
Agricultural Resources of Pennsylvania, c. 1700-1960

Adams County Fruit Belt, c. 1875-1960

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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.

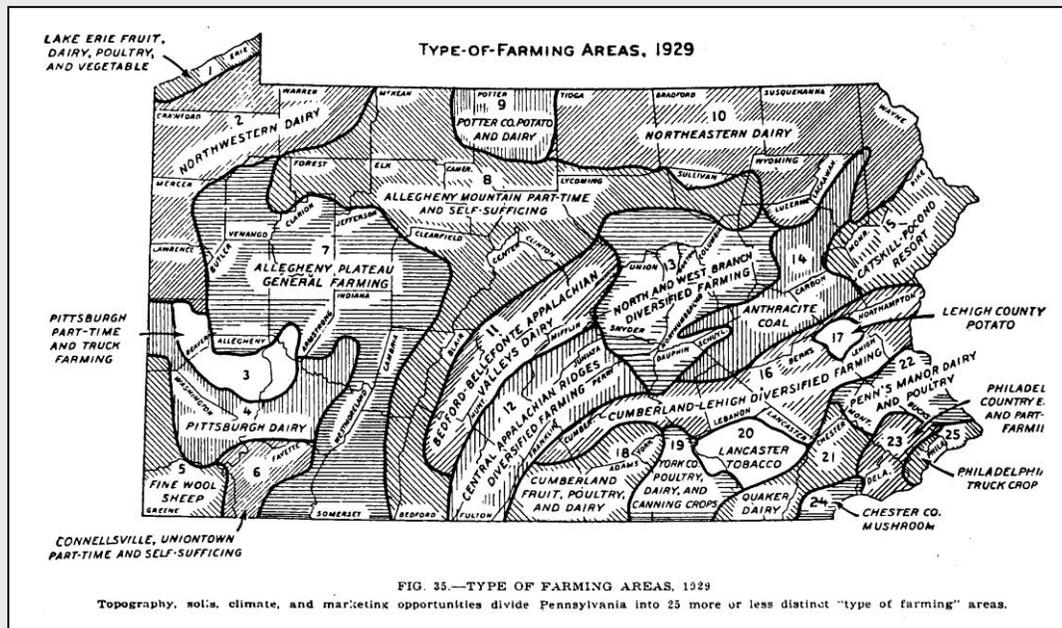
Acknowledging the historic diversity of Pennsylvania farm productions helps to

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.

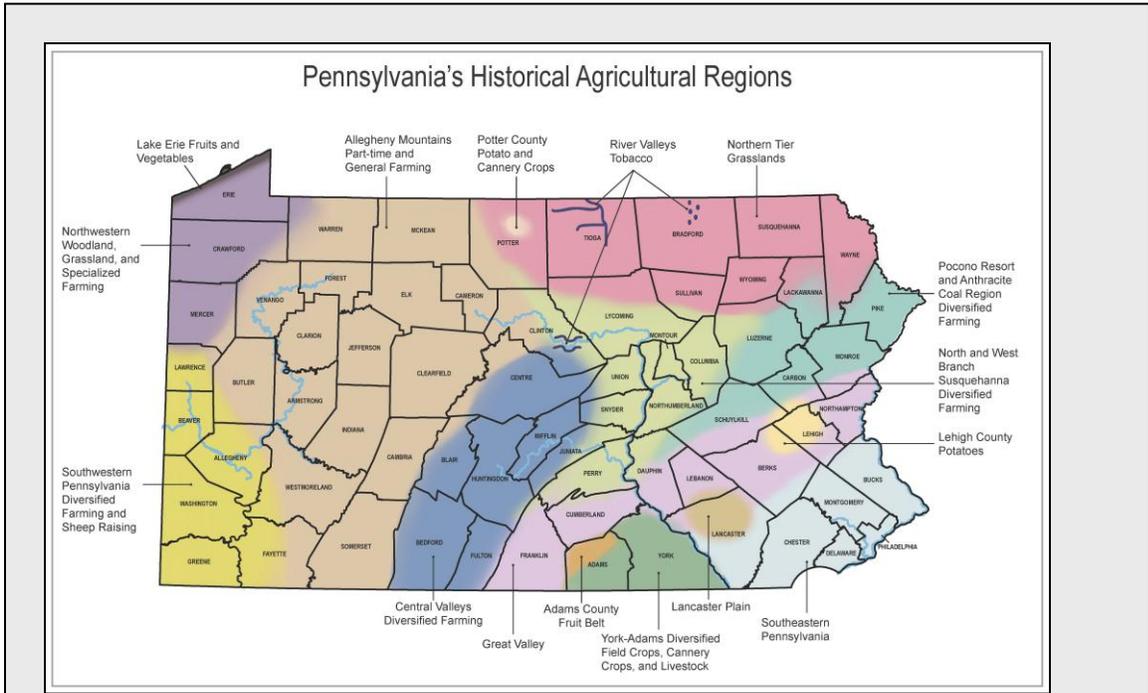
The idea of a “farming system” opens the way to a more comprehensive and accurate interpretation of the historic rural Pennsylvania landscape. For example, because the notion of a “farming system” includes land tenure and mechanization levels, we can identify a distinctive region in the heart of the 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

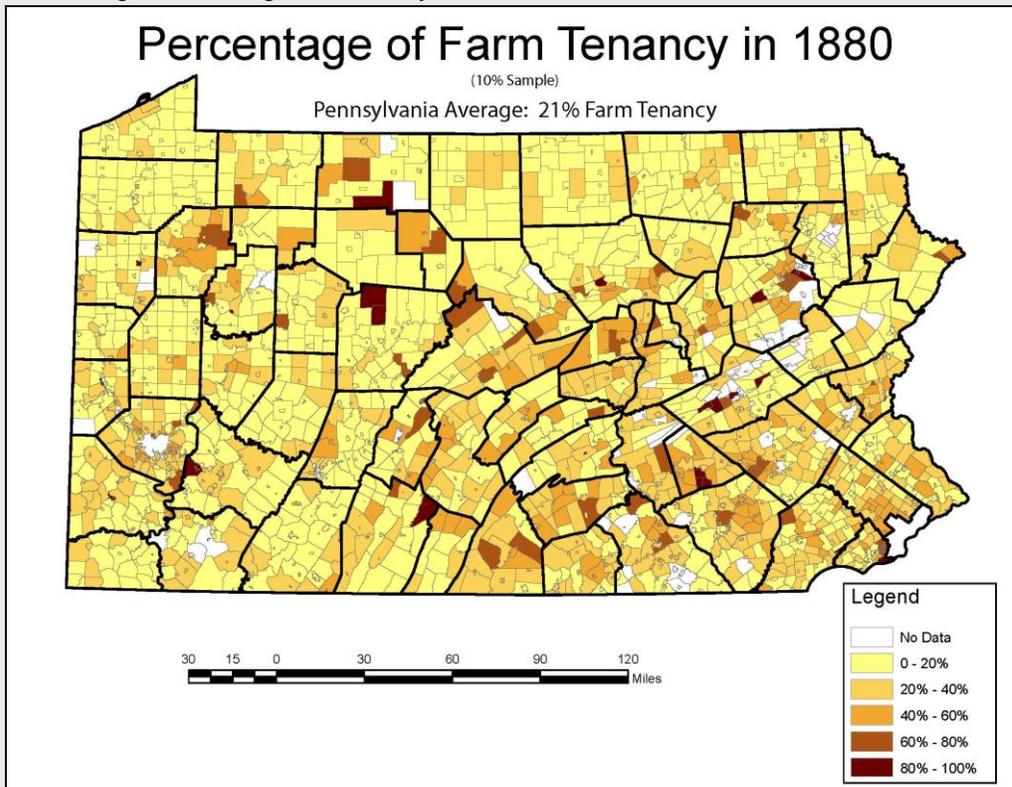
Mapping done by agricultural economists in the early 20th century identified “Types of Farming” areas based on soil types, topography, markets, climate, and production. These helped to establish clear regional boundaries to the extent that topography, climate, and soil types set basic conditions for 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.

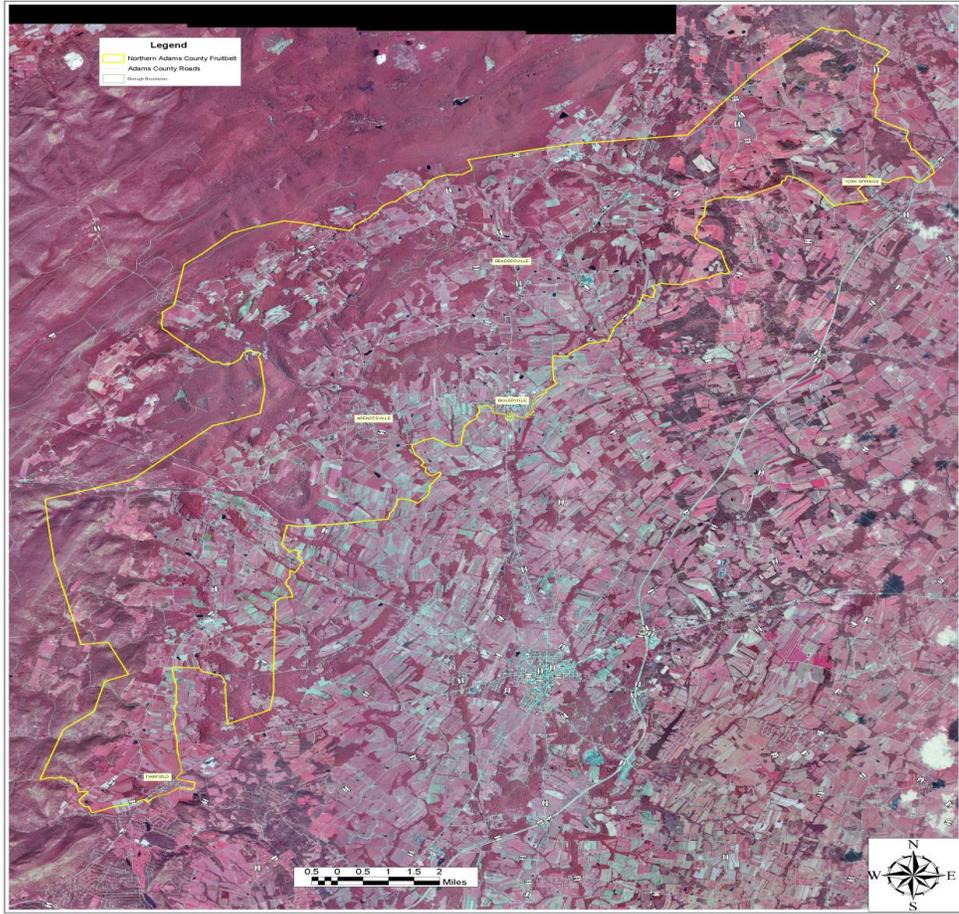
1 Emil Rauchenstein and F. P. Weaver, "Types of Farming in Pennsylvania." Pennsylvania Agricultural Experiment Station Bulletin # 305, April 1934, 39.

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

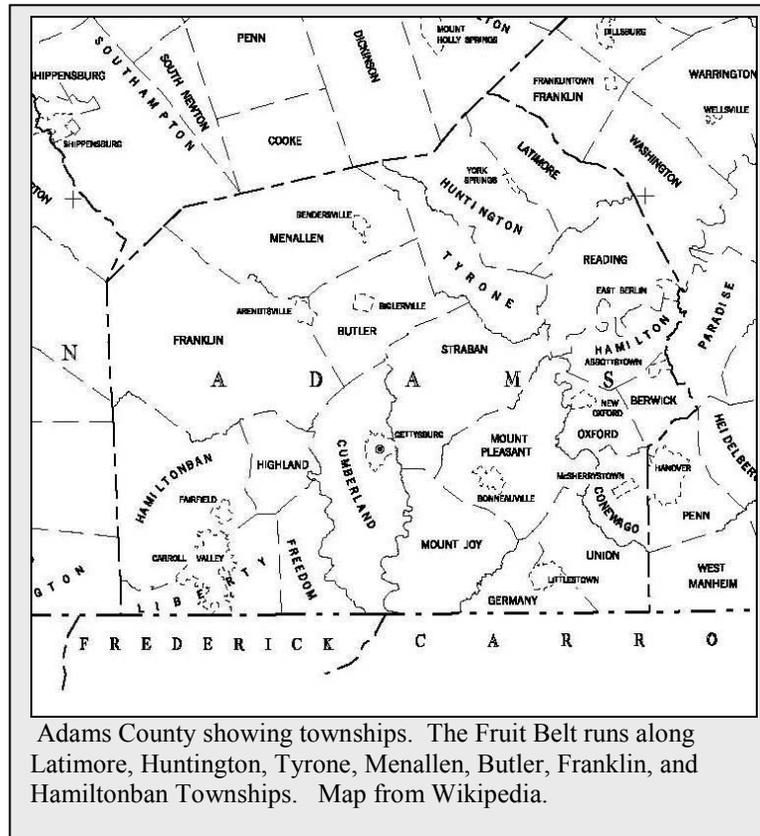
Location

The Adams County Fruit Belt consists of a 4-6 mile wide swath of land extending along the east slope of South Mountain and including major portions of Latimore, Huntington, Tyrone, Menallen, Butler, Franklin, and Hamiltonban Townships. It runs in a rough "C" shape from Latimore Township southwestward to Hamiltonban. It includes the villages of York Springs, Bendersville, Biglerville, Arendtsville, and Fairfield. Within the county, the fruit belt occupies the northern and western townships.

NORTHERN ADAMS COUNTY FRUITBELT ON MODERN AERIAL



Map courtesy of PHMC.



Climature, Soils, and Topography

The climate in the region is characterized by cold winters and hot summers. The average winter temperature is 23 degrees Fahrenheit and the average summer temperature is 73 degrees. Total annual precipitation is about 44 inches. The soils in the fruit belt are predominantly in the Penn-Klinesville-Croton; Lehigh-Neshaminy; and Highfield-Arendtsville-Rohrersville groups. The Adams County fruit belt lies along the border between the South Mountain section of the Blue Ridge province of Pennsylvania (the western portion) and the Triassic Lowland section of the Piedmont province (its eastern portion). (The Pennsylvania DCNR map calls this eastern area the “Gettysburg-Newark Lowland” section of the Piedmont Province.) South Mountain ridge top elevations are between 1,200 and 2,000 feet, but the fruit belt is on the lower eastern slopes, at 700-900 feet.¹ The sloping land is a critical feature of the Fruit Belt, because it allows for air drainage; that is, heavier cold air drains down into the valleys, sparing sensitive fruit trees from frost damage.

