
Agricultural Resources of Pennsylvania, c 1700-1960

**Lake Erie Fruit and
Vegetable Belt, 1870-1960**

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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 PA 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.

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

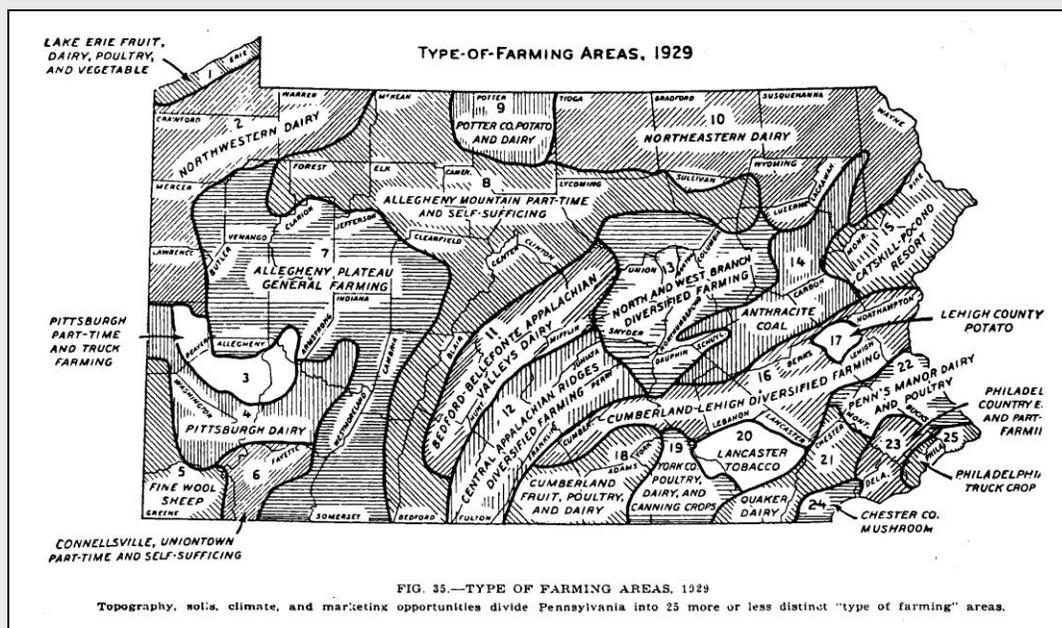
Acknowledging the historic diversity of Pennsylvania farm productions helps to clarify much, but it also raises a fundamental challenge for conceptualizing an approach that will faithfully convey Pennsylvania’s agricultural history, and make

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

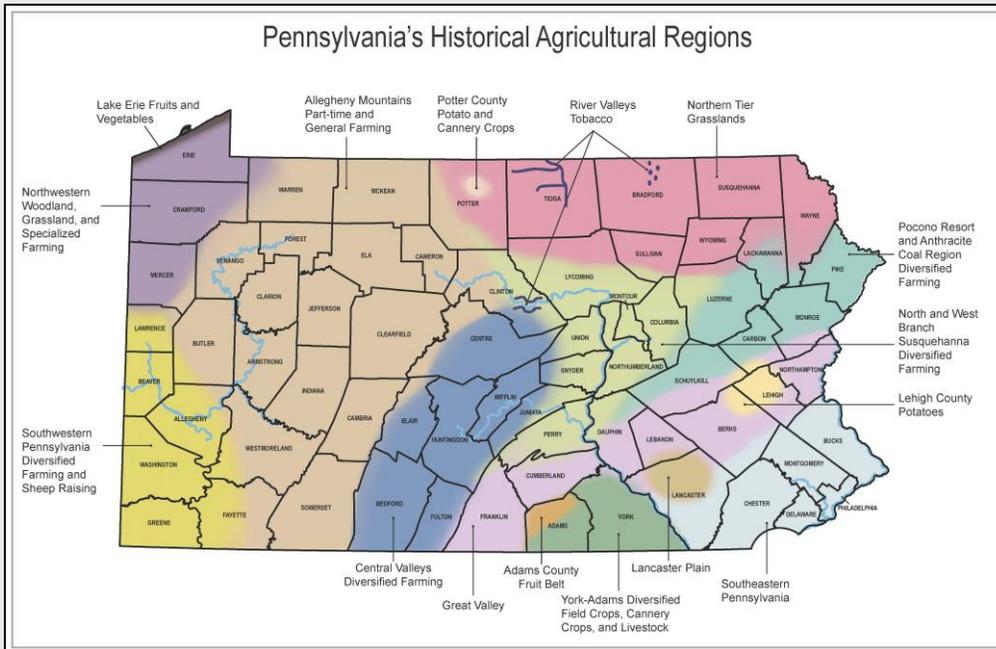
The idea of a “farming system” opens the way to a more comprehensive and accurate interpretation of the historic rural Pennsylvania landscape. For example, because the notion of a “farming system” includes land tenure and mechanization levels, we can identify a distinctive region in the heart of the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

Identification of Historic Agricultural Regions

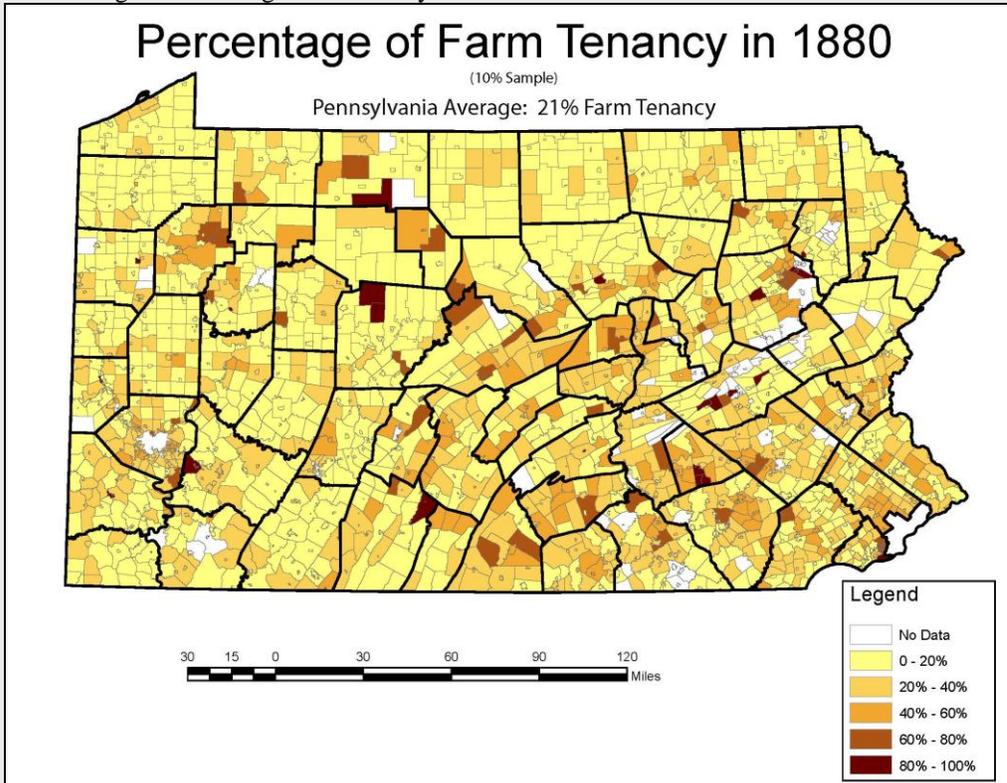
Mapping done by agricultural economists in the early 20th century identified “Types of Farming” areas based on soil types, topography, markets, climate, and production. These helped to establish clear regional boundaries to the extent that topography, climate, and soil types set basic conditions for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



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



Historic Agricultural Regions of Pennsylvania.



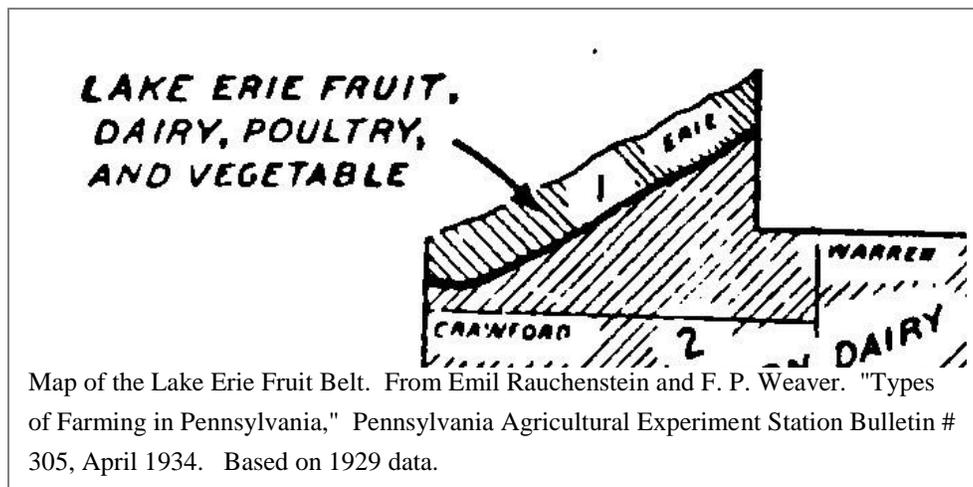
Share Tenants as a percentage of all farmers, 1880.

