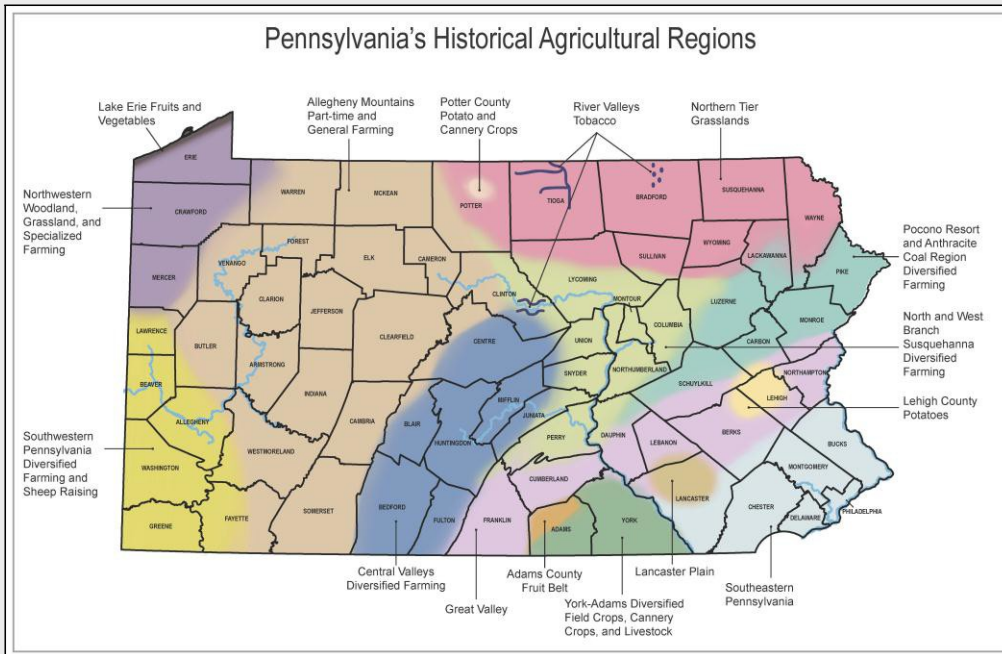
The idea of a “farming system” opens the way to a more comprehensive and accurate interpretation of the historic rural Pennsylvania landscape. For example, because the notion of a “farming system” includes land tenure and mechanization levels, we can identify a distinctive region in the heart of the state where sharecropping and high mechanization levels supported a cash-grain and livestock feeding system. This allows us to interpret the tenant houses, “mansion” houses, multiple barn granaries, large machine sheds, and crop rotation patterns that typify this region. Or, by including cultural forces as part of a system, we can differentiate a three-bay “English” barn from a three-bay German “ground” barn. By attending to labor systems, we can appropriately interpret the Adams and Erie fruit-belt areas that relied on migrant workers. And so on. So whether we seek to interpret German Pennsylvania, the “Yorker” northern tier, home dairying areas where women dominated, or tobacco farming in Lancaster County, the “farming system” approach is key to understanding all aspects of the rural Pennsylvania farm landscape—not only the house and barn.

Identification of Historic Agricultural Regions

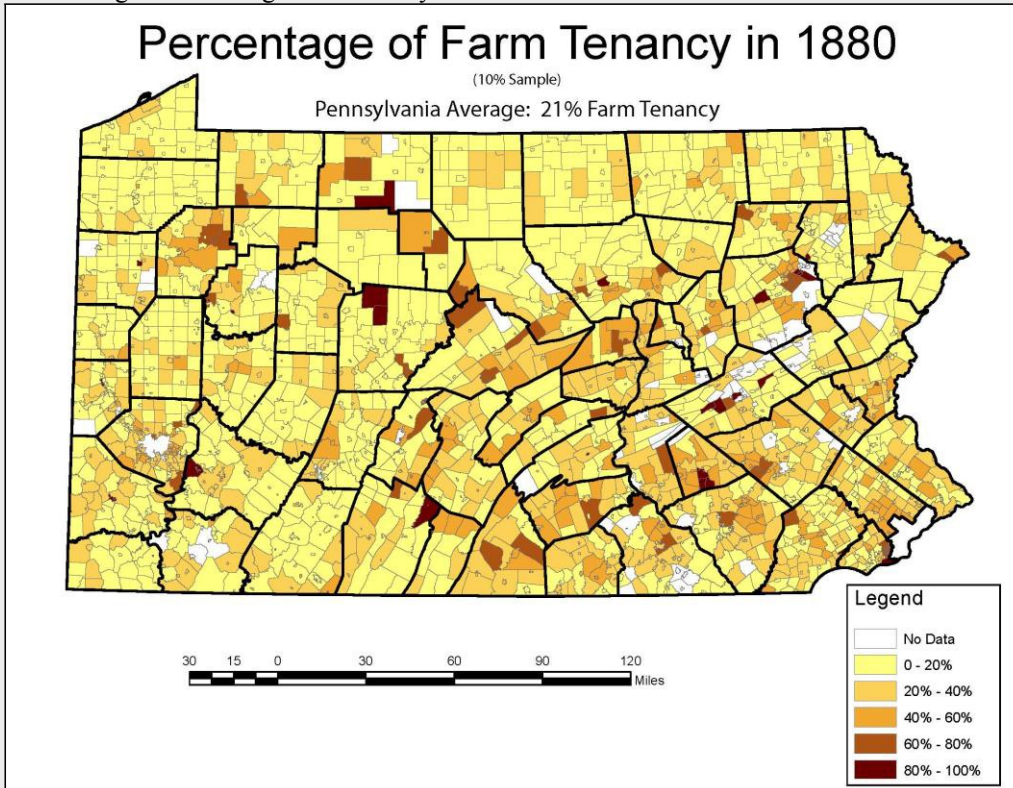
Mapping done by agricultural economists in the early 20th century identified “Types of Farming” areas based on soil types, topography, markets, climate, and production. These helped to establish clear regional boundaries to the extent that topography, climate, and soil types set basic conditions for agriculture, and they also aided in identifying 20th century production patterns. However, the agricultural economists were mainly interested in production and markets; they did not take into account other important factors which shaped the landscape, especially ethnicity, labor patterns, and land tenure. For this cultural and social data, cultural geographers’ work has proven valuable, because it maps information on settlement patterns, building types, ethnic groups, and even speech patterns. And finally, new maps of farm tenancy were generated for this report. Examples of these maps are reproduced below. Together, these resources were used to outline regions that allow us to avoid a “one size fits all” approach on the one hand, and the over-detailed focus on a single farm on the other.