Historical Farming Systems

Summary:

Even by the early nineteenth century, it was known that northern and western Adams County enjoyed special conditions favorable to tree-fruit culture: sloping land (to promote cold-air drainage), suitable soils, and protected sites. However, the Adams County fruit belt itself did not develop until later. In the late nineteenth century, several factors converged to provide favorable conditions. These were new transportation links, successes by local innovators, and a plague of pests that wiped out many trees across the state, creating a competitive opportunity for growers who were willing to spray. This foundational period lasted roughly from 1875 to 1905. Thereafter the Adams County Fruit Belt developed very quickly; between 1905 and 1925 it went from well below average to the state's first-ranked county in apple production.² Once established, the county continued in a statewide leadership position throughout the period under consideration, though it slipped nationally. Major shifts in the mid-twentieth century included changing varieties and processing uses; new cultural techniques; vertical integration between growing and processing; greater specialization on farms; increased activity of the state land-grant apparatus in the industry; and the use of migrant labor.³

The Adams County fruit belt shared some basic features with Pennsylvania's Lake Erie Shore fruit belt, though the specific emphases varied. Both originated in a context of diversified farming and became more specialized over time; both relied heavily on agricultural land-grant research from very early on; both relied significantly on processing; both shifted from local labor to migrant labor. One major difference was that by the mid-twentieth century there was greater consolidation of landholdings in the Adams County fruit belt. In a still larger context, it seems that both of the Pennsylvania fruit regions can be contrasted with their counterparts in the far West. To be sure, both regions stressed a strong role for scientific expertise and large corporate organization. But the differences were just as important. Eastern enterprises were still mainly family owned, whereas in California large corporations controlled huge holdings. California's reliance on irrigation helped to consolidate the role of big capital in an even more pronounced way. Western growers were more innovative in marketing and quicker to assess shifts in consumer taste. Apple growers in the Pacific Northwest also pioneered in

innovations such as planting dwarf trees, and the resulting huge per-acre productivity put them in a very favorable competitive position, because rail freight and land values were so low that they could send apples East to outsell Eastern apples. Finally, Western growers enjoyed milder climatic conditions, and avoided the losses from weather that put Eastern growers at a disadvantage.

1875-1905: The Origins of the Adams County Fruit Belt

Introduction

In the mid-nineteenth century, Pennsylvania agriculture was generally a thriving industry. Throughout the Commonwealth, farm development had proceeded, with extensive land clearing and the rise of crop and livestock enterprises. In general, farms produced the same basic mix of crops and livestock everywhere, but distinctive regions were appearing where the proportions and emphases in the mix varied markedly. Varied cultural and social systems also contributed to shaping regionally distinctive farming regimes and landscapes. So for example, the Northern Tier region stressed grassland and home dairying, shaped by New England cultural influences, while in the Pennsylvania German Central Limestone Valleys, crop farming and associated livestock enterprises predominated. But no matter where it was located, a typical Pennsylvania farm in about 1850 had an orchard, and apples were its mainstay. Most farms would have at least several dozen trees, perhaps as many as fifty, for apples were customarily put to many uses. Apples, like all other products, might be sold, bartered, or used on the farm. Town markets and even export markets took up farm surpluses. Besides raising apples to eat fresh (and storing them for winter use), farm families made cider, dried apples, and apple butter. Fallen fruit was often fed to hogs.

By this time many communities had nurserymen to meet local demand for fruit trees. However, there is little evidence for large scale commercial apple production anywhere in the state during this period. Bucks County had the highest total value of orchard produce of any Pennsylvania county in 1860, owing probably to its location near major Atlantic Coast cities. But even there, the average annual value of all orchard products per farm was only about \$20.⁴

The lack of large scale commercial activity did not preclude intense interest in apple varieties and culture. Apple trees do not come true from seed; they are open pollinated. Most seedling trees produce inferior fruit, and this is why commercially grown nursery trees would usually have been known varieties grafted onto hardy root stock. At the same time, new varieties were constantly being found through letting seedling trees grow to bearing age and testing their fruits, or just by discovering seedlings in places like hedgerows, where they had been planted by birds.⁵ So by 1885, American pomologist (pomology is the study of fruits, particularly tree fruits) Charles Downing could list over 2,000 varieties; and in 1911 the USDA pomologist G. B. Brackett claimed that 285 of these had originated in Pennsylvania.⁶

The nineteenth century Pennsylvania apple landscape was amazingly subtle and complex. Many varieties eventually went by the wayside for good reason; but the diversity, seasons, and uses for apples then were much broader than they are today. Agricultural publications commonly carried lengthy lists of apple varieties organized by season (Summer, Autumn, Winter); by adaptation to a given geographic region; by whether they were for “family” or “market” use; and by specific characteristics, such as keeping quality, hardiness, or suitability for cider, vinegar, applejack, baking, drying, and so on.⁷ Popular nineteenth century varieties in Pennsylvania included names like Fallawater, Smith’s Cider, Early Ripe, Astrachan, Smokehouse, Ben Davis, Winesap, Maiden’s Blush, Summer Seek-No-Further, and York Imperial.⁸ Many believed that growers in a given place ought to raise only locally developed varieties, in an apple cultivator’s variation on geographic determinism.⁹

In Adams County specifically, Israel Garretson in 1886 reported raising Pound, Newtown Pippin, and Smokehouse apples.¹⁰ Doubtless Adams County orchards resembled ordinary farm plantings anywhere in the state in their number of varieties, but otherwise, Adams County was quite obscure. It ranked low in total value of orchard productions in 1850 and 1860, and in value of orchard products per farm as well. Even by 1880 there was little indication in the census for Adams County as a fruit growing region.

Beneath this unpromising surface, however, foundations for later development were being put into place. The area’s unusual potential was recognized early. In 1906 Chester J. Tyson, a fruit grower from Flora Dale, Adams County, praised the South Mountain belt

“whose spurs and foot-hills break the adjoining county into numerous valleys with their well-drained, fertile slopes” and declared that “for many years it has been known that this section was well suited to the growing of fruits, particularly apples...” Tyson dated awareness of the county’s fruit potential back at least 100 years.¹¹

A few active and innovative individuals explored the potential of fruit culture and processing in the region. By the 1860s, several nurseries had been well established in the heart of the area that would become the fruit belt. T. E. Cook of Flora Dale owned Pleasant Ridge Nursery in the early 1860s, advertising that "the Apple [orchard] numbers 100 varieties, embracing all the approved sorts." Fairmount Nurseries in Bendersville were established around 1840. In 1860, the owners, George Peters and Company, noted a "greatly increased spirit of planting..." which convinced them to expand their stock to almost 40 acres and "several hundred thousand trees at various stages of growth."¹² Fellow orchardist William Wright of Latimore Township advertised in 1863 that "any person wanting one hundred [apple] trees can have them for \$5.00." Wright claimed that he had "about 5000 apple trees of four years growth, and about the same number of five and six years growth..."¹³ By 1865 Wright had died and his "Plainfield Farm" together with "Plainfield Nurseries" were advertised for public sale. The farm was 105 acres with a full complement of buildings, and the ad noted that the "fruit crop is peculiarly valuable."¹⁴ Another estate sale in Butler Township ("about one mile north of Arendtsville") advertised 100,000 trees, including apple, peach, pear, cherry, and others.¹⁵ Thus, even if orchard production was modest in the future fruit belt, a few nurseries located there were raising and disseminating substantial numbers of young trees. In the process the nurserymen must have accumulated knowledge about how well fruit trees grew in the local conditions.

Even so, the mere presence of commercial nurseries in Adams County was not necessarily a predictor of things to come; numerous Pennsylvania communities had nurseries to supply home orchard needs. Other factors also contributed. For example, several local farmers experimented with fruit production and proactively pursued deeper knowledge of fruit culture during the latter portion of the nineteenth century. Some were active in the Pennsylvania Fruit Growers' Society by the 1870s and 1880s. Israel Garretson of Bigler Post Office gave a paper before the Society in 1881 titled "The Cultivation of Apples."¹⁶ The 1886 county history mentioned that Noah Sheely had the largest orchard in the county, with 2,000 bearing trees, "700 York Stripe, 1000 York

Imperial, 300 of all varieties -- all winter apples." Related industries were also developing; Henry C. Peters of York Springs, by trade a tinsmith, established a fruit canning business around 1855 and by 1874 was canning "\$27,000 worth of goods."¹⁷ Thus a foundation of expertise and facilities was taking shape in the late nineteenth century. With the completion of the Gettysburg and Harrisburg Rail Road in 1884, which linked the region to distant markets, the stage was set for further expansion of Adams County fruit raising. By 1886 there was a fruit packing house erected along the railroad siding in Gettysburg, the county seat.¹⁸

Manuscript census data for the crucial decades beginning in 1890 is not available. Published data suggests that in terms of sheer numbers, Adams County was still obscure when measured against the statewide context; even as late as 1900, the county ranked very low in the state in its number of bearing trees. However, the county is geographically small, so absolute numbers are a little deceptive. Moreover, it seems that the events and activities just mentioned were beginning to have a localized impact. Local tradition tells that Noah Sheely and another local orchardist, Samuel Bream, travelled together to the 1893 Chicago Exposition, and there found a market for their apples, contracting to ship 1,500 barrels to the city at \$1.50 a barrel.¹⁹ This bold move must have caught people's attention. Tree planting began in earnest around the turn of the century; these trees would not show up in many census tabulations because they were still young, i.e. non-bearing. By 1903 there was an Adams County Fruit Growers Association, and by 1906 the association was holding its annual convention in a "Fruit Growers Hall" in Bendersville. The presence of a dedicated "Fruit Growers Hall" is another intriguing indication that fruit growing was rising in importance. Association members included a number of Adams County representatives, for example Mr. and Mrs. William S. Adams of Aspers; and members of the Bream, Garretson, Hoffman, Longsdorf, Gardner, Peters, Rice, and Tyson families. These names would long remain prominent in Adams County fruit growing.²⁰ In the association's published proceedings, a list of "Total Fruit Marketed in County" showed that 35,000 barrels – 234 rail car loads -- were shipped out by rail in 1903. We may infer that the orchard industry in Adams County had achieved a strong foothold, even if it did not yet dominate in the agricultural census statistics. The association's proceedings suggest a high level of organization and sophistication. The convention featured speakers, many from outside the county, such as the President of the Agricultural Experts Association of New York City with advice on cold storage; a

commercial orchardist from West Virginia; a state official from Harrisburg who spoke about state efforts at pest control; and an orchardist from New York State discussing marketing cooperatives. The scientific and business-oriented content of these meetings diverged notably from earlier proceedings of agricultural organizations, which tended to relate more personal experiences and were occasionally inclined to emphasize the sensational and eccentric.

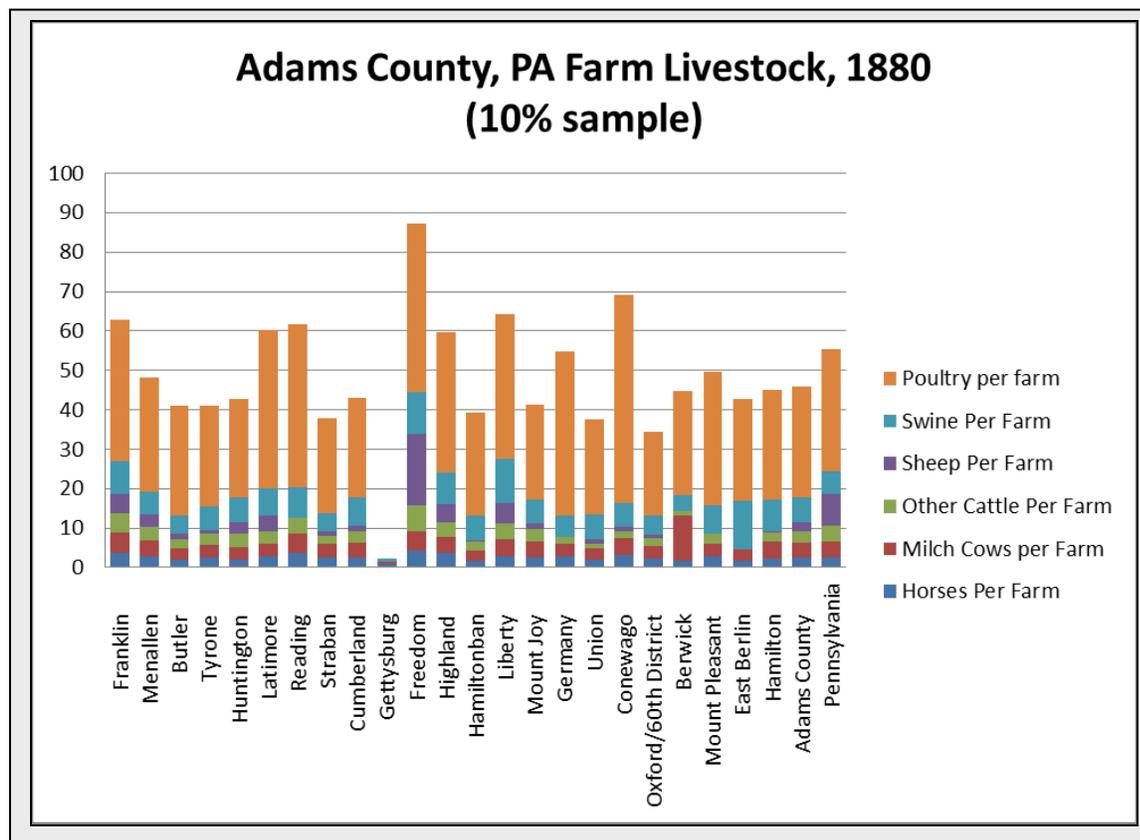
A final factor in the rise of the Adams County fruit belt was a pest. During the 1890s and early 1900s, a devastating insect plague wiped out thousands of trees in home orchards across the state and in the East more generally. This was a tiny insect dubbed the "San Jose Scale."²¹ Near panic ensued among orchardists as the scale's destructive impact became evident. Although commercial growers were sorely tested, they had strong incentive and adequate resources to invest in the expensive and dangerous spraying programs found to bring the scale at least partially under control. Not so the small farmer. Thus all across the state, home orchards began to decline. The process took a decade or two, and was most dramatic between 1900 and 1910. By the latter date, the state had lost over four million trees -- a third of all the apple trees in the entire state. Likely many survivors were weakened and less productive. The pest-induced decline added to losses from old trees which were not replaced. At the turn of the century, twenty-five Pennsylvania counties had 200,000 or more apple trees; twenty years later, only four could report that many: Franklin, Bedford, York, -- and Adams. Note that these four counties are geographically concentrated in south central Pennsylvania.

Products, 1875-1905

During the first phase in the Adams County fruit belt's history, fruit raising occurred within a context of mixed farming. A very few large orchards were planted and came into bearing by 1880; by 1905 orchards were considerably more numerous, but still usually situated on mixed farms.