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

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

Location

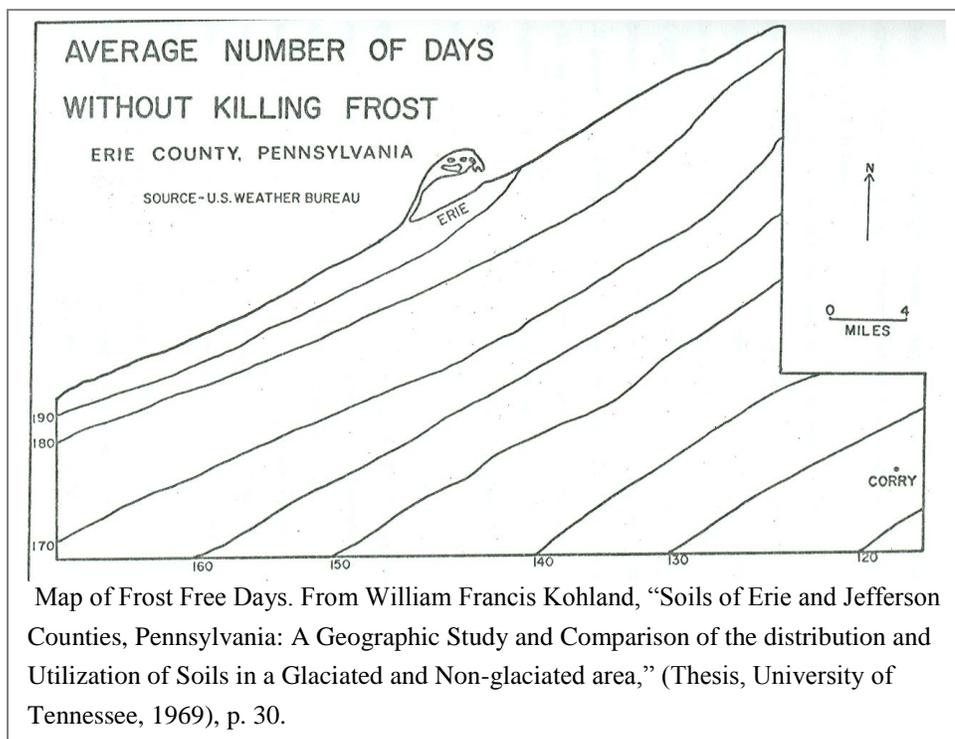
Located in the northwestern part of the state, Erie County spans 2,000 square miles and is Pennsylvania's only county that borders the Great Lakes.¹ The northeast section of Erie's Lake Plain is part of a longer "fruit belt" reaching from New York State to Ohio, and extends roughly 160 miles along the coast of Lake Erie six miles inland.



Climate, Soils, and Topography

The area has been historically recognized for high production of fruits, due to its soil patterns, climate, and extended growing season. A glaciated area once covered by ice, Erie County is located on the Allegheny Plateau and its soils are a mixture of rocks that were dragged here from elsewhere, principally granite, limestone, sandstone and quartzites. Drainage is to the Mississippi and St. Louis tributaries. The area is geographically marked by a series of gently sloping level-top ridges and intermittent valley floors. The most northern surface ridge serves as the northern boundary of the uplands and the southern boundary of the Lake Plain region. In general, glaciation created soils with favorable drainage, texture and fertility; however most scholars agree that this "agricultural region...is controlled by climate rather than by soil type."² Lake Erie significantly affects the strip along the coast, giving it cool winters and warm summers that are often humid due to lake wind moisture. Situated on the lake's windward side, the Pennsylvania lakeshore becomes a distinct microclimate. The climatic temperature system has direct effect on the growing season of the area. The county's lake portion receives up to 7 inches less precipitation than the rest of Erie County and has 196 days free of killing frost, compared to 130 day average of the uplands. According to one report, the first and last frost killing of winter and spring in the Lake Region are around October 20 and April 25 respectively. This period of frost-free days exceeds that of the upland region, which experiences the first frost killing around September 25 and last

killing around April 25.³ In the spring lake waters “warm up more slowly and in the fall cool off more slowly than the land. This encourages late spring and late falls and helps guard against damage by late spring and early fall frosts.”⁴ The extended warm period of frost immunity makes the lake plain a unique agricultural region with productive fruit harvests.



Historical Farming Systems

The history of farming in the Lake Erie fruit belt is characterized by three distinct periods. The first period, spanning the mid-19th century to about 1925, was marked by widespread general farming, with a small but growing specialization in grape culture existing among crop and livestock operations. The second phase of agricultural development began shortly after World War I, when the lake shore of Pennsylvania shifted away from general farming combined with fruit, to diversified fruit farming, as growers expanded beyond grape culture, planting (in addition to vineyards) an abundance of commercial apple, peach, and cherry orchards, and small fruits as well. In the latter half of this second agricultural phase (post-WWII through the early sixties) technological developments altered harvesting techniques and labor practices. Yet it was the invention of the mechanical grape harvester in 1965 that ushered in the Lake Plain’s third agricultural phase. This technological development initiated an almost exclusive specialization in grapes, as orchards were generally replaced by vineyards. The first two phases are treated in this context.

1850-1925: Diversified Livestock, Field Crops, Fruits, and Vegetables

By the mid 19th century the lake shore area in Erie County was already emerging as a recognizably distinct agricultural region. Almost immediately local farmers recognized the unusual potential of the Lake Erie shore area and they developed a richly diversified agricultural system, layering fruit and vegetable production over the more typical crop and livestock farming regimen. The diversity was remarkable. Dozens of fruit and vegetable crops were represented during this period. Harbor Creek and Girard Townships had substantial fruit and vegetable production; but North East was by far the most important of the lakeshore fruit townships in Erie County.

Several basic conditions promoted the emergence of this farming system. Transport and processing innovations fostered continued development of the Lake Erie fruit and vegetable business. By the mid-19th century, the Erie Railroad ran right along the lake front, traversing the entire county from the New York State line to the Ohio line. Expanding railroad systems opened new markets and “revolutionized the agriculture and industry in the area.”⁵ Rail transport dominated well into the 20th century, but by the 1920s trucking was beginning to catch up. A ready labor supply (except during the First World War) also aided in developing the fruit belt. Pickers and packers, usually women and teenagers, were recruited locally as well as from the growing city of Erie. Up until the early 20th century Erie County's fruits and vegetables were marketed fresh; distant urban markets were very important, especially where grapes were concerned, while the other crops tended to reach local markets. Rail lines provided reasonable access to New York City, Cleveland, and Buffalo. With the development of a bottling and pasteurization technique in the late 1860s, some grapes began to go to make juice. The appearance of the first large grape juice plant in 1911 in the borough of North East signaled an important shift in this pattern. Municipal cooperation played a role in this change, since the water supply infrastructure was critical to establishing large juice plants.⁶ Even so, only about a third of the crop went to juice during this period, while the remainder mainly was still sold fresh.⁷

Products, 1850-1925

The hallmark of the farming system up until the 1920s was a remarkable diversity. Most farm families along the Lake Erie shore raised livestock, ran small dairy operations, and grew hay, corn, and oats. The 1850 manuscript agriculture census shows, for example, that North East Township's farms averaged about 100 acres and included a full complement of horses, dairy cattle, beef cattle, sheep, and swine, and that these were fed on corn, hay, and oats from the farm. Interestingly, these enterprises could be

interrelated; one 19th century report noted that hogs ran loose in orchards and fed on dropped fruit.⁸ An 1889 account of the Hammond farm, near the town of North East, described a large-scale version of this system. This 300 acre farm included large acreages of oats, several hundred sheep, thirty Jersey cattle, a hundred swine, and 700 chickens. In addition it boasted three thousand apple trees, a thousand "choice winter pear trees," and 25 acres of grapes.⁹ At the other end of the spectrum, North East resident "Bid" Farr owned only 26 acres, but still "uses his plum and peach orchard for a hen-park, and a place for his pigs that pick up the fruit that falls to the ground."¹⁰ So, diversification was not necessarily related to scale.

A generation later, diversification still prevailed: a soil survey conducted in 1910 reported that, "...many of the soil types of this section [are] now devoted to general farm crops."¹¹ North East farmers, who resided in the township with the most intensive fruit production, continued to combine multiple agricultural enterprises; a 1918 *American Agriculturalist* directory, for example, showed individuals in the lake shore townships of North East and Harbor Creek producing combinations such as: grapes and milk; grapes and fresh fish; grapes and potatoes; fruit and hay; vegetables; garden truck. One even listed vegetables, renting summer cottages, and manufacturing cement blocks as his occupations.¹² In 1915 the Crawford Brothers farms planted sweet corn among fruit trees while also growing asparagus. Ellen Eppler of North East noted that in 1914 the Clark farm grew grapes, raspberries, and peaches. North East Township historian and farmer Ralph Hartley noted in an article that "for several decades grape growers kept cattle, horses, sheep, swine, and chickens."¹³ The 1920 Census of Agriculture further corroborates that agriculture on the lake shore was highly diversified. Of all farmers recorded in the North East township and borough, fully 61% engaged in general farming, and 35% in fruit farming.¹⁴ Below is a table compiled based on data from the U.S. 1920 Census.