From Penn State College Agricultural Experiment Station Bulletin 305: “Types of Farming in Pennsylvania,” April 1934.



Historic Agricultural Regions of Pennsylvania.



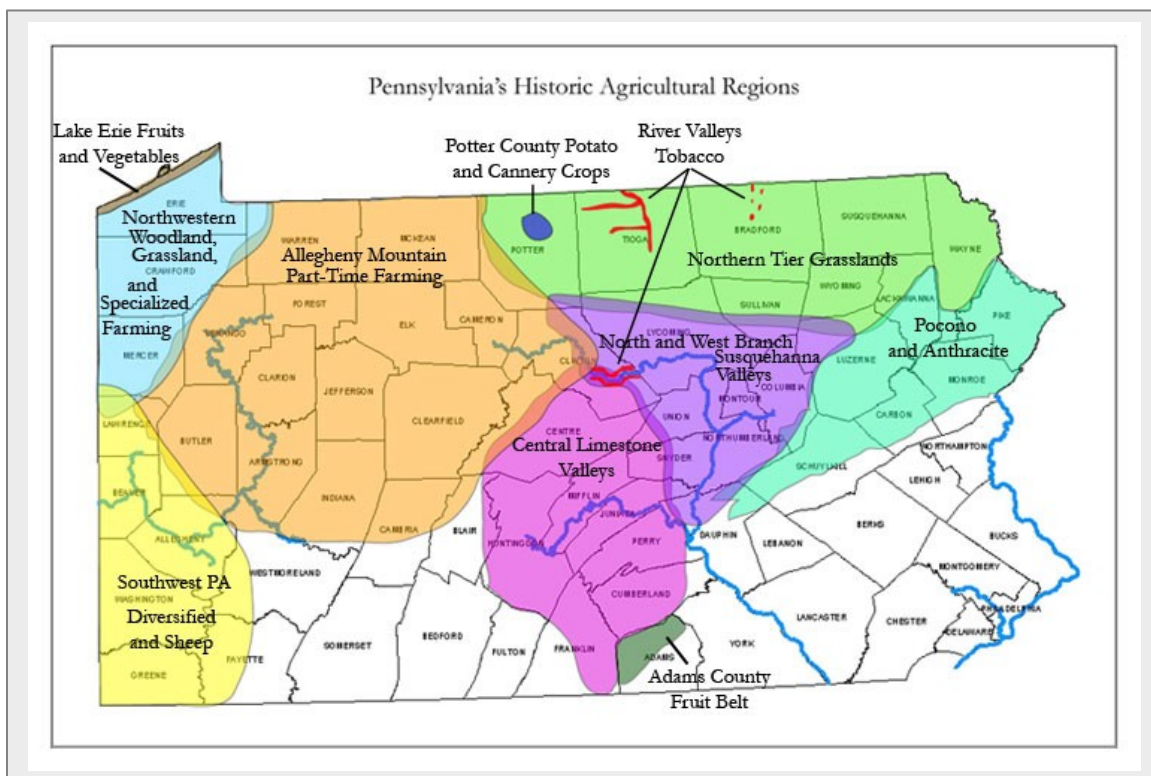
Share Tenants as a percentage of all farmers, 1880.

1 Emil Rauchenstein and F. P. Weaver, "Types of Farming in Pennsylvania." Pennsylvania Agricultural Experiment Station Bulletin # 305, April 1934, 39.

2 Paul I. Wrigley, "Types of Farming in Pennsylvania." Pennsylvania Agricultural Experiment Station Bulletin # 479, May 1946.