The 1880 manuscript census of agriculture for Adams County lists only about two dozen farms reporting over 100 bearing apple trees, and even the largest of these orchards were on farms which also were producing hay, grains, and livestock. The charts below show that farm families in the future fruit belt raised horses, milk cows, beef cattle, a few sheep, and more swine than on an average Pennsylvania farm. Farms in the future fruit

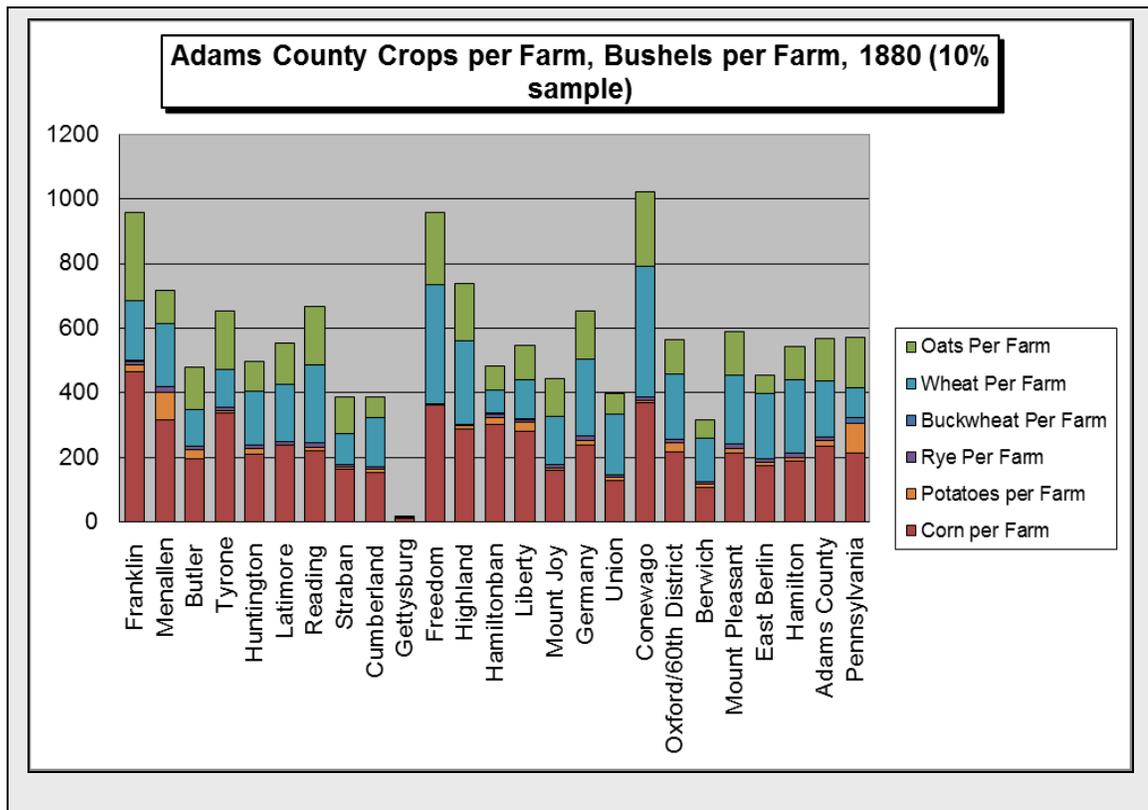
belt townships also produced substantial crops of wheat, corn, oats, and potatoes. Hay was harvested in significant quantities, and in Franklin, Menallen, and Latimore Townships farm-made butter production was high. Only Menallen Township, with 123 bearing apple trees per farm, showed any signs of future orchard potential. Where land use was concerned, Adams County in general had little woodland remaining (only about 15% of farmland was in woodlots), and pasture played a minor role, so open cropland predominated. Even after orchard planting was well underway, farms still carried on diversified husbandry. A soil survey published in 1904 noted that grain, hay, and cattle were marketed in to Baltimore, while fruit, butter, and poultry went to Philadelphia.²²



By the 1890s, plantings had begun on a broader scale. In 1906 Chester Tyson recalled that “Early in the nineties, ... there was a general awakening all along the line and several large orchards were planted. From that time on, the enthusiasm increased...” Tyson noted a slackening around the time the San Jose Scale struck. He believed that “while the

planting has continued, the timid ones have dropped out and it has been less general.” However, despite the pest infestation, planting was widespread. Tyson continued:

A census of the best known orchards of the district, taken nearly two years ago shows over 40,000 apple trees and nearly 26,000 peach. This means today not less than 50,000 apples for the district and fully 30,000 peach. For the past ten or twelve years, buyers have been coming after our fruit and we now have a cash market for our apples right at home.



Tyson gave figures for 1905 apple shipments from Adams County: 25,997 barrels in barrels; 11,228 barrels in bulk; 10,670 barrels of apples sold to the evaporator; and 2,400 barrels sent to the canning house. This was “not counting the thousands of bushels made into cider.”²³ The refrigerated rail car, patented 1887, may have helped along the trade in fresh apples.²⁴ The *Soil Survey of Adams County*, published 1904, confirmed Tyson’s observation: “Large quantities of apples are grown along the foot of South Mountain near Cashtown and from there toward Bendersville. The fruit has been of

excellent quality and gave promise of the extensive development of the industry in that section, but the scale has already obtained a strong foothold in some of the orchards, and unless this pest be combated by the use of sprays and washes the extension of the apple industry is seriously threatened.”²⁵ The Fruit Growers Association of Adams County was founded largely in response to the San Jose Scale and it contributed to a well coordinated counter attack which found some success, at least in the short term.²⁶

Several observers noted that Adams County growers relied heavily on a single variety. Chester Tyson, for example, averred in 1906 that fully 75% of the local apples were York Imperial, with the rest York Stripe, Ben Davis, Baldwin, Stark, and other minor varieties. This choice would have important implications. The York Imperial was in fact a local variety, discovered in bordering York County. The York Imperial had several virtues. Penn State horticulture professor Stevenson Fletcher praised its “dependability” and another expert observed that it yielded well at relatively low cost. Long keeping quality and shippability were also important: the York Imperial, according to one advocate, “possess[ed] marked ability to stand up in shipment even under none too favorable treatment, so that it is a favorite for export and canning.”²⁷ Few descriptions, however, lauded the York Imperial in the flavor department. Chester Tyson dissented:

He is our first love, he is our money maker, and it hurts our feelings to hear him slandered and abused. Moreover I want to say right here that the man who classes York Imperial with Ben Davis never has eaten a well-colored, fully ripened York Imperial from the hills of old Adams, nor has he tasted York Imperials cooked as our Adams county wives can cook them; baked whole, the core removed, the cavity filled with sugar and a good sized lump of butter on the top...²⁸

Yet even in defending the York, Tyson implicitly conceded that it needed help from butter and sugar. Other, more disinterested evaluators ranked York Imperial as a good processing and cooking apple, but not a high quality fruit for fresh consumption. Still, in the 1920s York Imperial apples accounted for 38% of the plantings in south central Pennsylvania.²⁹ Other popular varieties were Stayman, Baldwin, and Northern Spy.³⁰

Labor and land tenure, 1875-1905

The little information that is available for the period suggests that labor in this formative era came from family members and neighbors. On average, farms in 1880 reported hiring only about ten or twelve weeks' worth of labor. Land tenure patterns were not unusual for the period. In a few of the townships, tenancy was higher than in the state as a whole – around a third of all farms compared with 25% statewide– but in others, tenancy rates were lower. No definite correlation was found between tenancy status and fruit culture.

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Preliminary field work suggests that very few remnants of this period survive on the landscape, because the apple business was in its infancy. Surviving buildings or landscape features from this period mainly consist of outbuildings related to diversified farming of the region. We find Pennsylvania barns, Pennsylvania farmhouses, spring houses, summer kitchens, smoke houses, ice houses, root cellars, machinery sheds, and corn cribs. Today these exist more or less without their landscape context; historically there would have been extensive crop fields and smaller pastures and woodlots, but today only remnant crop fields and woodlots remain amid acres and acres of orchard. These buildings and landscape features are covered in the York-Adams narrative section for the statewide context. Relatively few fruit-related buildings firmly dated to this period were found in fieldwork, but they are discussed in the following section.

Fruit Storage 1875-1905

Available evidence suggests that in these early years, few Adams County farms produced enough apples to warrant large scale, dedicated fruit storage buildings. This is not surprising, for two reasons. First, supposedly Adams County fruit tended either to get processed, or shipped out by rail immediately following harvest.³¹ Second, the quantity of fruit was just not that large yet. Even so, there may have been some orchardists who needed cold storage facilities. These would have been simple.

One observer wrote in 1912 that “in olden days apples used to be stored in piles in the orchard, in pits in the ground, in bulk in the haymow, in bins in the cellar, and in various other ways. Nearly all of these old-fashioned ways are still practiced to some extent...”³² None of these methods would have left a lasting landscape imprint.

Another nineteenth century writer noted that "Long ago people kept even very perishable fruit by storing it away in common ice-houses. This has given way to fruit rooms, constructed much like above ground ice-houses. They may be built of any material suitable for an ice-house, with double or triple walls, doors, etc. The inside is furnished with shelves, or sometimes with drawers, and the fruit is carefully laid... not more than three layers thick." He recommended that growers fill the wall space with "pulverized charcoal or dry sawdust".³³

We should not overlook simple root cellars and caves and even spring houses as potential storage spaces for apples. One structure in Butler Township is a shed-roof structure with just one small window and a single roof vent; it may have served as an ice house or cold storage facility. No interior inspection of barns was possible during initial fieldwork, but surely barns were adapted for fruit storage; one member of the Pennsylvania State Board of Agriculture noted in 1886 that he kept his apples "... in the barn, weather-boarded on the inside tightly."³⁴ Another source noted that many people used spring houses to store fruit.³⁵



Possible ice house or fruit storage, Butler Township, Adams County, late 19th century. Site 001-BU-002.

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paper, and a layer of novelty siding. Inside they should be covered with another layer of inch boarding, a layer, or, better, two, of building paper, and finally a

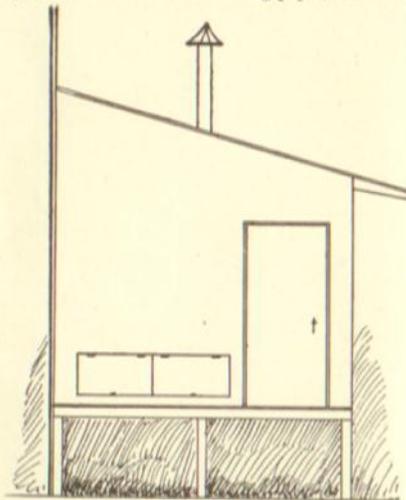


FIG. 52—LEAN-TO STORAGE HOUSE—END VIEW

good course of ceiling well laid and heavily painted. The sill should consist of one piece of 2 x 4 and one of 2 x 6 spiked together, L shaped, making a box sill. The joists should be 2 x 6.

“Lean-to Storage House,” from F. A. Waugh, *Fruit Harvesting, Storing, Marketing* (New York, 1908), 156.

Farm packing Facilities, 1875-1905

Most packing probably did not take place on the farm, but again, some farms may have had modest scaled packing facilities. Consider for example the following bank barn.



Pennsylvania barn with alterations that may indicate fruit packing, Butler Township, Adams County, c. 1875-1910. Site 001-BU-002.

The ramp is walled up to create a level approach area at the left. Large hinged doors admitted a wagon at grade to the basement level. Immediately above, windows provide ample lighting on one side. This may possibly have served as a packing area above a loading/storage area. This pattern was observed at several other sites. According to Robert Ensminger and Joseph Glass, after about 1850 many Pennsylvania barns in this area were designed with integral gable-end drive-through machinery bays at one end.³⁶ Often they had an integral corn crib in the gable wall. It seems likely that the barn depicted above began with such a design and *may* later have been adapted to fruit culture. The area where the corncrib would normally be located is tightly boarded, suggesting alteration. The windows may have lighted a granary, but it would have been an exceptionally large granary.

Other outbuildings 1875-1905

Consider also that summer kitchens could be fruit-related. Apple butter, schnitz, and possibly also cider could be made there (though spaces for apple butter making would often be out in the open).

Landscape 1875-1905

The fruit-belt landscape during this period likely consisted of patches of orchard within a diversified agricultural landscape. While the orchard area was growing, it still had not reached the stage where crop fields, meadows, woodlots, and pastures had disappeared. This would soon change.

1905-about 1940: Consolidation and leadership

The San Jose Scale ripped through Pennsylvania's farm orchards in the 1890s and early 1900s. With so many home orchards wiped out, there was an opening for commercial concerns. It is no coincidence that this was the same moment when Adams County apple production rose from relative obscurity to statewide preeminence. Adams had only 138,000 bearing apple trees in 1900, putting it very low in statewide rankings. By 1910 it had added about 30,000 trees -- not a huge number, but a gain during a time when most counties registered declines. Between 1910 and 1920 Adams vaulted to second place in the state (with 245,000 bearing apple trees in 1920), and just five years later it was first with 443,000. The plantings which resulted in these bearing-age orchards would have begun around 1905, about when an effective spray treatment for the San Jose Scale was developed.³⁷ So, the San Jose Scale episode played two crucial roles in the rise of the Adams County fruit belt: first by attacking and destroying many home orchards, and then by yielding to more or less successful control techniques, which in turn encouraged a tree-planting binge in Adams County that resulted in a full-blown fruit belt.