North East Township and Borough, 1920 Agricultural Statistics

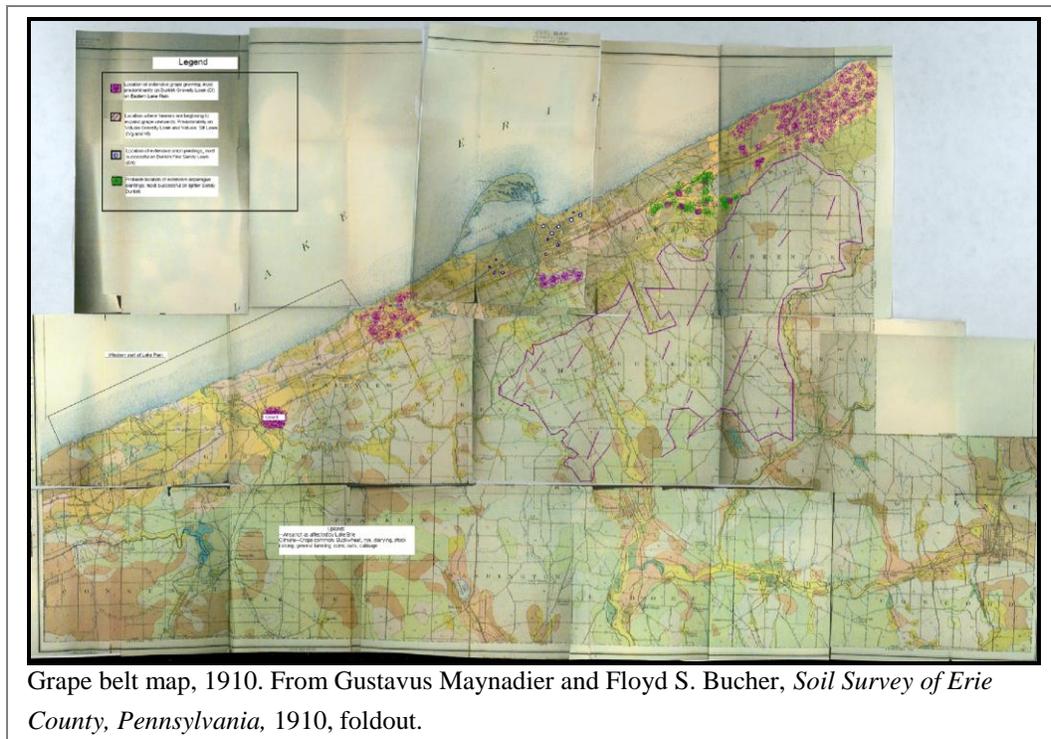
Dairy	Fruit	General Farm	Grain	Grand Total
4	186	306	2	498

As these figures show, what made the lake shore farms distinctive was the prominent place that fruit (especially grapes) and vegetables occupied in the farming regime. For example, in North East Township the average value of orchard produce in 1850 was over \$10 per farm, far higher than in other townships. In 1859 the *Erie Observer* reported that "the flourishing village of North East, in this county, is becoming somewhat famous as a Grape producing locality..."¹⁵ An 1860 "Glance at Eastern Agriculture" made a reference to "the vine-clad slopes of Lake Erie,"¹⁶ and a few years later the inaugural meeting of the

Lake Shore Grape Growers' Association included four men from Erie County among its officers.¹⁷ An 1867 real estate ad touted a farm for sale on the Lake Road which had barns, sheds, outhouses, and two orchards with "grapes, strawberries, plums, cherries, quinces and other small fruit."¹⁸ In 1879 the *Christian Union* reported on an Erie County fruit farm with 12,000 trees.¹⁹ In 1895 a Mrs. John Gaillard, in a letter titled "Notes from Northwestern Pennsylvania," noted that of blackberries alone the varieties raised included Early Harvest, Erie, Snider, and Ancient Briton; she continued, "Besides berries, almost all kinds of small fruits are grown in this fruit belt. The market gardener must have small fruits, vegetables, and flowers, in making his twice-a-week rounds." Mrs. Gaillard raised many vegetables, including snap beans that went "to the pickle factory."²⁰

New Englander Ephraim Bull developed the Concord grape in the mid-19th century.²¹ The variety was disseminated in the next few decades, and became the dominant variety in the emerging "grape belt" along the Lake Erie shore. Though the region had a long growing season, still, the Concord grape's hardiness and flavor mattered. A Mr. S. S. Crissey remembered in 1891 that "thirty, forty and fifty years ago, when the Isabella, Catawba and Clinton were our main varieties, the grape business was uncertain, failures frequent and the acreage small. The introduction of the Concord grape, the invention of the Climax basket, the ability to ship to distant markets, in full car lots, at low rates, and with quick time, have changed all this..."²²

A "grape district" began to take shape along the Lake Erie shore in New York, Pennsylvania, and Ohio. Already in 1873, a local directory for Erie County noted that in North East "There are in the vicinity hundreds of acres in vineyards, which give employment to over two hundred men."²³ By the 1890s, North East Township alone claimed 10,000 acres in grapes.²⁴ In that year, Concords reportedly made up 80% of all bearing vineyards in North East, and 90% of its plantings.²⁵ The rest of the grape acreage was planted for local table grapes and jam, respectively.²⁶ Varieties included Moore's Early, Delaware, Niagara, Catawba, Worden, Brighton, and Agawam.²⁷ A soil survey map from 1910 gives a pictorial view of that year's grape culture (and other specialized crops).



Though grape growing was the most remarked-upon industry in the area, many other fruits were raised. According to the 1910 soil survey, the Lake Plain region was well adapted for trucking specialization and the report encouraged more farmers to increase the use of soils for fruit production. The survey recognized North East farmers' interest in growing commercial peach and apple orchards to fill demands for canning and dessert fruit in distant markets. Erie County farmers made small scale profits in these tree plantings; in the early 20th century 177 farmers were growing mostly Schumaker peaches (which originated in Fairview, Erie County) "known for ... white flesh, small size" and occasional resistance to brown rot. Concurrently, apple production increased in the county from 1865-1880 (especially the Baldwin variety), and during the late 19th century Erie shipped barrels of apples to New York to be sold to foreign markets. They could also be processed nearby; in 1906 a local Cider Works was depicted in an advertising supplement along with apple boxes stacked high.²⁸ The soil survey remarked that cherries provided a good yield.²⁹ Though the market was limited, the first North East plantings consisted mainly of Early Richmond sour cherries and one historian noted that "around the forepart of the century, John McLaughlin began canning cherries in North East in tandem with a rising demand for canning cherries."³⁰ In the early 20th century farmers also began planting small scale plots of nut trees, berries, raspberries, and strawberries.

In addition to fruits, Erie's Lake Belt region also maintained profitable vegetable enterprises. The 1910 soil survey mentioned tomatoes, cucumbers, and beets. The most specialized vegetable production in 1910 was the growing of onions and asparagus on the eastern lake plain. The average yield of asparagus in the area was 1800-2000 bunches per acre, and of onions 300-400 bushels.³¹ The



Concord Grapes in Erie County. Pennsylvania State Archives Record Group 031, Department of Commerce Series #06-Neg#1688, no date.

census suggests that potatoes and cabbage were also popular.

Most of the fruits and vegetables were marketed fresh. The town of North East claimed to ship “more [rail]cars of grapes than any other in the world... not to mention heavy shipments of cherries, raspberries, currants, apples, gooseberries, plums and other fruit...”³² Some went out via rail to points east and west. Smaller scale production tended to find local outlets. Some farmers marketed direct, but most worked through commission merchants or cooperatives.



Ephraim Bull with his Concord Grapes, c. 1856. This photo has appeared in a number of publications. It apparently came from his personal collection. See Florence T. Eaton, "Ephraim Bull and the Concord Grape," *Pennsylvania Farmer* October 26, 1915, cover story.

Farmers took responsibility for harvesting and packing; sometimes they transported the goods, but more often transport was provided by the middleman. By 1909, a North East resident and longtime grape grower, L. G. Youngs, reported from North East that “the manufacture of grapes into jellies, unfermented juice, etc. is becoming quite a factor.”³³ Starting in 1911, a large grape juice plant in North East bought local grapes, thus providing a “home market” in an era when California fresh grapes were cutting into eastern markets. About a third of the

crop went into juice; but when Prohibition era legislation placed a tax on grape juice, this business went into temporary decline.

Some observers lamented that the lake shore fruit industry had not come close to maximizing its full potential, and urged greater specialization. However, there were advantages to diversification. It demanded multiple skills and extensive knowledge, but it also offered greater security and less susceptibility to natural catastrophe and market vicissitudes.

Labor and Land Tenure, 1850-1920

Farm mechanization in the lake shore townships was at or below state averages for all of the 19th century and into the 20th. The livestock and conventional crop operations required implements discussed in the MPDF context "Northwestern Woodland, Grassland, and Specialized Farming Region." Equipment for fruit culture was basic. Horse drawn cultivators were used for weed control, otherwise fruit culture required mainly human power. Containers, means of transport, and furniture, it seems, were more important than mechanical implements. Planting, pruning, thinning, and harvesting were overwhelmingly done by hand using small-scale specialized implements such as grape snips, pruning tools, and wooden stands to hold boxes. Each fruit had its own special containers (small oblong baskets with handles for grapes; deep, wide-topped baskets for peaches; barrels for apples). Simple, but specifically designed "orchard wagons" served to get the fruit from field to packing house, then from packing site to the next destination. In Erie County, a rail line running along the lake shore provided accessible transport, and fruit was sent out along this line. One report, for example, claimed that the New York and Pennsylvania lake shore orchardists shipped a million barrels of apples a year to New York for export.³⁴

Labor was recruited in a fluid, informal pattern which ebbed and flowed with the seasons. During peak harvest times, labor was provided by a mix of seasonal workers, including local women and children (responsible for fruit picking and grape vine tying), local men for hauling and packing, and outside hired hands and tenants.³⁵ Harvesting grapes was especially labor intensive. Grapes were "initially packed into four quart wooden baskets with wooden handles," sometimes in the field and sometimes in a packing house.³⁶ In the case of grapes destined for juice plants, niceties of secure, attractive, and uniform packing weren't as crucial.

Primary and secondary sources (including oral histories and photographs) indicate that women and children played a very significant role as seasonal workers during harvest time (for vegetables and more often fruit). Ralph Hartley, a local historian, wrote that as

early as 1898, hundreds of local women and young girls came from all over the state to help pick fruit during harvests. He reported that the “female count in the vineyards might be over 2,000” and these women were often referred to as “grape girls.”³⁷ Women picked grapes, cherries, peaches, tomatoes (this reportedly was often done by Italian women); tied grape vines; and packaged fruit. Lucy Rizzo recalled that in 1919 (at age 9) she picked asparagus in North East with her mother and other Italian women and children. In these early years, women were also employed in basket factories, as large picking seasons led to the establishment of Greenfield basket factory in 1886, and Loop basket factory of 1897 (which employed fifty people).³⁸ The town of North East also had several basket factories. A basket factory depicted in an 1896 birds-eye view showed that it was located along the rail line on the southeastern edge of town.³⁹ Numerous photos illustrate women picking fruit in straw hats and bonnets, and feature them standing with men outside their living quarters.⁴⁰ A 1930 thesis found that women accounted for at least sixty percent of harvest-time laborers in the grape industry.⁴¹ Likely they also dominated in other fruit harvesting as well as in vegetable culture. Postcards written by grape workers show that they came from around the region, including the Erie County towns of McKean, the city of Erie, Waterford, Conneautville, PA, and Conneaut, Ohio.⁴²

It is not clear whether this work took children out of school. Much of it did happen during the school year, especially the grape picking. One oral history taken in Erie County suggested that children went to the vineyards after school.