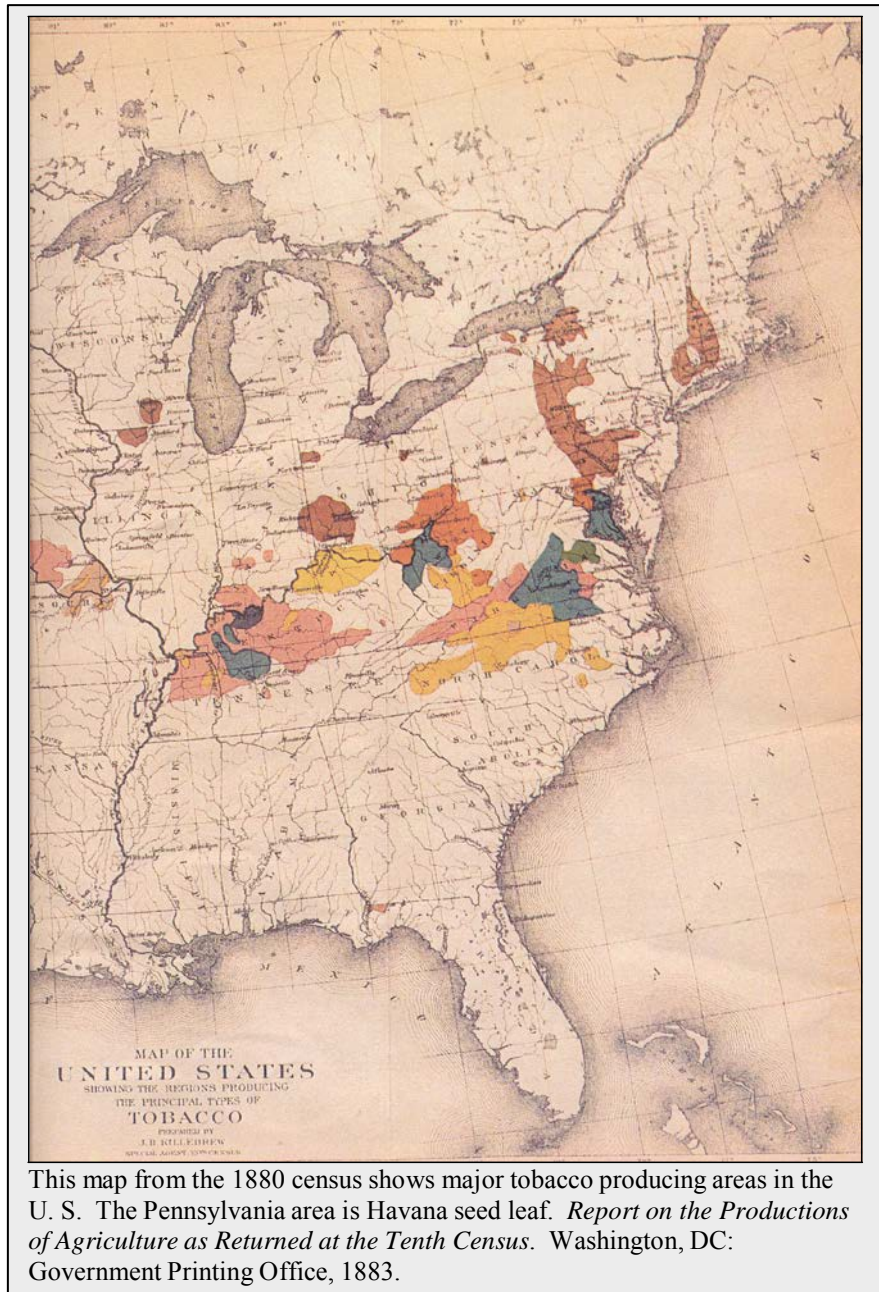
Location

From about 1870 to 1930, tobacco was raised in several small, concentrated areas of central Pennsylvania and the Northern Tier.¹ The 1880 United States Census special report, "Tobacco Production in the US," noted that Pennsylvania ranked third in the US behind Kentucky and Virginia, with fifteen counties producing 100,000 or more pounds of tobacco. "The tobacco counties," the report continued, "form a belt from north to south across the state. Midway north and south the belt is about 40 miles wide, and the Susquehanna divides the lower half. That portion of the belt lying east of the Susquehanna produces over 75 percent of the entire amount of tobacco grown in the state; and that portion extending from the center of the state southward, on both sides of the Susquehanna, will be found to produce 90 percent of the whole."²



So even though in percentage terms the amount grown outside of Lancaster County was small, at its peak there still were concentrated pockets of significant tobacco production. By 1900, the census showed that 9,621 Pennsylvania farms reported tobacco production. Most of these were in Lancaster County, but across the Northern Tier, tobacco was raised in Tioga and Bradford Counties; and also outside the Northern Tier in Clinton, Lycoming, and Snyder Counties.

In Tioga County, it was grown in the Cowanesque and



Tioga River valleys and along some of their tributaries, for example Crooked Creek, Marsh Creek, Seeley Creek, and Elkhorn Creek.³ Tioga County listed 1,785 acres in tobacco in 1900, yielding 2.8 million pounds; Bradford County claimed 1,210 acres and nearly 1.7 million pounds. The upper Susquehanna River valley and tributary valleys provided a few localized sites for tobacco culture, notably Bald Eagle Valley and Island (Dunstable Township) in Clinton County,⁴ and Jersey Shore in Lycoming County.⁵ In the century some tobacco was also grown in Snyder County, “in the neighborhood of Kantz, Verdilla, and Freeburg.”⁶ However, in most of these places production peaked around the turn of the century, and was inconsequential by around 1930.

Climate, Soils, and Topography

In northern and central Pennsylvania, tobacco was primarily grown on alluvial soils in narrow river-valley belts; it was highly localized. Topography therefore was mostly flat to gently rolling. Soil types in the Cowanesque River Valley of Tioga County are loams of the Chemung shale series. In Bradford County, in Troy Township along Sugar Creek, glacial and alluvial soils of the Catskill formation supported tobacco culture.⁷ These areas probably were “micro-climates,” situated as they were in protected valley areas at lower elevations than the surrounding country.

Historical Farming System

The River Valleys Tobacco Culture was a highly localized system that flourished for a limited period along river valley bottoms of the Susquehanna and its tributaries. The date 1870 was chosen for the beginning of the period, because primary documentation indicated that only after the Civil War did tobacco culture really become a significant force in these places. 1930 marks the end of the period, because while tobacco production peaked around 1900 or so, agricultural extension agents in Clinton County especially spent a good deal of time on tobacco-related issues until about 1930, and mention of tobacco in Snyder County also reaches into the 1930 period.