Products, 1905-1940

The Adams County fruit belt came into its own during this period. In 1911, Penn State professor R. L. Watts gave a talk on "Pennsylvania Horticulture" to the state Fruit Growers Association. He praised the "splendid" orchards of Adams County, now nationally famous. Watts estimated that 90 percent of the county's trees were York Imperials, although "In most recent plantations, Stayman Winesap has been planted to a considerable extent and is doing well. Grimes Golden, Jonathan, Rome Beauty and a few summer varieties have been planted to some extent in the young orchards."³⁸ By 1918,

an estimated 9,000 acres were planted in apples in Adams County.³⁹ Although competition from Western apples was a constant challenge, in general Adams County orcharding was commercially viable.⁴⁰

According to the 1924 soil survey, “about one-half of the apple orchards remain in sod at least three years out of every seven... and on the other half a clean-cultivation-and-cover-crop system is practiced,” with the most popular cover crops being clover, weeds, and legumes.⁴¹

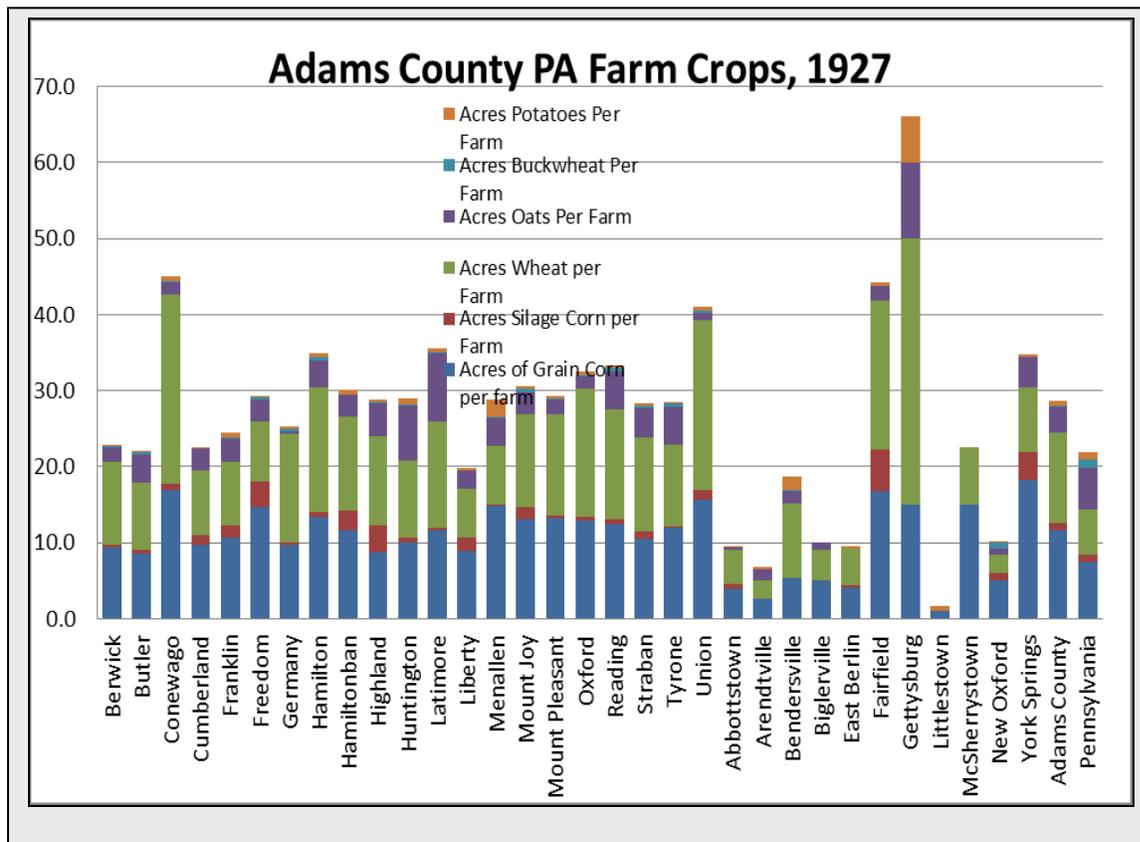
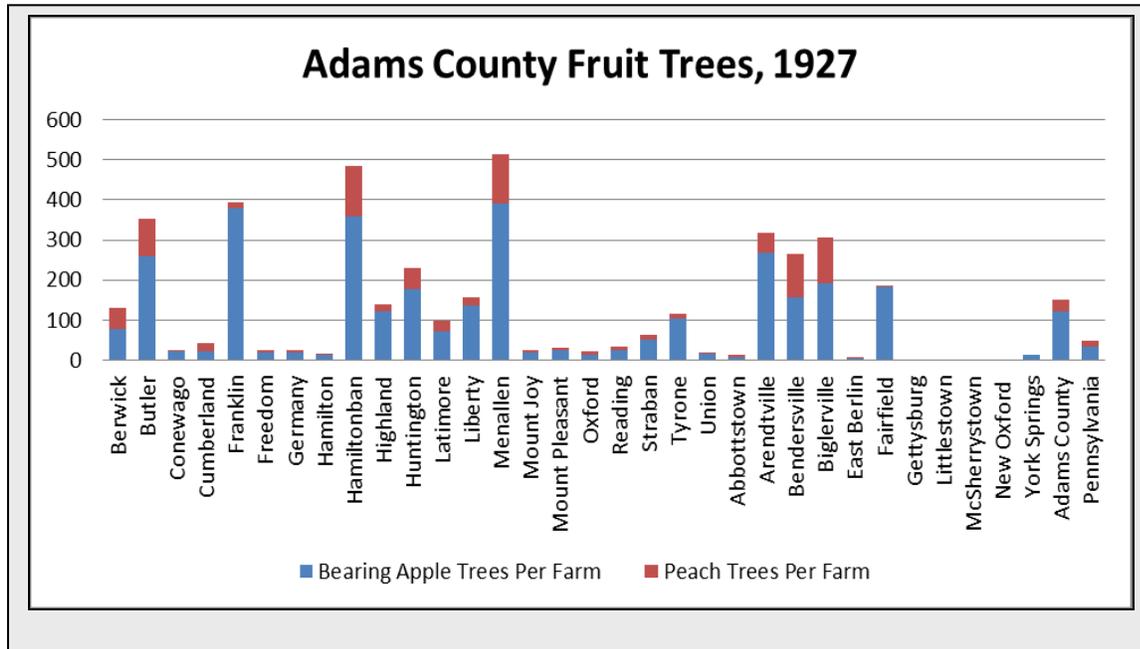
During this period, US analysts divided apple producing areas generally into two basic groups. Local-market growers (for example in the anthracite regions of Pennsylvania) were situated near their markets; they raised fruit to be sold fresh, locally. They needed storage and transport facilities more than they required large packing houses. Sometimes, especially as roads improved and auto mobility brought consumers into the countryside, they needed retailing facilities. They focused on varieties that would keep well over a long period, and also on ones that looked and tasted good for eating fresh. In the “carlot” regions, by contrast, growers tended to be too far away from population centers to cater to large local markets, so they aimed at distant markets for fresh fruit on the one hand, and at processing, on the other. They needed packing facilities and shippable varieties so their wares would be able to reach faraway places in good shape. They also required access to facilities for canning, drying, making cider or juice, and so forth. Storage was less of an imperative, because they did not hold their apples for gradual sale over a long winter season like the fresh-market growers did. Adams County was in this second category. A substantial portion of Adams County apples were shipped out by rail, and export to Europe was one major destination. The remainder was shipped in bulk to be evaporated, canned, or made into cider, vinegar, or apple butter.⁴² Only a small amount was marketed fresh locally or regionally.

An informative report in the 1913 report of the Fruit Growers Association of Adams County explained “What Becomes of Adams County Apples.”⁴³ It asked “Have you noticed,... what a decrease there has been in bulk shipments with a corresponding increase in shipments of manufactured fruit?” The anonymous author denied that this meant an increase in culls; but rather that “greater care in sorting is now almost universal” so that “No. 1 fruit” and “seconds” were no longer in competition. Good-quality carlots went to fourteen states all over the US, and to seven foreign countries.

Canned fruit records showed “that many other states competed for an opportunity to eat Adams County canned apples,” all over the US.

Processing occurred nearby. A processing plant was built in Biglerville; after a shaky start, it was acquired by C. H. Musselman and his wife in 1907 and rapidly became a major processor in the region, augmented by plants in nearby Gardners and in West Virginia. Musselman also began to buy up farms so he could control his supplies – an early move toward integration. A cannery established in Aspers in 1919 eventually became part of the Mott corporate group. The Knouse cannery was started in Arendtsville in 1925 and by the late 20th century was claimed as the “world’s largest apple processing firm.” Packing houses were built in the early 1900s around the region; Rice Fruit Company built one in Biglerville in 1909.⁴⁴ A 1938 industrial directory listed canning and preserving plants in Aspers, Gettysburg, Littlestown, Biglerville, and Ortanna.⁴⁵

Apple orchards typically still took up one portion of a more diversified farm operation in Adams County. A 1922 Penn State study surveyed several hundred fruit farms in Adams County. On the typical surveyed farm, about 45 acres of the 135 total was in orchards. Ancillary enterprises included livestock and farm crops, which in the authors’ opinion “tends to create a better balanced farm business...” Specifically, livestock tended to be hogs and beef cattle. The hogs could be pastured in the orchard, thus helping to curb insect pests and fruit diseases. Poultry also was said to be increasingly important, perhaps partly for pest-control purposes and possibly because it fit within the seasonal labor patterns. Cannery crops were also frequently mentioned in the county agent reports beginning around 1930. Nonetheless a measure of increasing specialization appeared in a telling statistic: 58% of these farms’ income came from fruit.⁴⁶ Technically this made the region a specialized farming region, since the criterion was that at least 40% of income originate with a single activity. Orchard land was worth “several hundred dollars an acre” and general farm land 100 plus. Farm crops like corn, oats, and hay were mainly fed on the farm, while wheat was a cash crop. Potatoes did not fit well into the fruit belt regimen because their seasonal demands conflicted with the fruit harvest. The agricultural extension agent reports for the 1920s and 1930s frequently mention other cannery crops in the fruit belt townships, particularly tomatoes.



These charts show that townships with the most fruit also had diversified farms. Of course, the two types could have been completely separated, but contemporary observers' comments suggest that most orcharding took place on diversified farms.

Labor and Land tenure, 1905-1940

Land tenure figures were still consistent with statewide averages in this period. Seldom were more than a quarter of farms tenanted. The orchard owner billed as the county's largest only controlled 800 acres.⁴⁷

Twentieth-century sources offer contrasting assessments of labor availability, but they agree that harvest time labor was supplied by local workers. Adams County had no large population centers and no public transportation network to recruit and convey workers, so perforce growers had to rely on family and community sources. A 1918 Penn State thesis by George W. Cochran stated that most commercial apple growers got "harvest labor from those who make a living from their own little farm and depending on the apple harvesting for their cash." During the First World War, though, Cochran noted, the growers had to "go farther into the country for the labor and to use women to do the work that had been formerly done by men."⁴⁸ The Agricultural Extension Agent reports for these years note the extensive use of high school students. The 1922 Penn State Study noted that there was a locally abundant and cheap supply of labor. Photos in the collection of the National Apple Museum in Biglerville show men photographed in the orchards picking, packing, and spraying. All of the men are identified by name in a hand written photo label, so we can infer that they were local people.⁴⁹ The authors of the 1924 soil survey maintained that that labor "is not very plentiful," but they confirmed where it came from: "...most of it being supplied by native-born whites, though some colored labor is found, especially near the Maryland border."⁵⁰ Several sources note that family members supplied labor. For example, the authors of the 1922 Penn State study wrote that wives and daughters frequently "helped" to pick and pack. It should be noted that gender conventions often assigned secondary words like "helped" to women's labor when in reality their contributions were often central. It seems that the gender balance in the Adams district differed from that in the Erie fruit belt, where the "grape girls" dominated.

Farm mechanization proceeded in Adams County at a modest pace. According to the 1924 soil survey, tractors "are becoming popular in the fruit-growing sections." The

author remarked that “the orchard men have modern power sprayers.”⁵¹ However, the census figures suggest that mechanization was concentrated in a narrow range of fruit-related implements, since nowhere in the fruit belt did even a third of the farms have tractors. The agricultural extension agent, who noted that most of the tractors in the county were concentrated in the fruit belt, would have had more frequent contact with more extensively equipped growers, and perhaps that skewed his impressions.⁵²

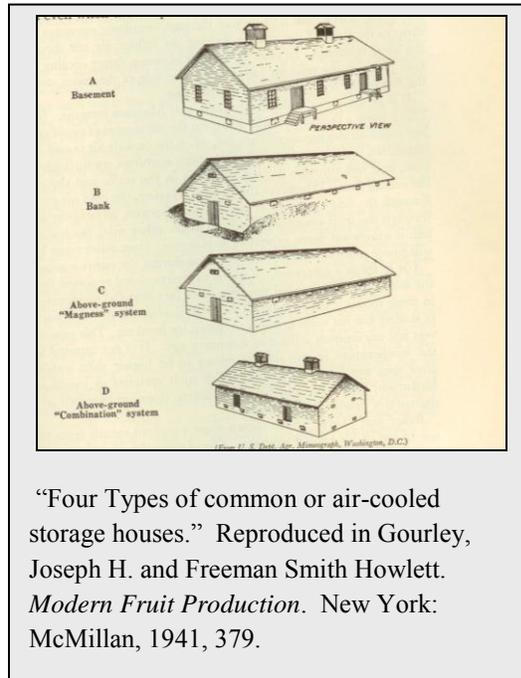
Buildings and Landscapes, 1905-1940

The focus here is on spaces that might be on farms. Immense processing plants (canneries, evaporators, vinegar making facilities, etc.), which could also include storage and packing, were in full blast in Biglerville, Aspers, Gardners, Peach Glen, and other nearby villages.⁵³ Centralized storage and processing reduced the need for apple storage, packing, or processing right on individual farms.⁵⁴

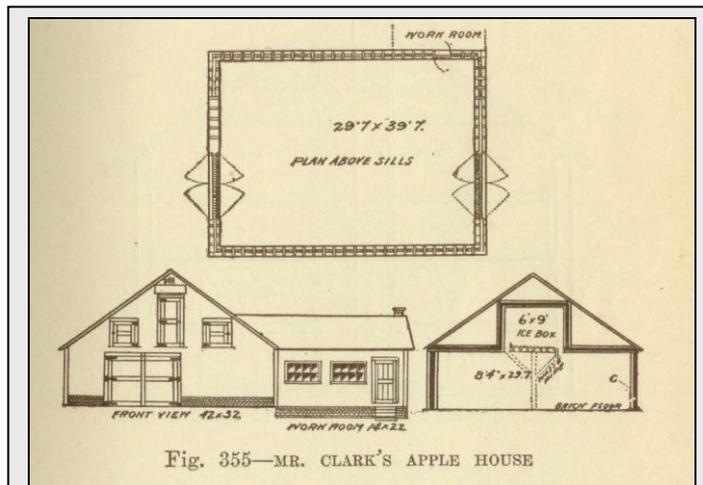
Fruit Storage Building, 1905-1940

However, in an area as prolific as Adams County, some growers did sell to local markets and thus could benefit from cold storage that would allow them to hold apples into the winter months when prices would rise. According to former agricultural extension agent Thomas Piper, some Adams County apple producers built farm cold storage. And in fact, at least two farm cold storage facilities from this period were identified in field work. Following is a discussion of early 20th century farm cold storage buildings in general, then a description of the examples found in the field.

During this period, mechanical refrigeration was not widely available for individual farms in the fruit belt, so “common” or air-cooled storage prevailed. Fruit storage



sometimes was built into the ground to take advantage of constant temperatures. In “common” storage, cool air was introduced by various systems involving vents and cool air, the air either coming from outside or from an ice room within the building. If ice was used, it was usually located in a chamber above the fruit storage space so as to take advantage of the heavier cold air’s tendency to sink. The “Cope” system for fruit storage houses (invented by an Ohioan of that name in 1869) employed ground-level openings to admit cool air, forcing out the warmer air inside. The “Magness” system put ventilation openings under the eaves instead. “Combination” systems had openings top and bottom, and often also used air shafts to help promote even temperatures. Ventilation could also be facilitated by roof-ridge ventilators. Frame structures generally were insulated with an air space, charcoal, or sawdust, and tightly sealed. Bank barns could be remodeled for with an air space, charcoal, or sawdust, and tightly sealed. Bank barns could be remodeled for cold storage.⁵⁵ If apples were to be stored into the winter months, a stove might be needed for heating.