The experience of the “grape girl” attracted interest from many quarters. She even inspired literary creations; poetry in the popular press described her rosy cheeks and hardy constitution. Gender attributes were soon associated with the work; so, women were regarded as good pickers and vine tiers because they were careful and dexterous. One observer declared (1895) that “Just as it takes a woman to stow away a whole wardrobe in a Saratoga trunk, so it requires feminine fingers to pack ten pounds of grapes into a nine pound basket.”⁴³ Though these romanticized depictions doubtless obscured less appealing aspects of the work, it does seem that the fruit belt afforded unusual opportunities for women to earn income during a period when sources of work were few, especially for rural women. An early 20th-century postcard written from North East reads “Dear Miss R. I am having a dandee time, Clara.” “Girls in their teens, rosy-cheeked maidens, and gray-haired mothers, flock to the vineyards from the neighboring farms and villages,” wrote an observer.⁴⁴ L. G. Youngs, a North East resident and longtime grape grower, wrote in 1909 that “the work is not play, but it is healthy and will perhaps often save a trip to the Hot Springs... and leave more money in their pockets.

We call this the grape cure...⁴⁵ The lakeshore growers' association reported that women made 75 cents a day if they boarded themselves; or \$3.00 per week with board, in 1889.⁴⁶ The photos below seem to bear out that female workers spanned a large age range. U. P. Hedrick declared that there was great "diversity in race, age, and condition of life of



Colorized postcard showing women grape pickers, North East, PA, c. 1907. The message reads, "Emma will come up Tuesday to harvest." North East Historical Society.

pickers."⁴⁷ Many accounts took note that picking season was a social occasion; women shared dormitory-style accommodations, and young single women could socialize with young men. Indeed, Youngs hinted as much when he wrote, in a patronizing tone, that "We have found it necessary to insist upon certain rules among our help. A fixed rule for retiring is among the most important. There are always



A woman berry picker, probably early 20th century. Source: Slide show created by Harold Buchholz and Ruthanna Walter called "Eighty Years of Progress in the Concord Grape Industry," March 2001. North East Library.

some among the girls who will keep late hours, and... by disturbing the slumber of the tired ones put your whole force on the 'drydock for repairs' the next day..."⁴⁸

Though women predominated at harvest time, a close look at the period photos confirms that men were there, too. They seem to have manned the wagons and they are also shown in the vineyards standing on high platforms that presumably permitted easy oversight. Probably there were casual workers among these men, but if a farmer did employ permanent workers, they would always be men, so that men formed the year-round work force and women were the supplementary labor force. And indeed, the 1918 Erie County directory shows that on almost every page, one or two farm laborers or farm managers were listed in fruit belt townships. These men usually were heads of household and often were listed as renting a house and lot. Single men seldom appeared in the directory, but that doesn't mean there were few single men working in the fruit belt; instead, they

were probably not targeted for inclusion in directories owing to their youth, transience, and relative lack of social influence.

Towards the end of this first agricultural phase, World War I led many male laborers to take industrial jobs or join the military, thus necessitating supplemental workers during harvesting. In the first year of World War I, the Agricultural

Extension records indicate that the Farm Bureau of Erie County and other agencies were active in recruiting farm labor.⁴⁹



Women picking grapes, North East, date unknown. North East Library.

Tenancy rates are not available for the earliest years of this period, but the 1880 and 1927 censuses both show that tenancy was about 20 percent throughout Erie County -- right around the statewide average. Directories show that some fruit growers rented land on shares, and that some were farm managers rather than owners; but no pronounced pattern of pervasive tenancy reveals itself. Rather, it seems that tenancy was probably related to life cycle patterns, generational succession, and the normal ups and downs of the real estate market.

Buildings, 1850-1925

For this period, most farms would have had a collection of buildings and landscapes typical of conventional diversified farming; see the Northwestern Woodland, Grassland, and Specialized Farming Region MPDF for descriptions of these. Here we add buildings and landscape features that are related to the lake plain fruit and vegetable culture.

However, we ought also to consider the possibility that conventional barns incorporated features specific to the fruit belt, especially since farming was so diversified in the beginning. It is not clear what these might look like.

Also, farm house exteriors may obscure features that were specific to fruit culture. For example, cellars may have accommodated packing or storage. At one field survey site, for example, a relative of the former owner mentioned that there was a twelve foot cellar extending across the entire basement level of the farmhouse, built about 1900.

Farm Packing House, 1850-1925

Once fruit was picked, it was often packed right in the field. Orchard packing tables were often provided for this purpose.



(U.S.D.A.)

FIG. 29.—A good type of orchard packing table. A gate closes the opening above the barrel. Note the canvas apron at the left of the opening for covering the barrel when the fruit is run into it. The corner pockets are used for facers. The chutes above are used for culls which run down into the crates.

Orchard packing table. From Eugene Auchter, *Orchard & Small Fruit Culture* (New York, 1929), 38.

However, frequently the fruit was transferred to a building that housed equipment for sorting and packing, particularly on farms with larger orchards and vineyards. Thus facility was called a packing house, or sometimes a packing barn. It had a number of diagnostic features. Most examples found in fieldwork and in period illustrations were sited near the roadway. Large doorways with either sliding or hinged doors admitted wagons piled high with containers, full or empty. Most packing barns had rows of first-floor windows to provide the light necessary for the work of sorting and packing. Special tables allowed workers a space in which to sort fruit in manageable quantities. At other tables, packers carefully placed the fruit



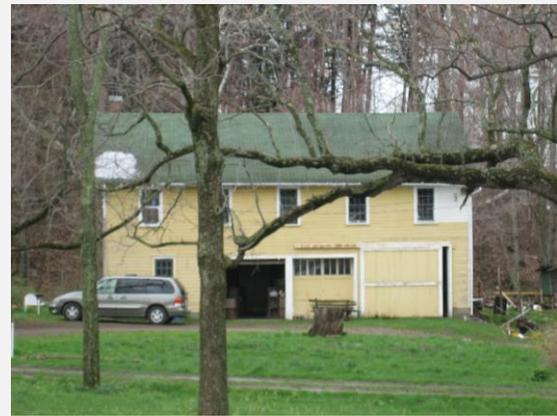
Typical packing barn with pickers, North East Township, no date. From Harold Buchholz slide show, North East Library.

in labelled containers for market, usually with uniform weights or volumes. These containers were then carefully loaded onto a fruit wagon (later a truck bed) for transport.

Several extant packing barns were documented during field survey work in North East Township.

At site 009, a packing barn had the large access doors on the first floor; windows to admit light; and second-story quarters (heated, as the chimney indicates.)

One exceptional barn dated to 1879 illustrates the potential for wealth in early North East grape growing. This large brick octagon barn still stands on the John Phillips property. Its datestone bears the name "A. W. Butt." Alonzo Butt descended from an early settler family and the agricultural census for the year 1879 reported that he sold 46,000 pounds of grapes; mowed 45 tons of hay; kept 10 cattle; and harvested corn, oats, barley, wheat, potatoes, and apples. His farm was worth over \$14,000. The octagonal barn accommodated a large scale diversified operation. Its huge open upper story could accommodate hay and grain, and possibly also wagon and box storage space needed for large scale grape growing. The lower story is supported by a number of posts and could have housed animals; but its numerous sash windows, which are executed in a style that suggests more human than animal occupation and obviously were intended to provide ample lighting, may indicate that this level functioned as a packing house. This theory gains currency when we consider that an extension to the barn for livestock was added almost immediately after the barn was built, and which has been removed.



Packing Barn, North East Township, Erie County, c. 1900-1925. Site 049-NE-009.



Packing house and worker housing, North East Township, Erie County. Site 049-NE-005.



English barn with packing house extension, North East Township, Erie County, original 19th century, addition early 20th century. Site 049-NE-006.



Octagon Barn, North East Township, Erie County, 1879. Site 049-NE-002.



Octagon Barn Interior, North East Township, Erie County, 1879. Site 049-NE-002.

Worker Housing, 1850-1925

L. G. Youngs wrote in 1909 that “Women help board themselves in the boarding houses which the growers have built for that purpose and furnished with stoves, tables, chairs, bedsteads, and mattresses. The pickers provide their own sheets, quilts, and provisions. Butchers, bakers and grocery wagons visit those away from the towns and keep them supplied throughout the season.”⁵⁰ As we have seen, some growers housed temporary workers in multipurpose packing barns. A 1930 study of the grape industry found that hourly cash wage work accounted for by far the largest portion of labor time and costs. However, a few workers were hired by the month, and some of these were boarded. Moreover, this study only dealt with the grape industry, and of course there were other fruit and vegetable crops that used hired labor. So, other types of worker housing does appear in the fruit belt. In North East, Site 007 has two houses. One was a small early 19th century house and the other, a larger c. 1900 house, was built



Probable worker housing, North East Township, Erie County, c. 1920. Site 049-NE-009.



Probable tenant house, North East Township, Erie County, c. 1920-40. Site 049-NE-001.



Grape pickers and packing house with worker quarters upstairs. Bostwick farm on Gulf Road, North East Township, Erie County, c1900-1910. North East Historical Society collection.

right next to it. At site 009, a separate building appears to have housed workers; perhaps this building corresponds to Youngs's' description of "boarding houses." At site 001, a very small house was sited next to a barn foundation, suggesting a possible tenant house.