Products

The historical sources suggest that while a few tobacco growers focused on tobacco alone, most tobacco culture in the River Valleys region was generally undertaken within a context of other crops and products. However, the data do not support associating tobacco with any one characteristic mix of complementary crops or products. Families found varied ways to incorporate tobacco into their economic strategies. The manuscript census for 1880 shows that in Tioga County, some tobacco growers raised Indian corn or Irish potatoes; and that where farms grew significant tobacco crops, they often did not keep livestock. This is surprising, since tobacco is a heavy feeding crop (i.e., it depletes soil nutrients quickly), and Lancaster County tobacco farmers complemented tobacco culture with intensive livestock husbandry. However, by 1899, the Tioga County directory suggests that tobacco growers had shifted to treating tobacco as a part of a more diverse mix. This directory lists local farm people and their main products. If we look just for those who list tobacco, we can find out not only where they were located (there is a map with keys included in the directory), but what else they were producing. So, for example, Calvin L. Phoenix of Austinburg farmed 75 acres; had a dairy of eight cows; raised 2 ¼ acres of tobacco, and also was a “breeder and dealer in Hambletonian horses.” Luther J. Davis of Little Marsh raised six acres of tobacco; had a dairy of ten cows; and owned twenty sheep, on a 100-acre farm. Charles Lee of Academy Corners worked “on shares for

Mrs. Eleanor Faulkner,” raising 3 ½ acres of tobacco and farming 90 acres. Some combined tobacco culture with fruit raising, beekeeping, or poultry keeping, as well as general farming. Sometimes they combined tobacco growing with business or artisan work, such as hay pressing, threshing, or merchandising. No correlation could be found between tobacco raising and farm value.⁸

The tobacco raised in these areas, as in southern Pennsylvania, was destined to end up in cigars. Several types of tobacco went into cigars. *Filler leaf* was chopped up for the inside of the cigar. (By about 1875, a steam-powered chopper had been developed by the agricultural implements industry and was widely used.) This filler was kept together by a *binder leaf* wrapped around it. Lastly, a single, high-quality, unblemished *wrapper leaf* enveloped the outside of the cigar.⁹ Each type has its peculiar qualities that suit it to its purpose. Pennsylvania-produced tobacco was predominantly filler and binder, though a small percentage of it was wrapper leaf. In Pennsylvania, many types had names; varieties that were favored included the “Glessner,” “Rustica,” “Pennsylvania Seed Leaf,” “Connecticut seed leaf,” “Cuba,” “Duck Island,” “Havana Seed,” and “Lancaster-Broad Leaf.” Scientists added their own names (actually numbers) such as Pennsylvania Type 41.¹⁰ Some of these varieties were clearly identifiable and possessed specific botanical characteristics, but in other cases, particularly those with local or folk names, their provenance wasn’t as clear. In any case, the ultimate quality of the leaf was profoundly affected by soil type, climate, and processing technique. All of the tobacco raised in Pennsylvania was air-cured (in contrast to some Southern grown types, which are flue-cured, meaning that they require a fire to reach proper curing.)

Labor and Land Tenure

No matter what type of leaf was grown, tobacco culture was extremely labor intensive. Most tobacco fields were under ten acres for this reason. The seed bed, a small area located in a protected place, had to be meticulously prepared, sometimes by steaming or burning, to kill microbes and insect pests in their various life stages (eggs, pupae, etc.). The miniscule seeds were sown there in early spring, then tended carefully until they reached transplanting size. In the meantime, the tobacco ground where the plants would mature had to be carefully manured and cultivated. Transplanting occurred in the last weeks of May. Then, as the young plants grew in the field, they had to be monitored, cultivated, and cosseted, protected from too much sun and too-dry conditions. Workers passed through the rows removing cut-worms, tobacco worms, and their eggs. “The hunt for worms,” said the report, “continues until the day the tobacco is carried from the field.”¹¹ Once the plants had a good start of growth, it came time to top and sucker – that is, remove selected leaves so the plant’s energy could flow to the remainder. By late

summer, it was time to cut the crop. By this point, the plant had a hefty stalk and a sharp saw or hatchet was needed to do the job. The stalks were speared on laths, then hung from a scaffold in the field (though reportedly not in Bradford County).¹² Finally, the laths were transferred to the barn. Filling the barn was a complex choreography in itself; it proceeded from the top downward in tiers, as laths, filled with stalks, were placed across the framing, carefully spaced to allow for air circulation. As winter approached, the work shifted indoors, to stripping and [sometimes] packing the crop. This work, too, took place in or near the barn, and lasted nearly throughout the cold months until the whole cycle began again. As we will see, tobacco barn design clearly accommodated to the unique requirements of this demanding crop.

Who did the work? Almost no research has been done on labor patterns for tobacco in this geographical area. In other parts of Pennsylvania, labor was furnished from a combination of family, hired workers, and share tenants.¹³ In the Connecticut River Valley tobacco area of New England, immigrant families often worked small tobacco farms, while the huge, industrialized shade-grown wrapper leaf industry was staffed exclusively by cheap, badly exploited wage laborers, including women, migrants, and children.¹⁴ North Central and northern Pennsylvania sit between these two major tobacco areas of the Northeast, and it is not definitively known whether the “Connecticut” or “Pennsylvania” labor patterns were more common. However, we can make some inferences. None of the central and northern Pennsylvania tobacco enterprises took up a scale anything like that in the Connecticut Valley, so it is fairly certain that huge crews were not used. The Tioga County directory suggests that family labor was important; and quite a few (about 18 percent, slightly higher than the overall tenancy rate for the area) tobacco growers farmed on shares (a much more common occurrence in Lancaster County). Women, children, and men all probably worked in the tobacco culture. We know that in both Connecticut and Lancaster County, women, children, and men did field work (though tasks varied depending on age and sex; for example, children did not do worming, and spearing was considered a man’s job). Stripping throughout the winter was something everybody did both in New England and Pennsylvania.¹⁵ In northern Pennsylvania, it would seem, winter tobacco work provided a good seasonal complement within a dairying economy, since dairy work was slower in the winter. However, it must have conflicted with spring and summer dairy work, especially for women.