"Mr. Clark's Apple House." *From Barn Plans and Outbuildings* (New York, 1881), 363. Note the amply lighted work room and the ice box above the storage room, to take advantage of heavier cold air.

According to Mr. John Peters, who now owns the property, this cold storage was built in the 1930s by the then owner of the property, Mrs. Eva Pape. She sold fresh apples to local markets. In the combined packing and cold storage facility depicted above, the lower portion in each section was a protected unit in the basement which had insulated doors. The two areas combined had a capacity of 5,000 bushels.



Farm cold storage, Huntington Township, Adams County, early 20th century. Site 001-HU-003. Note the characteristic features of "common" cold storage: roof ridge ventilators, banked construction, thick walls of good insulating material (in this case, stone masonry), and sliding doors at grade for easy loading.



Common cold storage (at left, portion with roof ridge ventilators, blank wall, and loading doors), Huntington Township, Adams County, c. 1930. Site 001-HU-001.

Machine shed 1905-1940

In 1922, of some 700 Pennsylvania orchard operations surveyed, about 500 had a spray rig.⁵⁶ These machines were likely housed in barns that had been built prior to when fruit growing became widespread.



Pennsylvania barn with machinery bay, Huntington Township, Adams County, late 19th century. Site 001-HU-002.



Machine Shed with integral corn crib, Franklin Township, Adams County, c. 1920-40. Site 001-FR-001.

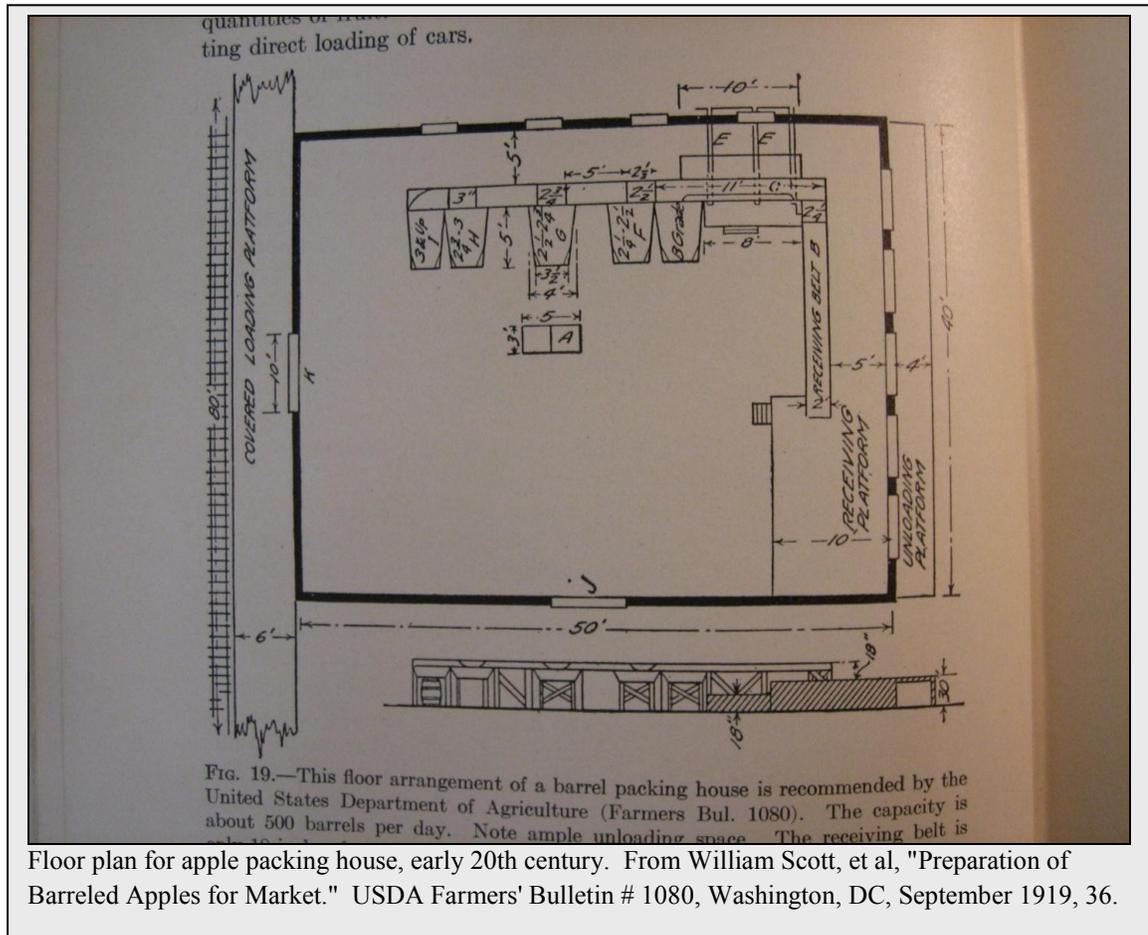
Packing houses 1905-1940

The 1922 Penn State study noted that in Adams County, there were large orchards, with few varieties, harvested over a short period and sent either to market or to distant storage. Packing was therefore necessary and, they noted, “the larger growers have found it necessary to build special packing houses.” In 1924, a correspondent to the Pennsylvania Fruit Growers' Society, H. G. Baugher, described a central packing house in Adams County, patronized by just 3 members. The apples were picked in bushel baskets and hauled to the packing house on spring wagons or trucks. The house was 40 by 70 feet with a platform the length of the building, which Baugher suggested was about 20 feet wide. Each of the three members was allotted 22 feet of platform to use. Inside, apples were sized, then packed in barrels. Buyers came to the packing house. One season, Baugher reported, this cooperative alone packed 50 carloads. Stevenson Fletcher's Pennsylvania State College “Outline of Lectures in Commercial Fruit Growing,” noted that most growers packed in the “open orchard” but that some moved apples to a shed within one mile of the orchard.⁵⁷

Diagnostic features of packing houses are several. Good lighting was important, so packing houses tended to have ample windows and sometimes skylights or monitor-style windows in the roof. Platforms for delivering fruit from wagons were a second important feature. Many packing houses had platforms extending across one, and sometimes two sides. These would make it possible to move loose apples from the wagon into the packing house, and then to move packed apples onto a rail siding. So, the interior arrangement in published plans often showed a clear sequentially organized space, where unpacked fruit space was inside the door, grading and packing tables beyond it, and the railway platform on the opposite side to the entry door, or sometimes at right angles.



Penn State Fruit Packing House, University Park, Centre County, c 1930. Note the characteristic features: the platform with raised, sliding doors; ample interior lighting; grade-level basement entrance.



This USDA recommended plan illustrated here shows how apples were received (at lower right), sorted, then unloaded at left onto railroad siding. Other variations on this plan were published in trade journals and textbooks.⁵⁸

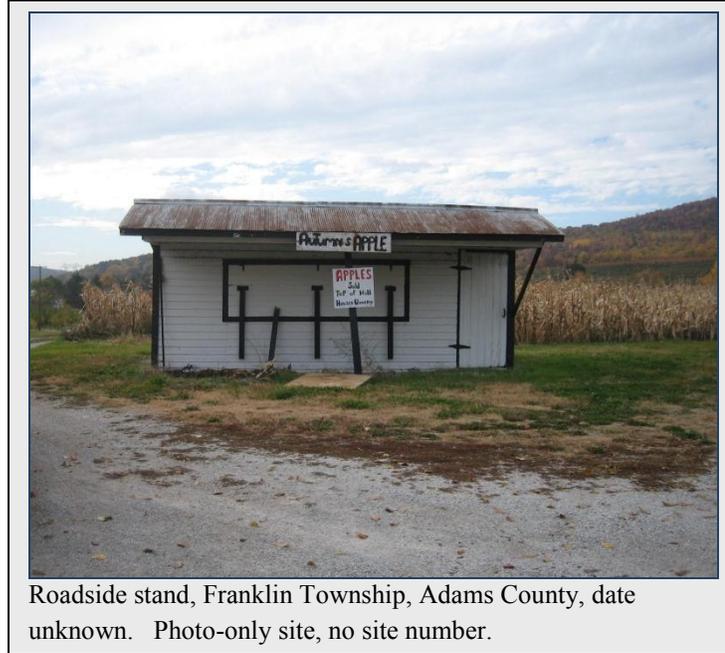


Apple packing house, Huntington Township, Adams County, c. 1930. Site 001-HU-001.

This packing house was built when Mrs. Eva Pape owned the property, sometime in the 1930s. It contained facilities for packing, as denoted by the well lighted areas. The sliding doors in the second level on the gable end led to spaces where baskets were stored. The porches were probably added later.

Roadside stand, 1905-1940

A few growers in Adams County began to market right at the farm gate, erecting roadside stands. C. J. Tyson of Gardners, Adams County, reported to the Pennsylvania Fruit Growers' Society in 1932 that he had begun in 1929, almost by accident. He explained that his orchard was on a “fairly well travelled concrete road between Carlisle and Gettysburg,” 30 miles from Harrisburg. The orchard bordered the road on both sides and passing motorists would often stop and ask for some apples. Tyson set up a stand, quickly learning to allow room for display and parking. He declared that it was important to give an “impression of volume – a fundamental in good merchandising...” He did not approve of Sunday sales, but conceded because “retail sales would not amount to much if



Roadside stand, Franklin Township, Adams County, date unknown. Photo-only site, no site number.

we refused.” Tyson’s stand sold fresh fruit, sweet cider, and apple butter. Tyson was not populations.

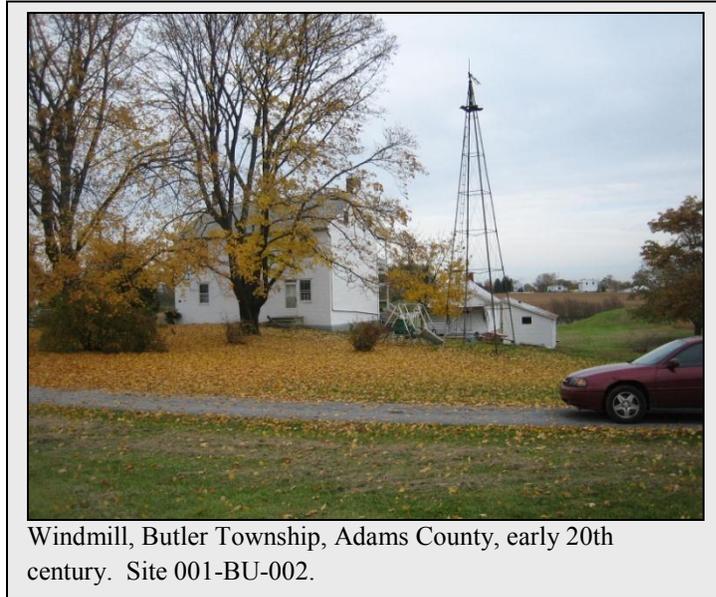
Structures, 1905-1940

Windmills were documented at several sites. Their dates are uncertain, but windmills were widely used and manufactured by the early twentieth century. They pumped water for household use, livestock, and probably for mixing sprays.

Landscape 1905-1940

Orchards began to take up significant land area by this time and the “fruit belt” landscape can be said to have begun to develop in earnest. Large orchard plots can be seen in aerials of the late 1930s. It should be noted that orchards did not consist entirely of apples, and indeed they still do not. Peaches were probably the second most popular tree fruit, and cherries, nectarines, plums, and pears were also grown. Some of these served as fillers – in other words, shorter-lived, smaller trees were interplanted between immature apple trees, so that revenue could be generated while the apples were still not bearing. When the apples began to bear, the filler trees were removed. The USDA

reported that recommended planting distances had actually increased, as they believed crowding resulted even from a 30 foot planting distance. (Remember that the dwarfing rootstock had not yet come into popularity.) Another landscape feature produced by early 20th century apple orcharding practice was created by pruning methods: in the beginning, trees were pruned to let a wagon drive through; later, they were pruned to a vase shape.⁵⁹



It is important to note that the aerials also show a highly varied patchwork in which orchards, though quite visible, were but one element. Bright white colors and flat textures mark out crop fields, and woodlots stand out clearly as well. This evidence merely confirms what the documentary sources tell: that even as late as 1940 the "fruit belt" was more like a lacy creation than a solid leather one.



This 1937 aerial of Clines Church Road near Gardners clearly shows orchards. Bright colored areas and areas lacking the regular geometric effect produced by fruit trees are probably crop fields. The village in the lower left is Bendersville. Penn Pilot.



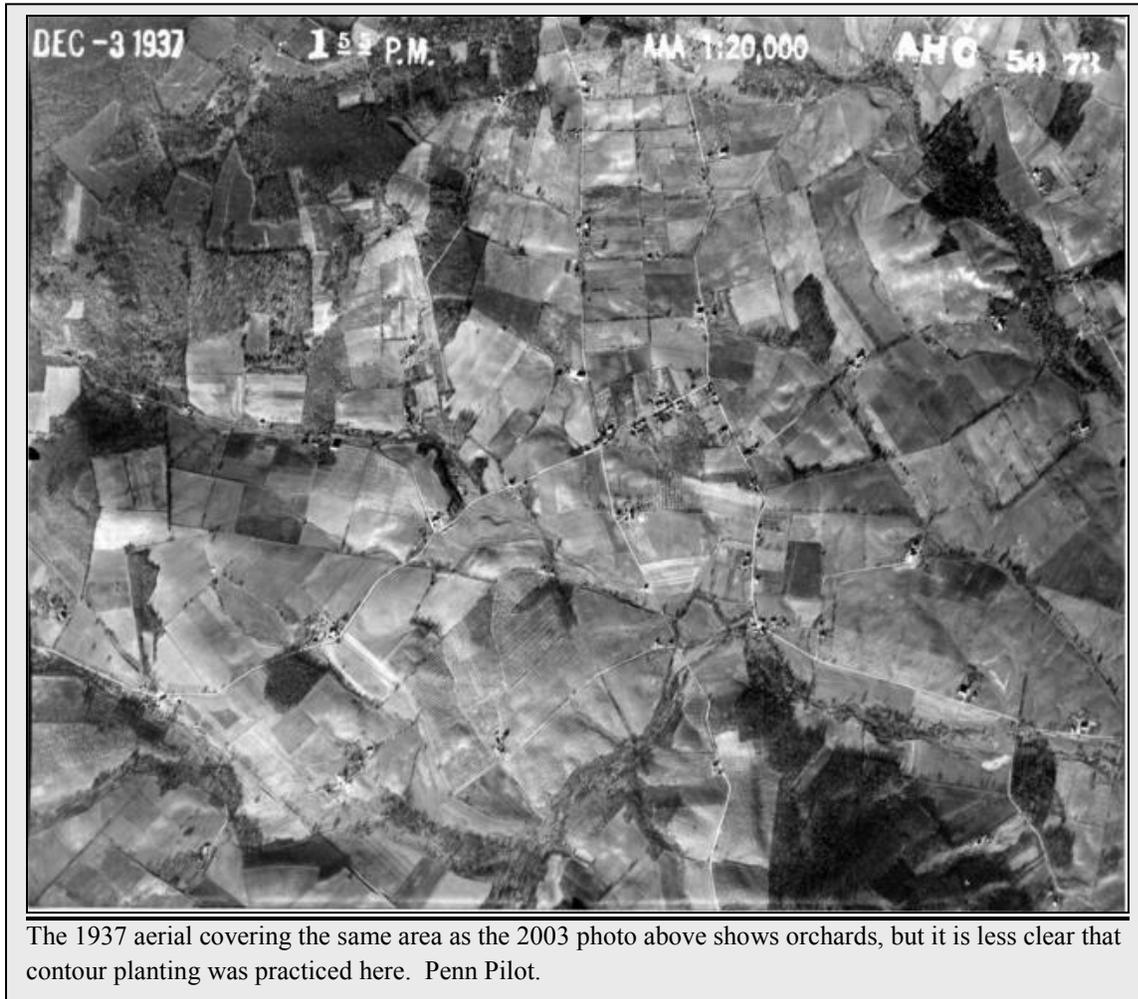
"Young Orchard." Pennsylvania State Archives, Record Group 1 (Department of Agriculture), Series 7 (Photographic Negatives), Negative # 4971. No date. This image clearly shows an interplanted orchard with younger trees occupying the space between rows.