Related Buildings, 1850-1925

This survey did not seek to record other related buildings that would not be found on individual farms. For the most part, these buildings would be located in

towns. For example, the 1918 directory⁵¹ notes several nurseries, one cannery, and fruit shippers and suppliers. The latter two were in the town of North East. A 1908 commercial advertising supplement showed a basket factory, three grape warehouses, and a "fruit package factory" sited along a rail siding in the town.⁵² There was one winery, the South Shore Winery, which shows up in 19th and early 20th century atlases, but it is no longer extant. Nurseries, supplying vines and young trees, were also important ancillary sites, but none of these were documented.

Landscapes, 1850-1925

The Lake Erie shore agricultural district has some of the most arresting landscapes of any farming area in the state. Regular lines of vineyard and orchard occupy the lake shore plain. From those which lie higher up on the slope a mile or two inland, there is a striking view of the lake. Today's landscape differs in some marked ways from the historic one. First of all, the landscape from the 1850-1925 period would have been more variegated, with a mix of small truck patches, vineyards, and orchards with different kinds of fruit trees: apples, peaches, cherries, plums, and so forth. The fruit trees themselves would have been large by modern standards -- both taller and wider than the dwarf stock now



Remnant orchard with apple trees, North East Township, Erie County, early 20th century. Site 049-NE-004.

standard in the industry. A larger selection of varieties would also probably have been present, that is, beyond the Delicious, McIntosh, Granny Smith trinity now so dominant.

Prescriptive literature recommended several different planting systems for apples. "Rectangular," "Hexagonal," and "Quincunx" were most often mentioned. In general, trees were much further apart than they are today. The closest spacing recommended was sixteen feet apart; the "Quincunx" pattern of planting accommodated just about 300 trees per acre. For peaches, an 1870 manual recommended spacing trees twenty feet apart.⁵³ The photos from Site # 003 and



Remnant apple orchard sited in a hollow, North East Township, Erie County, early 20th century. Site 049-NE-001.

#001 in North East Township show older apple orchards. The bushy, approximately fifteen to twenty foot tall trees are spaced about 15-20 feet apart. These remnant orchards are scattered around the lake shore fruit growing region. They seem to have survived because they occupy land in agriculturally marginal areas (low spots, for instance), or because they are on land that was sold off in a subdivision.



"Young Orchard." Photo showing orchard interplanting. No date or location given. Pennsylvania State Archives, Record Group 1 (Department of Agriculture), Series 7 (Photographic Negatives), Negative # 4971.

Since this method of planting would take up considerable acreage, fruit-culture experts also recommended interplanting (with squash, other vegetables, or even young fruit trees) to take advantage of open space while trees were young and small. The photo below from the Pennsylvania State Archives shows a case of interplanting.



“Acres of Grape Vines, Erie County.” No date.
 Pennsylvania State Archives Record Group 031
 Series #06-Neg# 0584.

The grape-belt journal *Farm and Vineyard* (which circulated throughout the Erie-Chautauqua fruit belt) suggested in 1891 that landscape changes accompanied the rise of the grape belt. “the grape business [has meant] ... dividing up its broad farms, removing hundreds of miles of its crooked rail fences and old hedge rows, cleaning up and beautifying the land, improving the highways, and raising beautiful cottages...”⁵⁴ A 1909 report on “The Grape in Pennsylvania and Modern

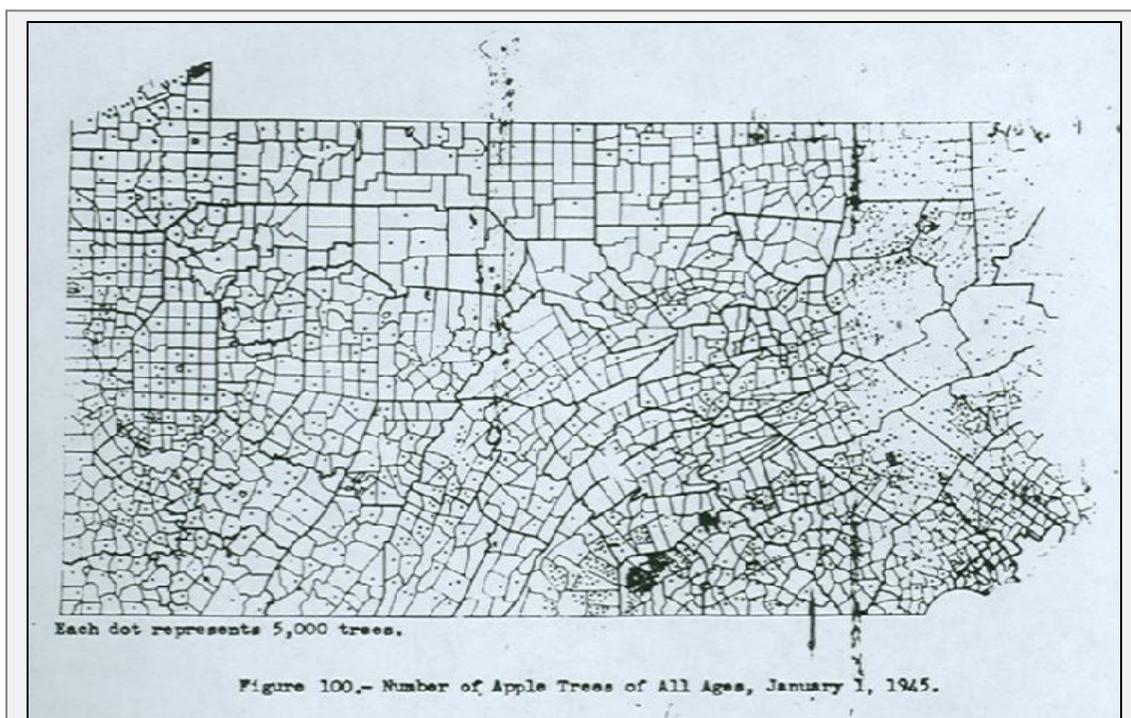
Methods of Culture” declared that “checks 8 by 9 feet is the one most generally used for the Concord grape. This gives 605 plants to the acre.”⁵⁵ The vines were staked to 8-9 foot chestnut posts, with two wires strung between them. Various systems were used for tying the vines to the wires.

1925-1960: Diversified Fruit Culture

Products, 1925-1960

By the 20th century, competition from California forced adaptations in the commercial fruit industry in Erie County. In the Erie-Chautauqua "grape belt" as a whole, the total number of vines peaked around 1930, with subsequent declines due to Depression conditions compounded by the end of Prohibition (when fresh grape production for home winemaking had boomed). It appears that in Erie County specifically, grape farmers slightly increased their number of vines during the 1930s and 1940s, but overall production there declined nonetheless. As smaller operations elsewhere in the state closed down, Pennsylvania grape culture became even more concentrated in Erie County. In 1930, 80% of the State's grape vines were located in Erie County; by 1945 this percentage grew to 85%, and by 1950, 93%. In 1945 North East alone had over half of the state's vines. Outside of the east lake region, Harborcreek Township (with 963,031 vines) and Girard Township (with 406,963 vines) were also important to county grape growing. That same year Erie was ranked the 14th county in the entire United States in the number of grape vines.⁵⁶ During the 1950s, aggressive fertilizing and spraying resulted in better yields despite lower numbers of vines. Yet even so, total production had dropped from previous highs: in 1950 Erie County produced twenty million pounds of grapes, as compared to more than thirty-six million in 1930.

Grape growers in Pennsylvania and New York State found economic relief from table-grape competition by diverting their crops to processing. A major shift in marketing occurred: by about 1940, nearly 100% of Concord grapes from the "grape belt" ended up in grape juice, with some juice further processed into jellies, soft drinks, and Kosher wines.⁵⁷ A strong cooperative association achieved vertical integration in the grape-juice business, providing a market for grape growers in the region. Indeed, the plants even began to import grapes from elsewhere to keep up. In the 1920s, grape juice dominated the fruit-juice market; later, when citrus and pineapple juice cut into overall market share, grape juice had to compete with alternatives, but consumption still increased at the same rate as the population.⁵⁸