Despite the small acreages and large labor demands, tobacco was a very remunerative crop. The popularity of the famous “five-cent cigar” created a boom for Northern tobacco growers. Domestic cigar factories claimed a huge output of “stogies, cheroots, and other low-grade cigars” in 1900.¹⁶ For a time, prices were high enough that even a few acres

could yield a handsome return – sometimes more than the rest of the farm enterprises put together. The Tioga County history of 1883 reported: “The amount of tobacco raised on an acre is from 1,500 to 2,500 pounds, and at 10 cents per pound it proves the most remunerative crop the farmer can raise. Even if it does require a considerable amount of fertilizers, . . . still the profit on the investment far exceeds that of any other crop raised in the county.”¹⁷ The 1900 census estimated that the average revenue per acre was over a hundred dollars, and that on a per-acre basis, tobacco outdid all other crops.

Processing the leaf afforded employment as well, not only for hired field labor, stripping, and packing, but also for cigar making; the industry was very decentralized until about 1920, and small scale cigar manufactories sprang up in urban centers and rural hamlets all over the Commonwealth. (Interestingly, cigar making was an important employer of women.) In Knoxville, Tioga County, the *Centennial History of 1951* noted: “the raising of tobacco in the vicinity of Knoxville around the turn of the century added to the commercial activity of this period. During the first years of the new century there were two tobacco warehouses in Knoxville. Morris Rosenberg & Co, with E. E. Woodbury as manager, operated a tobacco warehouse in the D. L. Freeborn Foundry building. This company employed about fifty people seven or eight months of the year.”¹⁸ The 1883 history of Tioga County announced that “Large packing and store houses have been erected in Corning and Elmira, designed to receive the crops of this county and Steuben and Chemung in NY. A sound and reliable firm has been organized at Tioga and Wellsboro to purchase the leaf and also manufacture cigars upon a large scale, about 100 persons being employed at each of those places.”¹⁹ Shippers and retailers added tobacco products to their stock in trade, and even tiny rural crossroads like Sabinsville, in Tioga County, had their “travelling tobacco salesman.”²⁰

Buildings and Landscapes

Limited field study has been undertaken of tobacco landscapes in north central and northern Pennsylvania. Results to date suggest that Northern Tier tobacco growers built “New England” type tobacco barns, and in the central counties, they imitated “Lancaster County” types. This pattern coincides with the general cultural background of the respective regions, since the Northern Tier counties were peopled by New Englanders and the central valleys largely by Pennsylvania Germans.

Tobacco Barns

Pennsylvania tobacco was air-cured, and it also needed to be stripped and sometimes boxed before it went to market. From these requirements flowed the design logic of the tobacco barn.²¹

Lancaster County versus New England style tobacco barns

Since the study area lies between these two regions, both “Lancaster County style” and “New England style” tobacco barns appear there. Both of these areas raised broadleaf tobacco for filler and binder. In the Connecticut Valley, however, around 1900 there also arose a highly capitalized, industrial style production of shade-grown Sumatra leaf for wrappers. Thus the Connecticut Valley actually had two tobacco economies; the broadleaf culture was usually on a small family scale, while the shade-grown culture was undertaken by large corporations.²² However, New England style tobacco barns were the same in their fundamentals whether or not they were erected by small or large concerns.

Tobacco barns in New England and Pennsylvania share the following characteristics:

- They are gabled
- They are predominantly frame construction (though may have stone foundations and sometimes roof frames are assembled with metal bolts)
- They are rectangular in shape
- They are fitted with means of ventilation, usually by hinges that permit cladding boards to be opened, either horizontally or vertically
- They usually have roof ventilators also – sometimes clerestory-style vents that run almost the length of the roof ridge, sometimes evenly spaced cylindrical vents with conical tops
- Their interiors have framing in bents about 10-15 feet apart on which laths loaded with tobacco leaves can be hung

There are some differences in the two regional variations of tobacco barns.

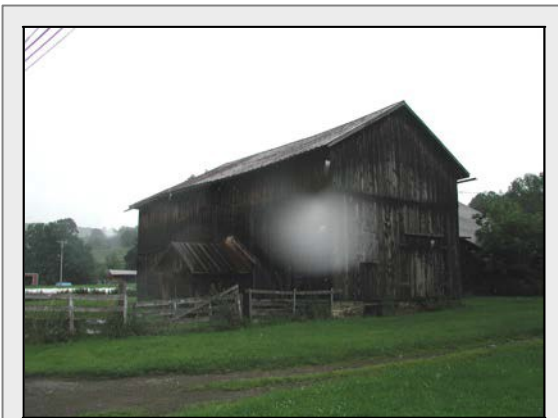
1) In general, “Lancaster County style” tobacco barns are banked, and New England style tobacco barns are not banked.

2) Most “Lancaster County style” tobacco barns incorporate the stripping and damping rooms within the main barn, usually in the ground-level, banked section. New England style tobacco barns sometimes incorporate stripping rooms in the main barn, but as they are not banked, the stripping and damping rooms in these cases are in a ground level that (while not necessarily a full story, often partly underground) extends under the entire structure. But equally often, New England style tobacco barns often have a separate, attached, or adjoining, one-story structure for stripping. It can be identified by its chimney and windows.