Contour Planting 1905-1940

A. E. Cooper, extension agronomist, reported in 1939 on “Recent Developments of Contour Orchard Plantings in Pennsylvania,” in which he claimed that fruit growers were “rapidly adopting” this practice. He included a photo of an Adams County orchard.⁶⁰ Quite a few instances of contour planting were found in field study, though they must all date well after 1939. It was not possible to definitely verify any contour orchard plantings in historic aerials.



C. 2003 aerial photo showing contour planted orchard, Latimore Township, Adams County. Adams County Public GIS Site. 2003.



The 1937 aerial covering the same area as the 2003 photo above shows orchards, but it is less clear that contour planting was practiced here. Penn Pilot.

Though there may not have been a great deal of contour planting that survives from the period, other landscape features have continued down to the present. Some treelines remain; some field patterns and boundaries appear to be intact. In many cases, the precise shape and extent of 1930s and present-day orchards can be traced. See for example the following two aerials, one from about 2003 and the other from the 1930s. The orchard size and shape have remained. Even the location of some buildings is the same. Woodlots also appear to have altered little.



Wood cover has also been quite consistent over the years; this probably illustrates the crucial role of soils in fruit belt culture because orchardists would leave soils inappropriate for fruit trees in woodlot. Property boundaries, too, have imposed continuity on the landscape. Even though many subdivisions have been created, other parcels have remained intact and so shape the disposition of orchard plantings, creating clearly visible boundaries.

1940-1960—Specialization and Vertical Integration

During this period,

profound changes took place in how Americans grew, obtained, and consumed their food. Agriculture mechanized and became much more capital intensive and petroleum dependent. Large regional grocery chain stores challenged independent

specialized retailers. By 1950, according to one apple-industry analyst, supermarkets sold 75% of food nationwide. The analyst believed that apple growers must sit up and take note. He offered a colorful portrait featuring “Mrs. Consumer”:

[she shops at]...beautiful -- food palaces; brilliant with light; designed and decorated for attraction, sanitation and temptation. And the Customer waits on herself. No clerks to slip the half-rotten apple into her package; or to call her attention to apples. Your apples simply sit there, surrounded by other apples and by from 40 to 80 other fresh fruits and vegetables, most of them beautifully trimmed and packed and laid out for eye appeal.⁶¹

The modern “food system” was taking shape, exploiting cheap petroleum, capital consolidation, mass production techniques, and modern marketing to completely transform the way food was grown, packaged, and sold to American consumers.

These large scale changes had a significant impact on the US apple industry. Challenges arose when hitherto exotic fruits like oranges, bananas, and grapefruit became cheaply available, year-round. “We may as well face the fact,” remarked one industry analyst, “that people do not have to eat apples anymore.”⁶² Since Americans’ overall fresh fruit and vegetable consumption was rising, this wasn’t a complete disaster for apple growers, but it did cut into their profits to some extent. Within the apple industry, competition between the eastern and western US intensified.⁶³ Eastern apple growers faced mounting challenges from apples grown in the Pacific Northwest. Thanks to their lower costs, innovative cultivation methods (such as dwarfing rootstock), shrewd assessment of consumer preferences, aggressive marketing, inexpensive labor, better weather, and cheap, essentially government-subsidized transportation, western growers enjoyed an advantage.⁶⁴ Adams County’s John Peters put the problem forcefully: “Did you ever try to out-sell Washington apples in Seattle, Tacoma or Spokane. They are selling theirs in Allentown, Reading, Biglerville and York.”⁶⁵

These factors together contributed to some very important shifts that went right to the “core” (so to speak) of the US apple industry. The number of commercially grown apple varieties declined drastically. The type of apples changed, with so-called “dessert” apples for fresh eating coming to the fore, eclipsing the older range which featured many varied uses. The seasonality of the actual apple growing shrank, from an extended three-season range to a much greater emphasis on winter apples. At the same time, improved

storage using mechanical cooling and controlled atmosphere techniques pushed apple longevity far into the winter and beyond. Naturally long-keeping apple varieties with otherwise inferior qualities, such as the Ben Davis, fell out of favor. In their place rose the McIntosh, Delicious, and Jonathan. “Eye appeal” became more important and these newer varieties possessed it.⁶⁶

Methods for orchard culture also changed significantly. After the World War II, petroleum based fertilizers, herbicides, and pesticides became available, and were energetically promoted by the land-grant system, often working closely with rising agribusinesses. Almost immediately pests and diseases developed resistance, necessitating new remedies every few years and accelerating a spiral of dependency.⁶⁷ Still, per-acre and per-tree productivity improved significantly, as did fruit quality. The American consumer could, and did, now expect an unblemished, bruise free apple.⁶⁸ The costs -- in diminished biological diversity, environmental quality, local self sufficiency, and possibly health-- have only recently come to be debated.

These forces were felt in Adams County, and their impact depended at least partly on the historical patterns that had prevailed there. In Adams County, as much as half the crop went to processing, so the competitive pressures were perhaps not as intense as in areas that depended more heavily on fresh market apples.⁶⁹ Nevertheless Adams growers did ship large amounts of fresh apples, so they faced looming adjustments. As did growers elsewhere, Adams County growers turned to petroleum based sprays and fertilizers to increase productivity and control pests. They specialized increasingly, moving away from diversified farming and even from diversified fruit culture.⁷⁰ They aggressively pursued cultural practices that would increase production. For example, they eliminated “obsolete varieties,” used a “filler plan,” and raised feed crops between rows of immature trees, feeding the crops to steers. Between 1954 and 1959 on a statewide level, the number of orchards dropped significantly, but total acreage did not decline as much. Though there were more orchards elsewhere, those in Adams County were larger.⁷¹

The processing industry grew more sophisticated. Adams County became a national leader. During World War II, for example, M. E. Knouse of Arendtsville wrote about “What apple growers should know about grades and varieties of apples required by the By-Products industries.” Given the war, he argued, it was important to produce the maximum capacity. Nevertheless, he maintained that long-range planning was also necessary. Knouse gave an overview of processing: overall, he noted, about twenty

percent of apples were processed, but the percentage was much higher in the mid Atlantic. Of these, half was the lowest grade apples, destined for vinegar. Others were made into dried apples, brandy, canned apples, and sauce. Canned apples were all one variety, but sauce was blended. Knouse believed that the York Imperial and Stayman were superior for processing.⁷² During this period, local processors such as Musselman, Motts, and Rice became important players on a national level, producing canned apples for pies, apple juice, vinegar, cider, and applesauce, among other items. Clearly the local historical experience in processing was being brought to bear in a new economic climate.

Adams County growers raised fruit for these large processors, as they had before. And, they raised the newer eating apples for the fresh market. The mode of transport changed, from rail to truck. Roadside sales continued to have a place here, perhaps a somewhat more important one as automobility increased. Proximity to the famous Gettysburg battlefield brought tourists to the area and the fruit belt enjoyed incidental promotion as a secondary tourist destination.

Apples command the most attention in historical retrospect, but peaches and cherries were also important in the Adams County fruit belt. In 1953, for example, the Adams fruitbelt and neighboring Franklin County accounted for over 90 percent of sour cherry trees in the state.⁷³

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Where labor was concerned, major changes took place during this period, beginning most decisively with World War II. As everywhere, during the war producers and processors alike bent their energies to maximum effort. Labor was a burning problem. Adams County growers addressed the need with varied strategies. Nearby conscientious objector camps provided some pickers, as did prisoners of war. These sources command historians' attention, but probably the biggest numbers were supplied by women and high school students. The state government, selective service boards, farm bureau, and school districts worked together to get workers into the orchards at the most critical moments.⁷⁴ It was at this moment that migrant labor appeared in the Adams County fruit belt. To be sure, during the Depression a few people seeking work had come into the area from elsewhere. According to local histories, they were mostly single men from nearby urban areas, housed as boarders with local residents in rooming houses.⁷⁵ But it was only with World War II and the transformations following on it that migrant labor became critical.

Native born men seized opportunities for education and employment in other sectors and in urban areas. Even women and teenagers got harder to recruit; white collar or service-sector jobs and expanded leisure opportunities took them away from the orchards. Some growers also attributed labor scarcity to the availability of unemployment and welfare benefits. Growers began to turn to migrants. The increasing use of migrant labor was part of broader changes taking place in agriculture and in the economy at large. Cindy Hahamovitch has argued that the Northern agricultural labor conditions were "Southernized," as ill paid and vulnerable migrant workers replaced local labor.⁷⁶ This trend was evident in World War II era Adams County.⁷⁷ In 1951, Adams County growers hired local temporary workers, Puerto Ricans, and Southern African-Americans. By 1965, an official Pennsylvania government publication listed Adams County as having 1300 migrant workers housed in 85 camps. Of all 67 Pennsylvania counties, Adams had the highest total. Supposedly, no "foreign" workers were employed.⁷⁸ However, not long after, sources note migrants from the Caribbean (Haiti and Jamaica and the Bahamas), and then from Mexico.⁷⁹ Increasing numbers were undocumented. A 1963 federal law mandating sanctions for employers knowingly hiring undocumented workers failed to achieve its purpose; the need for labor was too great, as were the economic hardships propelling migrants out of their home countries.⁸⁰

Another trend in the postwar period in Adams County was vertical integration. Oral history interviews confirm that the Musselman processing company (based in Biglerville) owned many thousands of acres of farmland from the early 1950s (perhaps earlier) to the mid 1980s. The company acquired these lands probably beginning in the 1930s. It is not clear just how much -- some sources mention the number 9,000 and others 6,000 -- but either way it would be a significant chunk of the county's total acreage in fruit production, which was about 20,000.⁸¹ The Musselman company farms were each staffed by a manager, and worked by farm hands. A head supervisor oversaw all of the farms. This arrangement allowed Musselman to control its supply to some extent, and possibly to drive down prices for independent growers. However, according to oral history informant Myles Starner, the farm tenant system also had drawbacks in that operators lacked a stake in the business, and sometimes also lacked necessary expertise. Not coincidentally, the Knouse Foods cooperative was formed in 1949 partly as a counterbalance to the Musselman corporation's power.⁸²

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Since 1940 the landscape has received thorough reworking. Where architecture was concerned, farmsteads in the fruit belt continued to exhibit a rich “layering” in which some specialized fruit-related buildings were added to already existing clusters of nineteenth century buildings. But the Adams fruit belt is one region in the state where the twentieth-century landscape elements of orchards and ponds have pretty thoroughly obscured earlier crop fields, pastures, and meadows.

Fruit Storage, 1940-1960

A number of documented sites had cold storage buildings but most probably date after 1960. These included Morton buildings and other modern facilities, generally constructed of metal.

Buildings for Sorting and Packing, 1940-1960

Much fruit processing and even packing took place in large-scale centralized plants in Biglerville, Orrtanna, Aspers, Gardners, and other locations. However, retired agricultural extension agent Thomas Piper, who served from 1956-96, recalled that many individual orchards still had packing houses.⁸³ Several buildings likely to have served for packing and/or sorting that may date to 1940-1960 were identified during field work and in interviews.

Many farms in the fruit belt have smaller outbuildings that appear to have associations with packing or sorting fruit. They are almost always sited on a farm lane or road, and often also with near access to the orchard. They are usually well lighted. They are not heated, thus suggesting a warm-season use. They have a relatively high degree of finish, suggesting facilities for human rather than animal use. Most have large access doors.



Packing House, Menallen Township, Adams County, c. 1930-50. Site 001-ME-005. This two story building has a concrete block foundation. The ample lighting and eaves-side garage style doors that indicate that packing was done here.



Fruit-related outbuilding, Franklin Township, Adams County, c. 1925-1950. Site 001-FR-001. Note the siting on the farm lane; windows; relatively high degree of finish (this is a board and batten building).



Fruit-related outbuilding, Franklin Township, Adams county, c. 1930-1950. Site 001-FR-001.

This building is in a spot where a summer kitchen would be; but it has the gable end sliding door (elevated to facilitate loading and unloading) and shed roof portion with no windows, suggesting that perhaps the space might have been used for small-scale storage, sorting, or grading. Note the orchard directly next to the building.



Fruit-related outbuilding, Huntington Township, Adams County, c. 1945.
Site 001-HU-002.

This building is sited on the farm lane; faces the orchard; has ample windows, gable end



Fruit-related outbuilding, Huntington Township, Adams County, c. 1930-50. Site 001-HU-003.

door (possibly to admit baskets for loft storage), and human door.

This building's rear faces the farm lane, and there are large doors opening onto the farm lane. The site is right at the orchard's edge and the building is amply lighted. There are human doors in the eaves side on the left of this picture.

Garages/Machinery storage, 1940-1960



Machine shed, Menallen Township, Adams County, c. 1945-60. Site 001-ME-007.



Garages and machine sheds, Huntington Township, Adams County, 1940s-60. Site 001-HU-001.



Machine shed, Butler Township, Adams County, c. 1940-60.
Site 001-BU-001.