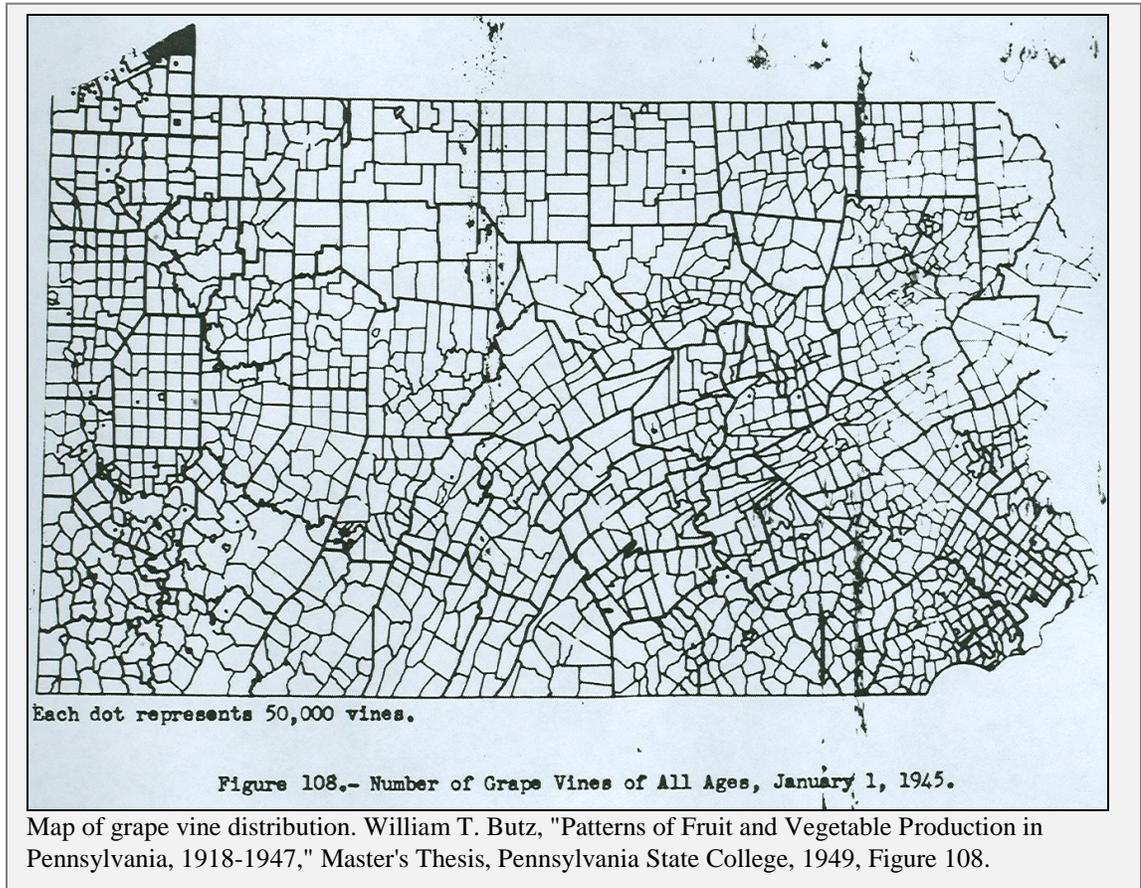


Map showing apple tree distribution. William T. Butz, "Patterns of Fruit and Vegetable Production in Pennsylvania, 1918-1947," Master's Thesis, Pennsylvania State College, 1949, Figure 100.

At the same time, farms in the lake shore district shifted away from general crop-and-livestock farming mixed with fruit culture, to focus on diversified fruit culture. General farming was not very profitable, while fruit farming could be made to pay. Local soils and climate were well suited to fruit and vegetable culture, so this was a logical transition. There had always been a few large scale fruit growers in the region;⁵⁹ during the 1920s many more specialized in fruit growing, and this pattern only intensified with time. The dramatic shift from the 1920 U.S. census to the 1930 U.S. census demonstrates the specialization in commercial fruit farming during the nineteen-twenties. Recall that in 1920 61% of employed farmers in North East worked in "general farming" while only

35% worked in fruits; but in 1930 these proportions were reversed.⁶⁰ North East became the most concentrated site of apple, peach, and cherry production in Erie County, indeed in the state. This trend intensified after World War II. By 1945, Erie County had 177,760 bearing apple trees, 80 percent of which were in North East Township. The number of apple trees in commercial orchards had more than tripled in 15 years' time. The number of peach trees in the county had increased almost threefold since 1929; most (over 90,000) were in North East township. Yields improved as soil management and scientific experimentation improved farming methods, resulting in the widespread use of cover crops, tractor motors, orchard fertilization, and power spraying.⁶¹ Several significant transitions took place in the 20th century US apple orchard business. The number of varieties declined drastically; and the most popular apple varieties changed notably as well. In 1915, the dominant varieties included the Baldwin, Northern Spy, Ben Davis, Rhode Island Greening, Winesap, Jonathan, and Rome Beauty. By 1964, Delicious apples (not even in the top 25 in 1915) claimed the top spot with a quarter of all US apple production; this variety had been obscure in the 19th century, then achieving wide positive publicity in the early 20th century with fair exhibitions and aggressive promotion by Stark Brothers nursery in Iowa. The Delicious apple tree's hardiness and strong branches recommended it to growers, and the fruit had good keeping qualities (though immediate cold storage was recommended). The Delicious became the iconic American apple by the 1940s. The McIntosh apple originated in Canada; like the Delicious, it had strong branches and good keeping qualities; it also was well regarded for both cooking and eating fresh. With spraying, its diseases could be kept at bay. The Rome apple had similar qualities.⁶² Overall, the newly popular varieties were mainly winter apples, picked late in the season and then held in cold storage and marketed slowly. Some have argued that flavor was sacrificed to keeping quality, especially where the Delicious apple is concerned. It does seem that heavy bearing, keeping quality, hardiness, and amenability to disease control were mentioned as often as flavor when the varieties' virtues were discussed.

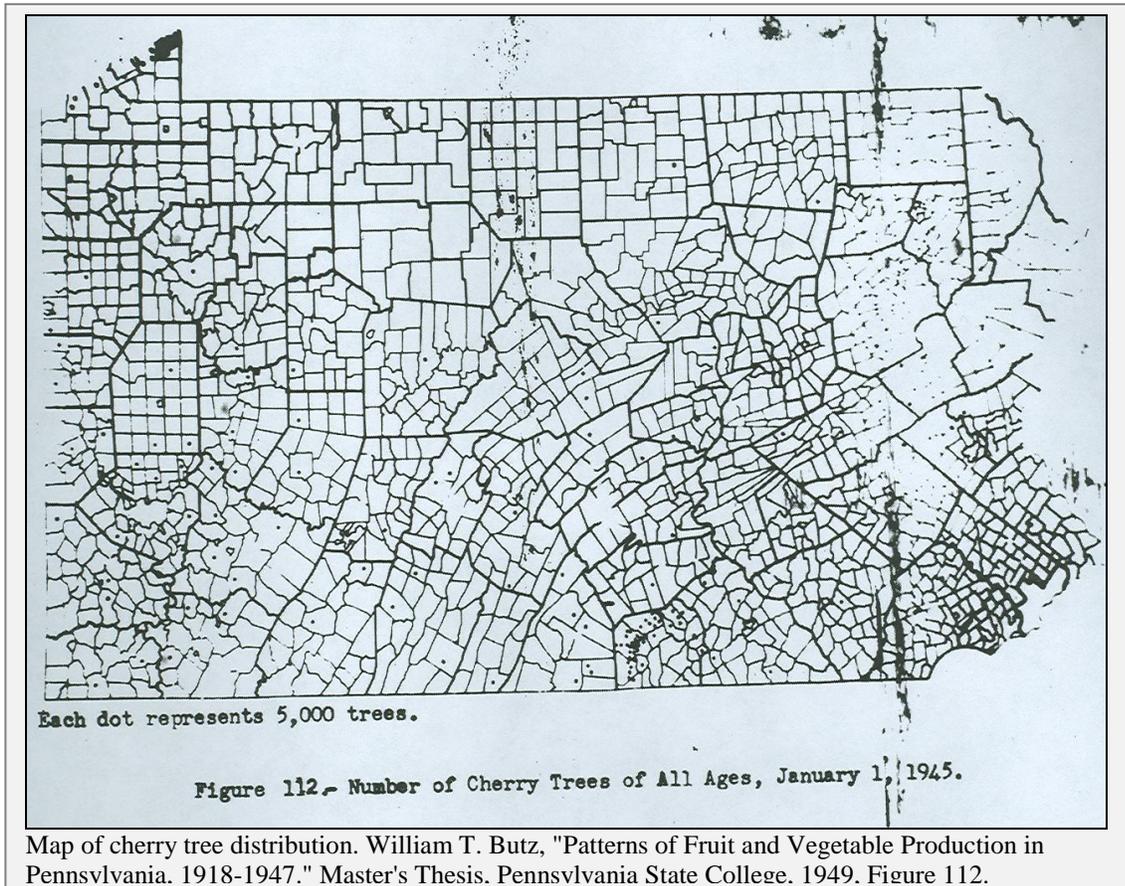
Until World War II, apple trees were tall and widely spaced. The most notable landscape change between 1945 and 1960 was the gradual introduction of dwarf rootstock, and with it of tighter planting and (in some cases) trellising. These innovations, together with fertilizers and spraying, enabled growers to raise per-acre productivity enormously.⁶³ This practice was most widespread in the Pacific Northwest, but growers in the East adopted it occasionally as well.



Among peaches, Elberta and J. H. Hale were the most popular varieties.⁶⁴

Cherries were another significant crop of the second phase of the Lake Belt's agricultural development, expanding from 1928-1960, with especially dramatic growth in the fifties. At the beginning of the 20th century a number of small scale operations grew cherry varieties, then cherry culture was encouraged with the introduction in 1928 of a mechanized cherry packing method. In that year, the Keystone Cooperative struck an agreement with Mr. A.F. Scharping of Albion, New York to buy cherries produced by Keystone Cooperative farmers. Scharping announced that he would preserve cherries by cold pack process, as did a North East factory, a frame 48 by 60 foot building with storage space on the second floor (half of the ground floor size).⁶⁵ Sour cherry crops were also contracted to canners, some were sold to open markets, and Welch's also bought sweet cherries. Changes in the public's taste translated into changes in the orchards (for instance, over time sour cherries gained popularity and replaced many sweet cherry orchards). In 1945, there were 179,343 cherry trees in the county, and North East township was the site "of greatest cherry production intensity in Pennsylvania," with more than 82% of the cherry trees in Erie County. In that same year, Erie County was ranked 12th of all counties in the United States in number of cherry trees. In 1950, Erie

County had 28.6% of the state's cherry trees and harvested 48% of the state's total sweet cherries; this growth continued with the 1950s' development of the mechanical cherry picker. It was not until pest problems and the mechanical grape harvester (about 1965) that the planting of cherry fruit trees declined in North East. This was because now production costs for grapes declined, thus profits increased, and surpassed the profit potential of cherries.