3) “Lancaster County style” tobacco barns often (not invariably though) have a lower length : width ratio than do New England style tobacco barns. Lancaster County style tobacco barns are seldom longer than 75-80 feet, while New England style barns can reach more than 100 feet in length. The width of both is about 30-40 feet. Published documentation indicates that barns like this long existed in the Northern Tier, but none were found in fieldwork. For example, the 1880 U.S. Census special report noted that in Clinton County, a 24 x 100-foot barn cost \$500; this implies a New England style barn. The same report noted that in Tioga County, “the tobacco-houses are of the ordinary character, framed and battened, from 28-30 feet wide and 60-250 feet long. The crop throughout is cultivated, handled, and marketed more after the methods pursued in New York.”²³

4) “Lancaster County style” tobacco barns are an integral part of the farmstead. They are near the house and main barn and are often painted to match other outbuildings. By contrast, New England style tobacco barns sometimes are located near the house and/or main barn, but are often located at the edge of the field, rather isolated and at a distance from the other buildings.

5) “Lancaster County style” tobacco barns have a drive-in door in one gable end, but often not both – partly because the structures so often are banked. New England Style tobacco barns often have doors in both gable ends, creating a drive-through structure.



Tobacco barn, Cowanesque River Valley, Deerfield Township, Tioga County, c. 1900. Site 117-DE-001.



Close-up of hinges on a tobacco barn, Cowanesque River Valley, Deerfield Township, Tioga County, c. 1900. Site 117-DE-001.

Field work to date has yielded few examples of extant tobacco barns in the Northern Tier. Very few tobacco barns remain along the Cowanesque River – Route 49 corridor, an area where there was significant tobacco growing. A few were seen from the road but not documented. One tobacco barn was documented. No adaptations were found in interiors

of other barns, but no access was gained, so this is still unknown. These barns all seem to have more characteristics of the Connecticut River tobacco barn than of Lancaster County tobacco barns.

They are not banked; at least one had a separate stripping shed; they are not painted. However, the Tioga County tobacco barns were located along the road and within the farmstead – not at the edge of the farmstead as in the Connecticut Valley. This probably reflects the fact that family labor was used. On the Josephus Campbell farm in Bradford County, there was a multipurpose outbuilding that had a basement which could have been a stripping room.

A field survey in Snyder County identified several farms with tobacco barns, located along tributaries to the Susquehanna River. These, in contrast to the Northern Tier barns, were built in the “Lancaster County” style. Since Snyder County was heavily Pennsylvania German, this is not surprising.



Tobacco barn with horizontal siding, Litchfield Township, Bradford County, c. 1900. Site 015-LI-001.



Likely tobacco barn, Burlington Township, Bradford County, c. 1880. Site 015-BU-001.



Tobacco shed in Sabinsville, date unknown. Photo by Joyce M. Tice, February 1997. <http://www.rootsweb.com/~srgp/1900/tobacco.htm>. Accessed 7/3/06.

Future field work should look for adaptations made to other barns. In both Lancaster County and New England, pre-existing barns were often adapted for tobacco. This adaptation could be as radical as changing the cladding of a bank barn or New York-style basement barn to install hinges and movable boards. Or it could be something more subtle, such as an addition to a barn of a section with hinged cladding. Or, it could be the installation of cleats in any barn’s framing, to hold laths. Visser’s book shows a picture of

a New York-style basement barn that has been adapted by changing the cladding. Noble has a picture of a Pennsylvania barn in Lancaster County that has had its cladding changed.



Reuben Cook and Fred Benn in Sabinsville's Tobacco Shed. October 1900. <http://www.rootsweb.com/~srgp/1900/tobacco.htm>. Accessed 7/3/06.

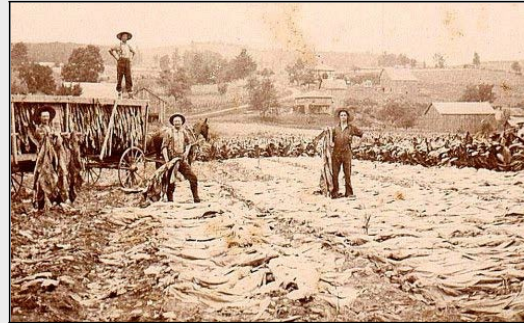


Photo from Bailey's Corners Hill in Leroy, date unknown.

<http://www.rootsweb.com/~srgp/business/tobacco.htm>. Accessed 7/3/06.



Lancaster County style tobacco barn near Kantz, Snyder County, c. 1940. Photo taken from road by Sally McMurry; no site number.



Interior of a Pennsylvania barn showing the cleats on the upper beams which hold tobacco laths in place, West Lampeter Township, Lancaster County, c. 1875.

Landscape Features

Landscape features in this farming system really don't differ significantly from those of the surrounding area. Thus, Northern Tier landscape features are found in Tioga and Bradford Counties, and North and West Branch Susquehanna Valley features in Snyder and Clinton Counties. The one exception is the alluvial flats on which tobacco fields were situated.

No good field documentation of these areas has yet been obtained.

Property Types and Registration Requirements – Criterion A, Pennsylvania

This statement outlines considerations for Pennsylvania as a whole.

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

A 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.

A. Criterion A, Agriculture

This section first outlines general consideration for Pennsylvania as a whole, with reference to considerations related to labor, gender, and tenure. These are followed by Criterion A requirements for each region and subregion.

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.

-AND-

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.²⁴

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.²⁵ 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 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.

Property Types and Registration Requirements —

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.

Property Types and Registration Requirements – 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.

Property Types and Registration Requirements – Criterion C, Design and Construction

Typical examples are encouraged to satisfy Criterion A for agriculture, but average or ordinary examples are not likely to qualify under Criterion C for Design and Construction. 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 possess high artistic values, or, as a rural historic district, that represent a significant and distinguishable entity whose components lack individual distinction”.²⁶

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 ...”.²⁷ 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 specific 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 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.²⁸ 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 reflected essential characteristics of specific barn types, such as Pennsylvania bank barn, Stable 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 Revivalized 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 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.