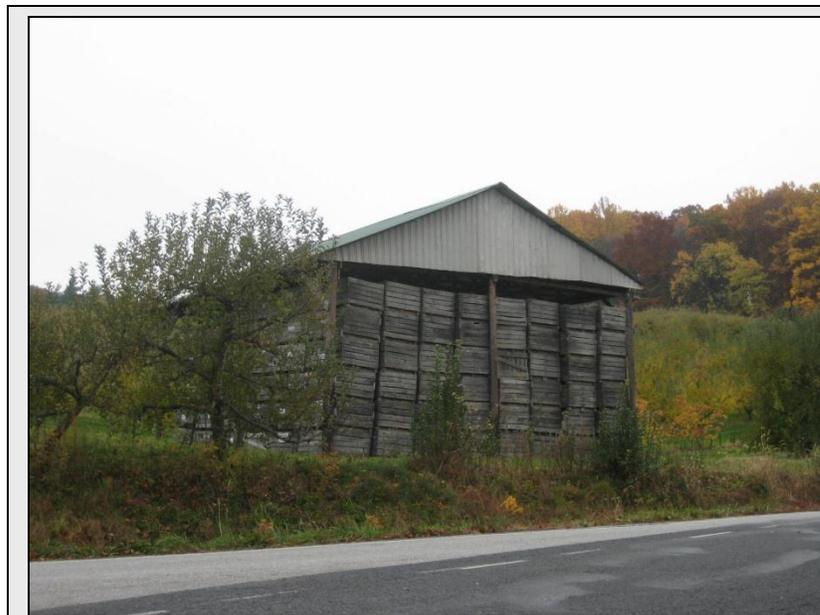
Many documented sites have garages with multiple bays. Some may date to the 1940-1960 period. These probably accommodated the many trucks, tractors, wagons, spray rigs, fork lifts, and other equipment needed on a large orchard.

Bulk Bin Storage, 1940-1960

Nineteenth century barn with shelter added for bulk bins and lower level altered for machinery, Butler Township, Adams County. Barn c. 1880, forebay side alterations c. 1960. Site 001-BU-001.



Two story sheds for machinery and bulk bin storage. In the rear of the center and left most bays of the barn, not clearly visible, are stacks of bulk bins. As well, the cold storage facility in the right foreground has sprouted two "wings" for bulk bin storage. Huntington Township, Adams County, c. 1960. Site 001-HU-001.



Bulk bin storage structure. Menallen Township, Adams County, date unknown. Site 001-ME-001.

Bulk bins, holding about 20 bushels of apples, reportedly came into use in the mid 1950s. The need for storing these in stacks led to a new type of space. The forebay side of a Pennsylvania barn provided a convenient place to add a two story tall, open shed roof shelter. These are a common sight in the fruit belt region. As well, purpose-built structures for bulk-bin storage are also frequently seen. These are tall structures, open on two or even four sides. They have simple pole construction with a gable or shed roof for protection. These tend to be located far from the main farmstead, in the middle of an orchard, but always on a farm lane for easy access.

Barn alterations, 1940-1960

In addition to alterations for bulk bin storage, well-built and capacious Pennsylvania barns which had formerly served diversified agriculture had many possibilities for being adapted to fruit culture. It is likely that many barn basements were modified for fruit storage and machinery storage. Below are some instances of barn modification that were observed in field study.



Forebay barn with shed-roof addition possibly used for packing. The windows are larger and more carefully finished than poultry windows would be. Menallen Township, Adams County, barn c. 1880, alteration c. 1940. Site 001-ME-004.



Pennsylvania barn altered for fruit production, Cashtown, Adams County. Barn, c. 1950; alterations, mid 20th century. Photo-only site, no site number. Large windows were inserted into the gable end to give light; the packing line was situated below the windows, moving from the forebay side to a shed added on the rear.



Forebay barn altered to admit wagons and tractors, Huntington Township, Adams County. Original barn c. 1900, alterations c. 1950-60. Site 001-HU-003.

Cider house 1940-1960

It would stand to reason that farm cider houses might have been common in Adams County. One was firmly documented through field study, and several others possess architectural characteristics consistent with cider houses.



Cider house, Straban Township, Adams County, c. 1930. Site 001-ST-003.

Migrant Housing, 1940-1960

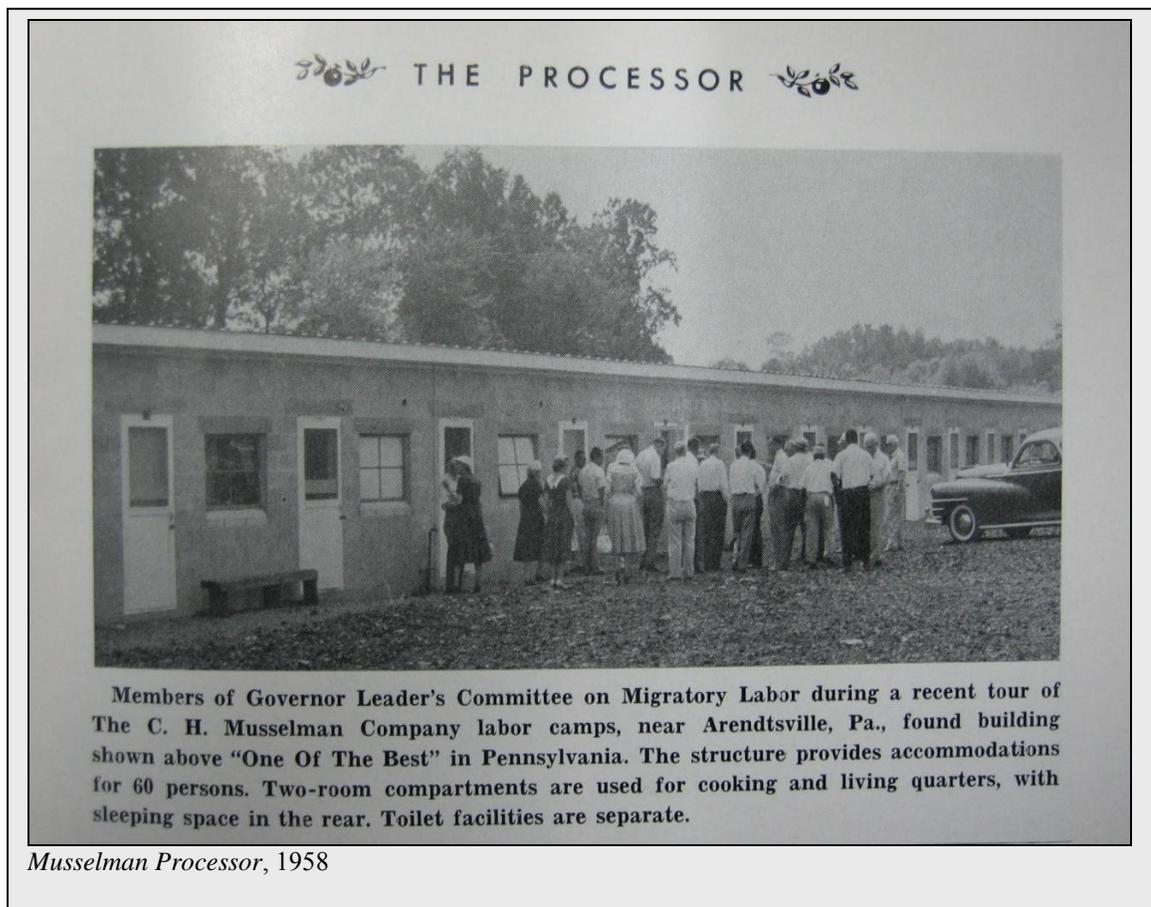
The rise in migrant labor was accompanied by urgent housing issues. The Pennsylvania Farm Labor Report concluded that some growers were unable to obtain labor at crucial times partly because they failed to take into account that housing would be required.

Initially, it seems, solutions were improvised, often with predictably poor results.

Gradually, partly because of pressure from humanitarian and civil rights organizations, government regulation of migrant housing became more systematic, though abuses continued to be a problem. The period 1940-1960 was largely before effective government oversight, and migrant worker housing during this period varied highly in quality. In many cases, it was segregated by race and geographic origins of workers.⁸⁴

So, for example, an NAACP report from the 1950s alludes to 8 camps south of Harrisburg, 6 of which were occupied by Puerto Ricans, one by American "Negroes," and one by "white workers from Florida." Except for one, these camps were owned by canneries. The C. H. Musselman Company, for example, in 1958 opened a new model migrant housing facility on the Blue Ribbon Orchards Farm (likely owned by the company), 2 miles south of Arendtsville.⁸⁵

Dozens of worker housing units exist today in the fruit belt. Most date from after 1960,



though some may reach back to the early 1960s. Present-day worker housing is often (though not invariably) sited in such a way that reinforces the workers' own invisibility. For example, at site 001-ME-003, the migrant housing is placed virtually inside the orchard. In other cases, such as sites 001-ME-001 and 001-ME-004, the worker housing is visually somewhat disguised, in a second story above a garage. And, sometimes the worker housing is located far from the farmstead on a separate road. In fact there is a road named "Labor Camp Road" in Huntington Township.



Worker quarters and garage, Menallen Township, Adams County, date unknown. Site 001-ME-001. The figure on the landing is a Halloween puppet.



Migrant worker housing, Menallen Township, Adams County, date unknown. Site 001-ME-003.



Migrant housing, Labor Camp Road, Huntington Township, Adams County, date unknown.



Worker housing and garage, Menallen Township, Adams County, date unknown. Site 001-ME-004.

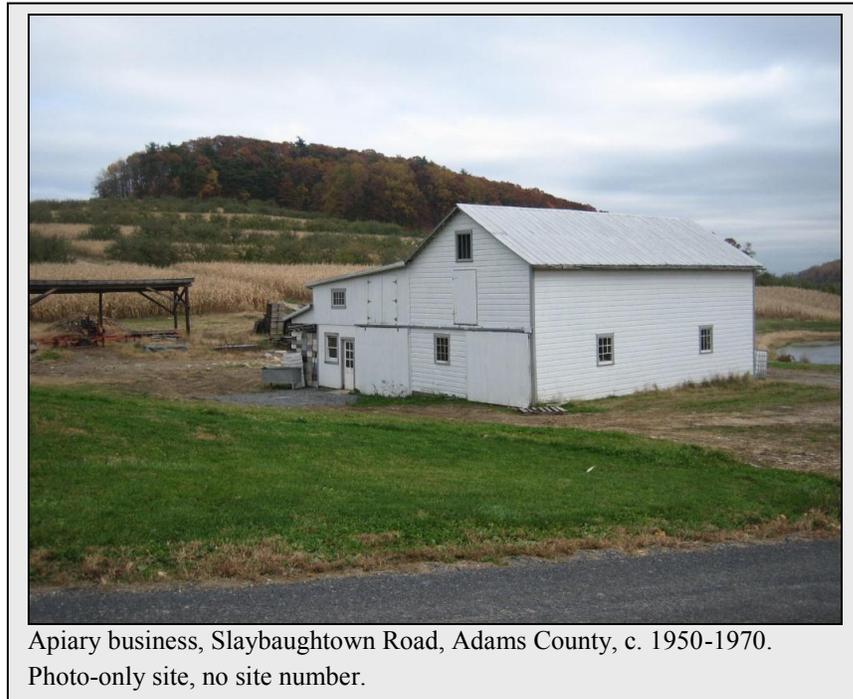
Buildings Related to Migrant Services, 1940-1960

Opportunity Center, Potato Road, Adams County, c 1964. Photo-only site, no site number.

This building, the Opportunity Center on Potato Road, actually falls slightly outside the 1960 cutoff date, but since it is close to the cutoff date, it is included here. This was a daycare center, located on orchard company property. It has been in continuous use since it was first built.

Apiary, 1940-1960

Pollination is crucial to orchard production. Apiaries were therefore important auxiliary businesses in the orchard region. Elements of apiary-related buildings would include room for a power extractor, storage, and honey packaging.⁸⁶ One apiary was noted in field study.



Structures, 1940-1960

Water Tanks. Large water tanks are frequently seen on fruit belt farms. Their location varies. Some are placed in the orchard for ease of access, and others appear nearer farmstead buildings. According to current Agricultural Extension Agent Jim Travis, these hold water so that spray rigs can be filled on-site instead of needing to return to a central water source. The tanks are often elevated so gravity power can be used. Sometimes a simple pump house protects the pump that would be used to get the water into the tank. These structures have been in use in the fruit areas at least since the 1950s.⁸⁷



Spray shed and water tower, Potato Road, Adams County, date unknown. Photo-only site, no site number.



Water tank, Menallen Township, Adams County, date unknown. Site 001-ME-003.

Landscape, 1940-1960

Landscape changes during the period were marked. As diversified agriculture gave way to thoroughgoing orchard specialization, the landscape changed accordingly. Where field patterns were concerned, orchard monocultures took up acreage formerly devoted to farm

crops. An impressionistic survey suggests that woodlots were not converted to orchard, however. Within the orchard business, apples took up a greater proportion of fruit acreage, so the overall appearance of the orchards themselves became more uniform. As new orchards were planted, new varieties replaced older ones. Closely spaced dwarf-tree plantings gave the orchard landscape a different texture than the earlier practices. Contour planting became more common.



Landscape with orchard, soybean fields, and other crop fields, Butler Township, Adams County, 2009. Site 001-BU-001. This photo gives a fairly representative impression of the orchard landscape today. In the foreground is a field planted to soy beans; Agent Jim Travis notes that the Extension service recommends a period of soil restoration between orchard plantings. In the middle ground is an orchard of mature trees, and beyond that a field of young trees and a field in grass.



View from Pine Swamp Road, Adams County, 2009. This view shows peach trees in the foreground, with drip-irrigation hoses. In the middle ground, an apple orchard; in the far distance a planting in strips alternating field corn and apple trees.



Closely spaced dwarf trees, Menallen Township, Adams County, age unknown. Site 001-ME-007.



Apple trees in alternate cropping with corn, Adams County, 2009.



Young and middle-aged orchards, Arendtsville vicinity, 2009. Grassy strips fill the rows between the trees.



1937 aerial of the Arendtsville vicinity, with solid ovals superimposed showing the location of present-day ponds that were not there in 1937. As far as it is possible to tell, no pond was built on an orchard site. Arendtsville is in the lower center of the photo. Penn Pilot combined with contemporary aerals.

Ponds are an important and highly visible recent landscape feature; their visual impact has been dramatic. When overlaid on the 1937 aerals, it seems that many ponds were built in formerly wooded areas, and in areas formerly devoted to field crops, but not so much in former orchard. Across the state, ponds became popular in the post World War II period. The pond building boom was fueled by a number of factors including the availability of large scale digging equipment and dynamite; rising farm values and fire insurance concerns; a desire for recreational facilities; and government aid for farm owners who wanted to build ponds. The extension agents and soil conservation service were active in giving advice to prospective pond builders, for example. An impressionistic view of Adams County contemporary aerial photographs suggests that pond building was even more popular in the fruit belt than elsewhere. Certainly a

number of ponds today are very large. There were place-specific reasons for an interest in ponds. Current extension specialist Travis notes that ponds were needed so spray materials could be mixed. (The water was filtered first to remove mud and silt.) Recently more orchard owners have been irrigating their trees using ponds and pumps, but it is not clear whether this practice has been followed for very long.

Property Types and Registration Requirements – Criterion A, Agriculture

Property Types: These property types apply to properties in all regions.

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.

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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.

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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.

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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.⁸⁸

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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 show important agricultural changes over time.

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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.⁸⁹ 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, which 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.