Apples, grapes, peaches, and cherries were the most prominent crops, but many others were grown. Longtime North East farmer Alfred Pero stated in an interview that during this time period there was a proliferation of diversified fruit farms that grew apples, cherries, peaches, plums, prunes, quinces, gooseberries, and raspberries. In another interview, Garth and Lucille Pero of North East discussed the Crossman farm in 1945, which dedicated 14 acres to peaches, 14 to sweet and sour cherries, 14 to apples (Romes and Red Delicious), 2 to prune orchards, and 30 to grapes. According to another interview, some cherries went to the Erie Storage Company for cold storage, and apples could be sent to the cider mill on Mill Road.⁶⁶

Truck farming also increased modestly in the lake shore belt. As early as 1906, the U. S. Canning Company had a plant in North East.⁶⁷ A 1934 ad for the North East Preserving

Works noted that that year, "Growers were furnished 1,200,000 tomato plants this season." Interestingly, this implies that the canneries contracted in advance with growers for tomatoes, rather than just taking whatever people brought at the season's end. The Preserving Works processed "Cherries, Berries, Peas, Green Wax Beans, Tomatoes, Tomato Products, Beets and Pumpkin."⁶⁸ A decade later, Erie County was the state's leading cabbage producer (in terms of acreage), with 2300 acres. Another 1300 acres of tomatoes was planted. Sweet corn, snap beans, cucumbers, and peas rounded out the garden truck (ie small scale commercial vegetable) production.⁶⁹

The motor truck had an impact on the fruit growing industry. For fruit farmers, its impact was both positive and negative. On the one hand, direct marketing via roadside stands became more feasible and popular. Greater freshness could be achieved when trucks sent a day's crop into market immediately, instead of waiting for railroad cars to fill. Farmers could realize greater profits with a middleman eliminated, if they trucked produce to market themselves. New markets could be reached, and this happened especially in the mining regions. Damage to fruit was less because it reached market more quickly. On the other hand, it wasn't always farmers who owned and drove trucks. Truckers and merchants did too. At least in the early years, inexperienced truckers allegedly dumped fruit from distant origins, depressing prices; and since so many more growers were in striking distance of markets, oversupply and increased competition also indirectly resulted from trucking.⁷⁰

Spraying became routine in this period. In the 1920s, arsenates and other highly toxic compounds were used; terms like Paris Green and London Purple became an everyday part of the commercial fruit grower's lexicon. At least in the early years, sometimes the compounds were mixed on the farm. The spraying equipment was horse drawn or tractor drawn. Surely spraying had health implications for workers and perhaps consumers too, but little information on this has been located. Extension records suggest that agents tended to find government concerns about residues annoying.

It seems that cold storage was only moderately important in the Erie shore fruit belt. Early cold storage (called "common storage") depended on ice, below-ground location, or insulation, and later mechanical refrigeration came into use. However, cold storage was little used for grapes and peaches. The most important cold-storage fruit was the apple, so it is possible that cold storage in Erie County was not really prominent until the commercial apple orchard appeared. Fieldwork research identified one former cold storage facility in North East borough, but it has been converted to other uses and was not visited. No farm cold storage facilities were recorded.

Labor and Land Tenure, 1925-1960

Land tenure patterns remained similar to the earlier period.



This period saw a continuation of intense manual labor, right up until the end of our study period, ie the early 1960s. As in the first stage of agricultural development, the second phase also relied heavily on the labor of women and children during harvesting. It seems that shifts in marketing and technological changes may have changed the content of on-farm packing labor. On the one hand, there was less need to carefully pack cherries and grapes, because of the cherry cold pack process and diversion of grapes into juice, respectively. However, with the increase in peach and apple orchards, hand grading and packing would still be needed.

Grape harvesting still required a large labor force during harvest season, as human labor made up 40% of the cost of producing grapes. A 1930 study of farms with 100 acres or more showed that 83% of the labor was done by hired help.⁷¹ Temporary workers and hired help during harvesting was also used on small farms with less than



twenty-five acres, performing half of the labor in vineyards. As before, women did most of the grape picking and vine tying. Wages were often paid per hour for tying and piece work for picking. Women came from inside and outside the township, who according to oral histories did so "for pocket change" and Christmas spending money. One interview with Lucille Pero noted that in one instance a mother and two children wanted to go on a vacation and the mother said "well let's go pick grapes and whatever money you make, we will use it for vacation." Women worked during cherry picking season, thinned out peach trees in June, and later packed apples. Apple packing required about five to six women who used cylindrical cans and

placed a single apple on paper, then another on top and so forth. Once again these women often stayed in private homes or converted barns and packing houses.⁷²

During World War II, demands for labor spiked. In 1944 the Erie County Agricultural Extension Agent's "Narrative Annual Report" stated that county agents used public schools and organizations to recruit women and children from the city. Six hundred workers from Erie city left daily for work upon lake front farms, and agents also set up soldier camps from Camp Reynolds where men (brought by buses 110 miles) were employed to harvest apples and tomatoes in the western end of the county.



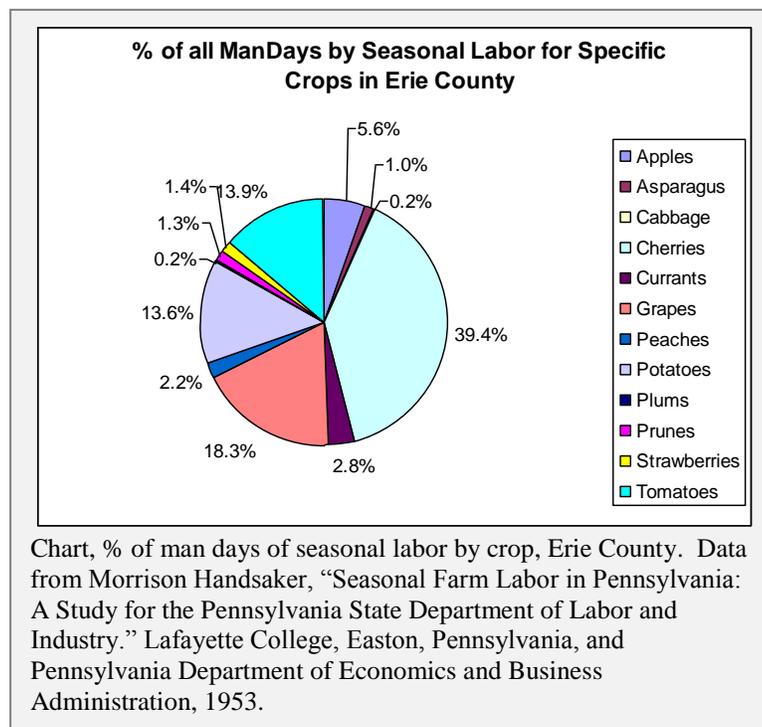
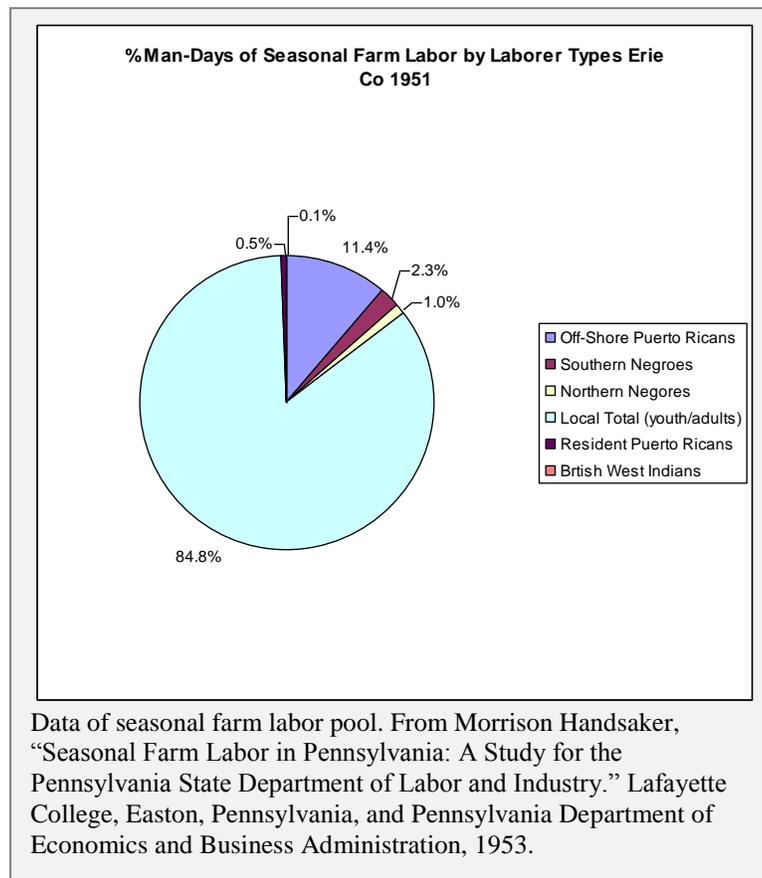
This photo of a woman with grapes, taken in the early 1960s, was labeled as "thing of the past." Harold Buchholz slide show, North East Library.

There were efforts to recruit interned Japanese Americans but "public opinion prevented further activity along this line" and only 10-12 were placed on farms. The county labor committee requested the construction of farm labor camps in fruit and lake front regions. Five camps with the capacity of five hundred and fifty workers were requested to relieve housing demands. Five directors and eight assistant directors, a cooking staff, and home economics high school instructor worked at these five sites. One camp housed 160 high-school aged boys and four other camps operated for young women in high school.⁷³

Another wartime source of labor came from 160 German war prisoners sent to processing plants in North East. The Emergency Farm Labor Committee established a work camp and negotiated a deal with North East Cannery Inc. for farmers to pay cannery 15 cents per hour for every man hour of work to defray camp expenses (which totaled at \$14,000). This agreement lasted for 12 weeks and 90% of employers reported satisfaction with this labor. The 1945 crop required an even larger picking crew for cherries, apples, and grapes. In addition to camps for wartime workers, laborers lived in make-shift accommodations like converted packing houses, tenant houses, or private homes.⁷⁴

One change in the labor supply was that migrant workers comprised an increasing (though still small) proportion of pickers. Puerto Ricans began to arrive as early as the 1930s and during the Depression, itinerant "hoboes" sought work also.⁷⁵ During this phase Welch's and Keystone replaced picking baskets with wooden crates, which were heavier and harder to carry. They began to hire Puerto Rican, "Texas Mexican", and African American migrant men.⁷⁶ Greater availability of cheap migrant labor and movement of local women into the service sector were probably factors in this change. Also, the shift to juice meant that grapes could be collected in larger containers, because they did not have to be so carefully handled to avoid crushing and because sales would occur in large quantities.