Design could 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 also includes 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).

What qualifies as significant workmanship?

Workmanship is evidenced in quality of masonry, timber framing, durable construction, including evidence of skilled workmanship in details such as hardware or even nails. Masonry, for example, might exhibit carefully cut stone rather than fieldstone. Another facet of workmanship would be cases where there is a good quality 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”?

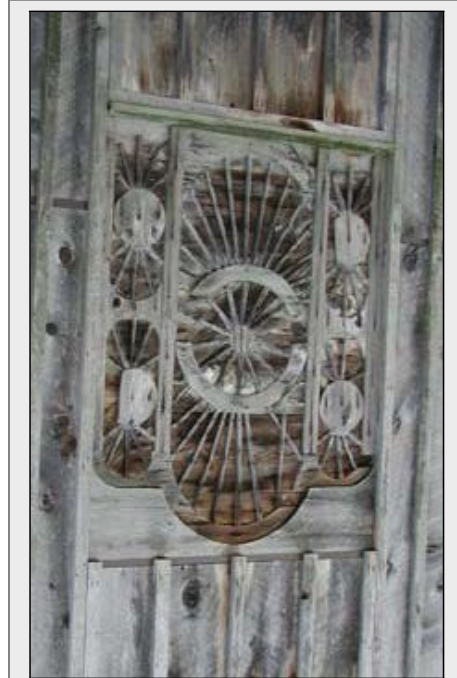
This is the most hard to define category of the three. It connotes skill in achieving desired aesthetic qualities. For example, careful proportions, sensitive siting, and originality of design are important components of aesthetic merit. Again, ornament is where aesthetic merit shows most clearly, for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

Examples

Example 1: Hodge Barn, Centre County, c. 1870.

This is a double-decker Pennsylvania barn with decorative ornament, double bankside bridges, and 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 (decorative ornament).



Ornament on Hodge Barn, Centre County



Hodge Barn, Centre County, struts under forebay

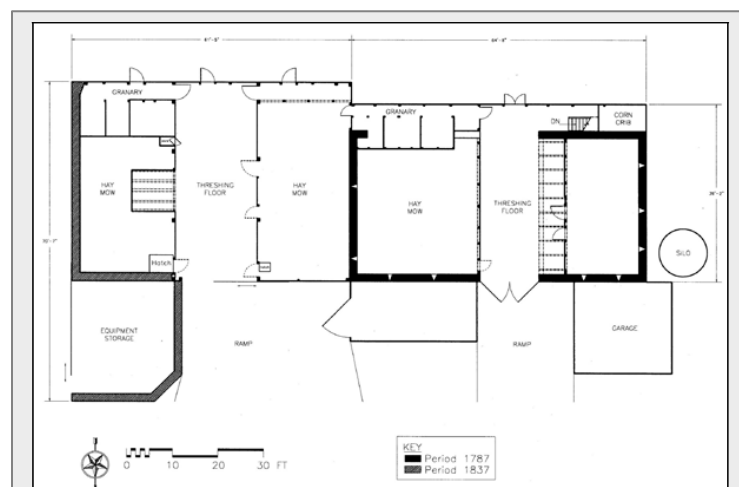


Hodge Barn, Centre County, struts under forebay

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 intact stable level. It is significant because of its design (the multi-level system was worked out to perfection), workmanship (the masonry and the timber framing) 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 significant 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.



Bertolet Barn, Oley Valley, 1787 and 1839.



Bertolet Barn, Oley Valley, Berks County, floor plan of upper level. University of Delaware Center for Historic Architecture and Design.

Example 3: the Plank Barn in Cumberland County. This brick-end barn was built in 1853. It is significant for its design, workmanship, and artistic merit. Its significant design features clearly include 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



Plank Barn, Cumberland County, 1853

motifs. 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.

Example 4. Smokehouse, Tulpehocken Manor, Lebanon County, late 18th century. Most examples of architectural significance will likely be larger buildings such as barns, but this smokehouse (in Lebanon 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 all the characteristics of its type.



Smokehouse, Tulpehocken Manor, Lebanon County, late 18th century

Example 5: Chicken house at Landis Valley Museum, Lancaster County, early twentieth century. Although in poor condition, this chicken house, located in what is now the Landis Valley Farm Museum, embodies the character-defining features of “modern” housing recommended by the extension services and growers associations for optimum management of large flocks. The massing, proportion, and fenestration, as well as the interior arrangement maximize efficient work flow and healthy stock management.



Chicken house at Landis Valley Museum, Lancaster County, early 20th century.

Example 6: Joel Dreibelbis Farm in Berks County. Properties can be significant under Criterion C for reasons other than their architecture. The farm plan with the siting of the buildings in relation to each other and to the surrounding fields make up a carefully planned complex. The spatial organization of the buildings and the land use patterns, which include a wet meadow, reflect traditional German labor and conservation ethics.



Joel Dreibelbis Farm, Berks County, farm lane, fields, outbuildings. Pennsylvania Historic Preservation Bureau file photo.

Property Types and Registration Requirements – Criterion D, Archaeology

The examples below 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.

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" (McGuire 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.

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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.”²⁹

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.”³⁰

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”³¹ 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.”³² 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.”³³ 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.