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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 for Criterion A, Agriculture, Specific to the Adams County Fruit Belt

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

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

To be considered significant for the period 1875-1905, "Origins,"

A **farmstead** should include, at a minimum, a farmhouse typical for the region (refer to the York-Adams context for further description of regional characteristics); barn or

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

To be considered significant for the period 1905-1940, "Consolidation & Leadership,"

A **farmstead** should have architectural evidence of focused apple and other orchard fruit growing, namely at least one of: packing barn, migrant quarters, roadside stand, cold storage. A **farm** should have landscape evidence extant for apple culture, i.e., an orchard or remnants, and associated storage buildings, migrant housing, and/or processing facilities. And a **historic agricultural district** should have a more or less contiguous collection of farms representing these features.

To be considered significant for representing the major agricultural changes in the Adams County Fruit Belt for the period 1940-1960, "specialization and Vertical Integration,"

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

2) a range of buildings and landscape features that illustrate change over time in the region's agricultural history.

To be considered significant for representing the major agricultural changes in the Adams County Fruit Belt, a farmstead should have architectural evidence of the major shifts over time. A 19th century house, late 19th or early 20th century farm outbuildings, a barn renovated for fruit farming, and a packing house, for instance, would effectively portray a shift from diversified farming to fruit farming. A farm should have orchards, ponds, and some remnant cropland, pasture, or treelines or woodlots. A historic agricultural district should have a more or less contiguous collection of farms representing these features

Property Types and Registration Requirements – Criterion B, Association with the lives of Significant Persons

These requirements apply to properties in all regions. 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

These requirements apply to properties in all regions. 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”.⁹⁰

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 ...”.⁹¹ 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.⁹² 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 Revitalized in the early 20th century might be significant for its stylistic features outside this MPDF but would not be architecturally significant under this MPDF because the alterations are not associated with the needs and priorities of farm life. But a farmhouse modified to reflect important transitions in the relationships of farm family members to each other, labor, or the market could be considered significant (such as the addition or removal of quarters for hired hands, cooking facilities for feeding threshing crews, social spaces separated from spaces devoted farm matters, etc.). Changes reflecting access to modern amenities and willingness to adopt modern amenities could also be considered significant, such as

the addition of a bathroom, running water, a heating plant, or electrification. However, the design features reflecting these changes must be demonstrated to be part of a local or regional pattern of construction; individual, personalized or idiosyncratic alterations that lack design features not adopted elsewhere in the community would not be considered significant under Criterion C, but would support significance under Criterion A for their association with labor and production patterns. In the post-World War 2 era, many farmhouses have undergone dramatic changes in ways that make them indistinguishable from contemporary suburban residences in their materials, styles, amenities, and use. Thus it will be difficult to evaluate the Criterion C significance of post war farmhouses without further study.

Design 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 on Hodge Barn, Centre County

ornament).

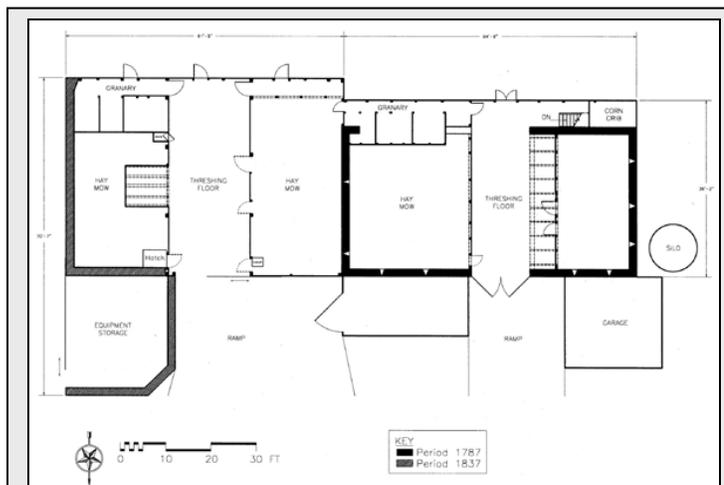


Hodge Barn, Centre County, struts under forebay



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, 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 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.



Plank Barn, Cumberland County, 1853

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

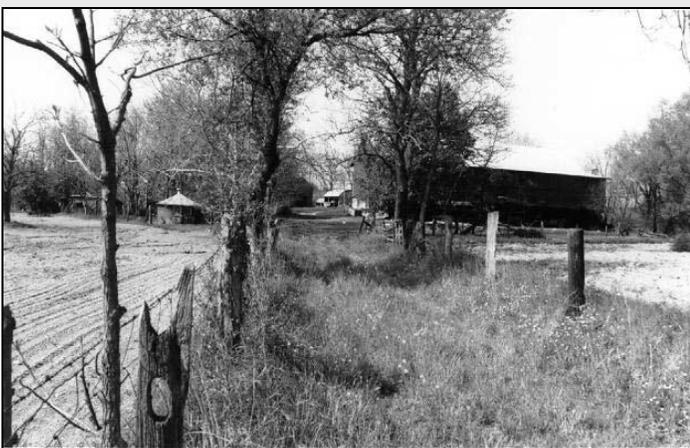
Example 5: Chicken house at Landis Valley Museum, Lancaster County, early twentieth century. Although in poor condition, this chicken house, located in what is now the Landis Valley Farm Museum, embodies the character-defining features of “modern” housing



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

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.

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

These requirements apply to properties in all regions. 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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Statement of Integrity

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

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.”⁹³

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.”⁹⁴

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”⁹⁵ 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 fence line 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.”⁹⁶ 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.”⁹⁷ 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.

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⁵⁵ Joseph H. Gourley and Freeman Smith Howlett, *Modern Fruit Production* (New York, 1941), 376-7; F. A. Waugh, *Fruit Harvesting, Storing, Marketing* (New York, 1908), 124-166; J. H. Weinberger, “Remodeling a Bank Barn for Cold Storage,” *Proceedings of the Pennsylvania State Horticultural Association for 1936*, 53-55. (this description

assumes electricity and mechanical cooling.) Other farm storage buildings are shown in Eugene C. Auchter and H. B. Knapp, *Orchard and Small Fruit Culture* (New York, 1929), 124, 129, 28-31; F. A. Waugh, *The American Apple Orchard*, 171-177; Samuel T. Maynard, *Successful Fruit Culture* (New York, 1905), 69. Bliss S. Brown, *Modern Fruit Marketing* (New York, 1916), 88, shows a bank cold storage, and on 89 a “small storage and packing-house” built of hollow tile.

⁵⁶ R. D. Anthony and J. H. Waring, *The Apple Industry of Pennsylvania*. Pennsylvania Department of Agriculture General Bulletin # 369, Harrisburg, PA, July 1922, 135.

⁵⁷ R. D. Anthony and J. H. Waring, *The Apple Industry of Pennsylvania*. Pennsylvania Department of Agriculture General Bulletin # 369, Harrisburg, PA, July 1922, 151; Pennsylvania Fruit Growers’ Society *Annual Report*, 1924; . Stevenson Fletcher, “Outline of Lectures in Commercial Fruit Growing,” Penn State College Department of Horticulture, undated typescript in PSU Special Collections, p 55.

⁵⁸ See also Albert E. Wilkinson, *The Apple: a Practical Treatise dealing with the Latest Modern Practices of Apple Culture*. New York, 1915, 311.

⁵⁹ R. D. Anthony and J. H. Waring, *The Apple Industry of Pennsylvania*. Pennsylvania Department of Agriculture General Bulletin # 369, Harrisburg, PA, July 1922, 130; USDA Technical Report 54, 1927, 21.

⁶⁰ Pennsylvania Fruit Growers’ Society *Annual Report* 1939, 51, 54.

⁶¹ Carroll R. Miller, “Adjusting Our Production to Our Markets,” Pennsylvania Fruit Growers’ Society *Annual Report* 1950, 26-33.

⁶² Herschel H. Jones, “The Evaluation of your Fruit by a Distributor,” Pennsylvania Fruit Growers’ Society *Annual Report* 1950, 17.

⁶³ For a general overview, see Thomas J. Talbert, *General Horticulture: Principles and practices...* Philadelphia, 1946; Clarence W. Olmstead, “American Orchard and Vineyard Regions,” *Economic Geography* July 1956, 189-236; Joseph H. Gourley and Freeman S. Howlett, *Modern Fruit Production* (New York, 1941), 5, 11.

⁶⁴ Dick Lehnert, “IFTA helped growers bring fruit trees down to size,” *Fruit Growers’ News*, April 2007, Accessed online at <http://www.fruitgrowersnews.com/pages/arts.php?ns=570>, August 21, 2007.

⁶⁵ Pennsylvania Fruit Growers’ Society *Annual Report*, 1948, 56; *North American Apples: Varieties, Rootstock, Outlook*. East Lansing, Michigan, 1970, 22.

⁶⁶ J. R. Magness, “Our Apple Industry, Present and Future,” Pennsylvania Fruit Growers’ Society *Annual Report* 1948, 12. See also R. D. Anthony, “A Brief Survey of the Apple Industry in Pennsylvania,” Pennsylvania Fruit Growers’ Society *Annual Report*, 1949, 25-29; Herschel H. Jones, “The Evaluation of your Fruit by a Distributor,” Pennsylvania Fruit Growers’ Society *Annual Report* 1950, 10-17; Joseph H. Gourley and Freeman S. Howlett, *Modern Fruit Production* (New York, 1941), 4.

⁶⁷ Pennsylvania Fruit Growers’ Society *Annual Report* 1950, 26-28; Frank Hewetson, ed., “History and Accomplishments of the Penn State Fruit Research Laboratory at Biglerville, 1918-1976,” Penn State Agricultural Experiment Station Bulletin 834, May 1981.

⁶⁸ Truman Nold, "Apples in the Changing Agricultural Picture," *Pennsylvania Fruit Growers' Society Annual Report*, 1942, 33.

⁶⁹ By 1960 the figure for apples was 43%. See Basil G. Coley, "Structure and Performance of the Pennsylvania Fruit and Vegetable Processing Industry," *Pennsylvania State University MS Thesis, Agricultural Economics*, 1962, 1.

⁷⁰ Interview 1.3, Mark Bream, November 9, 1998, Dickinson College Community Studies Center, Mexican Mosaic Interview Transcripts. Dickinson College Community Studies Center archives.

⁷¹ *Pennsylvania Fruit Growers' Society Annual Report* 1950,46; 1951, 43. Coley, "Structure and Performance," 57-9.

⁷² *Pennsylvania Fruit Growers' Society Annual Report* 1942. See also John R. Magness, "Our Apple Industry, Present and Future," *Pennsylvania Fruit Growers' Society Annual Report* 1948, 10.

⁷³ K. R. Slamp, *Pennsylvania Fruit Tree Survey, 1953*. Pennsylvania Bureau of Markets, Harrisburg, 1953, 21.

⁷⁴ Adams County Agricultural Extension Agent Reports, Penn State University Archives Record Group 17, Box 001, 1942, Narrative Report p 7; 1943, Narrative Report p 6, 1944, Narrative Report p 8-9. *Pennsylvania Fruit Growers' Society Annual Report*, 1944, 6-16; *The Pennsylvania Farm Labor Program 1943 to 1947*. Penn State College of Agriculture, Agricultural Extension Service, no date.

⁷⁵ John Bloom, "Voices of Migrant Workers," *Pennsylvania Heritage* 2005, 16-25.

Marshall Garretson recalled that when he was a youth in the 1930s, helpers on his family farms were itinerants, many with mental-health or addiction problems. They were housed on the Garretsons' farm. Oral history interview, Marshall Garretson, Gettysburg, PA, June 8, 2009. Notes on file with Sally McMurry, Department of History, Pennsylvania State University.

⁷⁶ Cindy Hahamovitch, *The Fruits of Their Labor: Atlantic Coast Farmworkers and the Making of Migrant Poverty, 1870-1945*. Chapel Hill, NC 1997. Hahamovitch's analysis places the rise of migrant labor into the context of federal policy and argues that agencies originally intended to protect workers ended up undermining them.

⁷⁷ Morrison Handsaker, *Seasonal Farm Labor in Pennsylvania*. Published by Lafayette College, Easton, PA, 1953.

⁷⁸ *Pennsylvania Farm Placement Program* 1951, 15, 19; *Farm Labor Service, Pennsylvania Annual Report* 1965, 6, 7, 13. The numbers fluctuated; the 1957 report listed Adams with "300 Southern" and "300 Puerto Rican" workers in 81 camps. *Farm Labor Service, Pennsylvania Annual Report*, 1957, 14. (For an interview transcript illuminating an African American's experience, see Interview # 1.2 Ethel Bloom, November 11, 1998, Dickinson College Community Studies Center, Mexican Mosaic Interview Transcripts. Dickinson College Community Studies Center archives.)

⁷⁹ Interview 1.4, October 19, 1998, Carlos and Carmen Fernandez, Dickinson College Community Studies Center, Mexican Mosaic Interview Transcripts. Dickinson College Community Studies Center archives, documents the experience of one Mexican worker who came to the county in 1959.

⁸⁰ Suzanne Vaupel and Philip L. Martin, “Evaluating Employer Sanctions: Farm Labor Contractor Experience,” *Industrial Relations: A Journal of Economy and Society* Volume 26, Issue 3, (September 1987): 304–313. Accessible at <http://www3.interscience.wiley.com/journal/119469343/abstract>

⁸¹ Paula Reed, “The Fruitbelt,” Pennsylvania Historic Resource Survey Form, March 2, 1993.

⁸² Oral history interview, Myles Starner, Aspers, PA, June 8, 2009. Notes on file with Sally McMurry, Professor of History, Pennsylvania State University.

⁸³ Thomas Piper, interview with Sally McMurry, September 14, 2007, at Biglerville.

⁸⁴ This was still the case as late as 1998. See Interview 1.3, Mark Bream, November 9, 1998

Dickinson College Community Studies Center, Mexican Mosaic Interview Transcripts. Dickinson College Community Studies Center archives.

⁸⁵ Musselman *Processor*, 1958

⁸⁶ The agricultural extension agent reports for the 1930s mention a Mr. Sachs who owned an apiary with a “well equipped honey room, a power extractor, and good storage facilities.” Adams County Agricultural Extension Agent Reports, Penn State University Archives Record Group 17, Box 001, 1938, Narrative Report p 11.

⁸⁷ Property Inventory, Fruit Research Laboratory, Penn State Physical Plant General Vertical Files, Penn State University Archives, Penn State Libraries Special Collections. This inventory contains photos dated 1957 and 1958 showing water tanks mounted on wood frames and concrete block supports.

⁸⁸ Note that while the *buildings* represent an identifiable cultural tradition, the *owners or occupants* may not have necessarily share 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.

⁸⁹ 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.

⁹⁰ NR Bulletin *How to Apply the National Register Criteria for Evaluation*, p 17.

⁹¹ *Historic Farming Resources of Lancaster County*, MPDF, 1994.

⁹² 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).

⁹³ “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.

⁹⁴ “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

⁹⁵ Ibid.

⁹⁶ Ibid.

⁹⁷ Ibid.