Notes

1. Ralph Watts noted that Clinton, Lycoming, Bradford, and Tioga Counties raised tobacco even before 1850. See Ralph Watts, *Rural Pennsylvania*. New York: The Macmillan Company, 1925, 166.
2. *Tobacco Production in the United States*. U.S. Census published reports for 1880, Chapter XIV, "Culture and Curing of Tobacco in Pennsylvania," 147-167. Quoted excerpt is from page 148.
3. Agricultural Extension Agent Report, Tioga County. Penn State University Special Collections, 1923, 1924, 1925, 1926.
4. John McCool, Jr. *A Study of Farm Management Practices in Growing General Farm Crops, Clinton County, Pennsylvania*. M.S. Thesis, Agricultural Economics, Pennsylvania State University, 1993, 10; D. S. Maynard, *Historical View of Clinton County*. Lock Haven, Pennsylvania: Enterprise Print, 1875, 114; Agricultural Extension County Agent Reports, Clinton County, Penn State University Special Collections, 1917, 1918, 1919, 1922, 1924, 1925, 1947, 1948, 1949; John Franklin Meginness, *History of Tioga County Pennsylvania*, Harrisburg, Pennsylvania: R. C. Brown and Co., 1897, 117.
5. U.S. Census for 1900, volume 2, Agriculture, 569, 499-508; John Franklin Meginness, ed., *History of Lycoming County, Pennsylvania*. Chicago: Brown and Runk, 1892, 427.
6. George Dunkleberger. *The Story of Snyder County From Its Earliest Times to the Present Day, Prepared by George Dunkelberger, With the Assistance of Other Members of the Snyder County Historical Society*. Selinsgrove, Pennsylvania: Snyder County Historical Society, 1948, 356-359. The diary of "Uncle Aaron Stauffer" notes that he worked in the tobacco fields regularly in the immediate post-World War II period. Enos E. Stauffer ed. *Uncle Aaron Stauffer's Diary 1947-1956. Abridged, Condensed, and Annotated by a Nephew Enos E. Stauffer of Port Treverton, PA*, Port Treverton, Pennsylvania: E.E. Stauffer, 1995. Penn State University Special Collections.
7. Franklin Menges, *Soils of Pennsylvania*. Harrisburg: W.S Ray, 1914, 472.
8. *Directory of Tioga County, Pa. with Map*. Elmira, N. Y.: G. Hanford, 1899, Penn State University Special Collections; Manuscript Census of Agriculture, Tioga County, 1880.
9. James O'Gorman. *Connecticut Valley Vernacular: The Vanishing Landscape and Architecture of the New England Tobacco Fields*. Philadelphia: University of Pennsylvania Press, 2002; *Tobacco Production in the United States*, 501-504; Patricia Cooper, "What this Country Needs is a Good Five-Cent Cigar," *Technology and Culture*, Vol. 29, No. 4, Special Issue: Labor History and the History of Technology. Oct. 1988, 779-807; Jason Hughes, *Learning to Smoke: Tobacco Use in the West*. Chicago: University of Chicago Press, 2003; Egon Corti, *A History of Smoking*. New York: Harcourt, Brace and Company, 1932, 206, 254.
10. The names appear in the agricultural extension county agent reports; *Tobacco Production in the United States*, 16, and the U.S. Patent Office annual reports.
11. *Tobacco Production in the United States*, 151.
12. *Tobacco Production in the United States*, 163.
13. In Lancaster County, tobacco raising in the mid- to late 20th century was associated

with the Old Order sects, who viewed the work as suitable for family members. However, in 19th century Lancaster County almost all farms produced tobacco and this means the main producers were not Plain Sect people, since they were a small minority of the farming population.

14. O’Gorman, *Connecticut Valley Vernacular*.
15. Robert Barakat, “Tobaccuary: A Study of Tobacco Curing Sheds in Southeastern Pennsylvania,” Ph. D Dissertation, Folklore, University of Pennsylvania, 1972.
16. U.S. Census Report for 1900, Volume II, Agriculture, 504.
17. John L. Sexton, *History of Tioga County Pennsylvania: With Illustrations, Portraits, and Sketches of Prominent Families and Individuals*. New York: W. W. Munsell, 1883, 62.
18. Edwin A Glover, *Centennial History of Knoxville, Tioga County, Pennsylvania*. Elkland, Pennsylvania: Elkland Journal Press, 1951, 61. This description suggests not only a warehouse but also a factory.
19. John L. Sexton, *History of Tioga County*, 62.
20. Tioga County Directory, 1899, Clymer Township.
21. Tobacco barns are discussed with designs illustrating location of cellar and stripping room in Pennsylvania State Board of Agriculture, *Agriculture of Pennsylvania*. Harrisburg, Pennsylvania: Lane S. Hart, 1880, 189-191.
22. O’Gorman, *Connecticut Valley Vernacular*.
23. *Tobacco Production in the United States*, 166.
24. 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 Sweitzer barn because it best suited the diversified farming of the region.
25. 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.
26. NR Bulletin 15, *How to Apply the National Register Criteria for Evaluation*, 17.
27. *Historic Farming Resources of Lancaster County*. MPDF, 1994.
28. 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).
29. “Corridor Improvement Study, Reconnaissance Survey and Historic Contexts Report, SR 0030, Section S01, East Lampeter, Leacock, Strasburg, Paradise, Salisbury, and Sadsbury Townships, Lancaster County, Pennsylvania.” 2 Volumes. Prepared by A.D. Marble Company: 2004, Volume I, page 175. The SR 30 study involved an exhaustive survey of all resources in the multi-township area of Lancaster County and preparation of contexts for agriculture, industry, and several other themes. For agriculture the study identified character-defining features for both English and Plain Sect farms.
30. “Tilling the Earth: Georgia’s Historic Agricultural Heritage, A Context.” Prepared for the Georgia Department of Natural Resources, Historic Preservation Division, by Denise P. Messick, J. W. Joseph, and Natalie P. Adams, New South Associates, Inc. 2001. http://hpd.dnr.state.ga.us/assets/documents/tilling_the_earth.pdf
31. Ibid.
32. Ibid.
33. Ibid.

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

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