Though converted barns, packing houses, and private homes still provided most housing, labor camps also were erected, especially for migrant families; the concern for their



welfare and living conditions became the focus of social workers and government agencies. A study was conducted in 1953 in order to “examine the adequacy of the present and the prospective labor supply and secondarily, to examine the social situation in which workers, particularly the migrant workers, find themselves.” The study reported that in 1952, out of all counties in Pennsylvania, Erie had the most farm operators to employ five or more seasonal workers. Most migratory man-days in the 1951-53 were spent on apples, cherries, currants, grapes, potatoes, and tomatoes. These crops required workers in different degrees depending on the month of harvesting (for example workers were needed most in October for apple harvesting, while almost all man-days in July were devoted to cherries).⁷⁷ Growers often resented government regulation of migrant housing and working conditions.

Several oral history interviewees reported that the workers were racially segregated; foremen put local, white natives and African Americans or Puerto Ricans into different orchards. Several interviewees acknowledged that prejudice was a problem in North East, and others disparaged migrants in terms that implicitly stereotyped them.⁷⁸

In 1952 the largest group of non-local migrant workers was Puerto Ricans who worked most extensively in cherry picking, which interestingly claimed more man-days

than did grapes. The mechanical cherry picker of the late 1950s reduced the required man power, and thus the number of Puerto Ricans workers employed during cherry harvest dropped thereafter.⁷⁹ Other migrant workers who came to Erie during harvesting in the fifties included African Americans from the southern U.S. states. Out of ninety-nine farmers interviewed in the early fifties, the majority recruited laborers from among previous workers or hired those who came to the farm directly to apply. A few farmers utilized crew leaders, labor contractors, or private employment agencies.⁸⁰

The grape industry of the post-war period also saw a slight decrease in labor when plastic crates replaced wooden ones. Wooden crates weighed seven pounds and held 30 pounds of grapes, while plastic crates weighed only three pounds but held 40 pounds. This allowed more grapes to be picked by a single worker. Plastic crates were developed by Welch’s and did not “rot or break and could be easily stacked.”⁸¹ Further, fewer workers



Plastic bins and machine hauling, North East Township, Erie County, early 1960s. John Griggs, North East Grape Extension Office.

were needed for hauling and dumping grapes in tanks with the rise of mechanical devices that performed these jobs. Finally while Puerto Ricans still tied vines and pruned grape vineyards, the use of pneumatic pruners even reduced the need for this manual labor.⁸²

Buildings, 1925-1960

In 1961, geographer Robert Dahlberg noted that "farms producing grapes in the Chautauqua-Erie area are characterized by a comparatively simple complex of structures consisting of a house, a barn, and one or two sheds. In many cases the latter represent old grape-packing houses which stand as a reminder of the era in which grapes were packed on the farm for the table market."⁸³



Grape packing barn extension, North East Township, Erie County, c. 1950-60.
Site 049-NE-005.

Packing House/Packing Barn, 1925-1965

Packing houses continued in use as peaches, cherries, and apples increased in volume. Some field sites show additions made in 1940s and 1950s for this purpose.

At site 049-NE-005, for example, the original barn is a timber frame English barn that probably dates to about 1860. Behind it a gabled ell was added sometime in the thirties or forties. This ell was used for packing cherries and other fruits, and for storage. Inside the ell, fruit boxes are still stacked high.⁸⁴



Packing barn interior at site 049-NE-005.

Worker Housing, 1920-1965

In this period, previous housing patterns continued. Oral histories and other sources document that local women and sometimes families were housed on farms in apartments or dormitory-style accommodation, often above packing house facilities.



Packing house and worker housing, North East Township, Erie County, c. 1935-50 addition to c. 1860 English barn. Site 049-NE-005.

At site 049-NE-005, a gabled wood frame packing house was combined with worker quarters. This building had the classic features of this type: ample lighting and large loading bay on the ground floor; lighting and living quarters on the second floor. An on-site interviewee recalled that a farmer and his family, either a son or a tenant, lived in the upper quarters in the post-World War II period. (That's why this picture is used for two different eras.)



Packing house converted to migrant quarters, North East Township, Erie County, original construction c. 1920, conversion c. 1955-60. Site 049-NE-002.

A new feature of this period was housing for migrants. In some cases the workers were all single men, and these people were often housed in dormitory-style accommodations. According to John Phillips Jr., on the Phillips farm, for example, Puerto Ricans and later Texas-Mexicans, as many as sixty at once, occupied the upper story of the former packing house. The ground floor was converted to a cook-room.⁸⁵ A 1951 study of migrant labor in Pennsylvania documented a mix of housing for migrant workers. 99 farmers were interviewed in Erie. Twenty-two of these supplied housing for seasonal workers, 7 of which housed 15 or more, while 15 housed from five to fourteen. So, most migrant quarters were relatively small in scale. Most of the interviewees reported housing

migrants on their property, though not in their private homes. One interviewee in a later oral history project mentioned a dairy barn that had been converted into migrant housing. One was large enough to have two large barracks rooms, shower room, and restaurant style kitchen.⁸⁶



Packing house converted to migrant quarters, North East Township, Erie County, original construction c. 1920, conversion c. 1955-60. Site 049-NE-002.

Migrant "camps" with dozens of workers were mentioned in each of the annual reports on seasonal labor that were issued by the state in the postwar period. In 1951, for example, twenty-two migrant camps housed 150 southern workers and 400 Puerto Ricans. In the 1963 season there were 330 migrants housed in five camps, harvesting apples, cherries, peaches, potatoes, and tomatoes. None of these camps has been documented.

Spray Mixing Shed, 1925-1965

No extant spray mixing sheds were documented in the field. These small, usually gable-roofed frame structures housed facilities with water access and storage for chemicals.

Cold Storage, 1925-1965

General publications about fruit farming frequently mentioned cold storage for fruits, especially apples. Cold storage would enable a grower to hold fruits beyond the period when they were most plentiful, therefore waiting until prices rose before marketing them. Some manuals also mentioned that cold storage allowed growers to hold apples and sort and pack them after the time pressures of harvesting abated.⁸⁷ However, field survey work did not identify any farm-based cold storage buildings in North East Township. By the time apples became more important in the Erie fruit belt, centralized commercial cold storage was probably more widely available.

Roadside stand, 1925-1965

In the 1930s and 1940s, as the automobile became more widespread and road infrastructure was improved, the roadside stand became an important means of reaching markets for many fruit producers. A few small roadside stands still exist in the Erie Fruit Belt, especially along Lake Road. These are small structures, usually built of balloon framing, often with a



Roadside stand, Lake Road, Harborcreek Township, Erie County, c. 1950-65.

shed roof or truncated gable roof. Their defining features are their proximity to the road (and to the orchard); parking area surrounding the stand; and large openings in the eaves side for display of wares.

Landscapes, 1920-1960

In this period, as farming shifted to diversified fruit and vegetable production, landscapes would have reflected this shift. A typical Erie Fruit Belt operation would have 10-20 acres of vineyards, and substantial acreage in orchards as well. Smaller fields of tomatoes, sweet corn, potatoes, and other vegetables might also be part of a Fruit Belt farm.

Robert Dahlberg, in his 1961 analysis of the Erie-Chautauqua fruit belt landscapes, lamented that "downslope orientation of vineyard rows has greatly frustrated the efforts of the Soil Conservation Service." He noted that vineyard rows were usually sixty percent longer than they were wide. The median length was about 540 feet, Dahlberg reported, and the width about 340 feet. "Two characteristic features of vineyards in this area are the headlands or spaces left at the end of the vineyard rows and cross alleys which interrupt rows in long vineyards. Headlands provide room for the turning of implements and generally average 30 feet. The cross alleys at intervals of 500 to 600 feet are necessary if brush or prunings are to be removed easily." This is as precise a description of Lake Erie vineyard landscape organization as we are likely to find. Present vineyard layout still seems to fit this description, even the ones on slopes.⁸⁸



Orchard with older full size trees, North East Township, Erie County, c. 1920-50. Site 049-NE-004.



Orchard with dwarf or semi dwarf trees, North East Township, Erie County, c. 1950-65. Site 049-NE-00.



Vineyard, North East Township, Erie County, mid twentieth century. Site 009-NE-002.

The orchard landscape was only beginning to change in this period. Most orchards had large trees, or possibly semi-dwarf ones. In general, the biggest change of the postwar period was the shift to close packing and trellising of dwarf trees. This was found at one field survey site, though the newer orchards were only about thirty years old. What orchards remain seem to exhibit the older pattern of large trees widely spaced. Very few cherry orchards remain.



Mixed apple orchard and grape vineyard with Lake Erie in the distance, North East Township, Erie County, date unknown. Site 049-NE-003.



Trellised dwarf apple trees, North East Township, Erie County, c. 1990-2000. Site 049-NE-003.



Cherry orchard, North East Township, Erie County, date unknown. Site 009-NE-001.

Property Types and Registration Requirements – Criterion A, Pennsylvania

This statement outlines considerations for Pennsylvania as a whole.

Farmstead

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

Farm

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

Historic Agricultural District

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

A. Criterion A, Agriculture

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

General Considerations for Pennsylvania as a Whole

National Register eligibility with respect to agriculture in each Historic Agricultural Region of Pennsylvania will depend upon how well a given property reflects the historical farming system in that region. It is very important to remember that Criterion A significance should be assessed in relation to how a given property typifies a farming system, not in relation to whether a property is exceptional or unusual. A property should exemplify a farming system in all its aspects. The totality of a property's representation

in the areas of production, labor patterns, land tenure, mechanization, and cultural traditions will determine its National Register eligibility.

Historic Patterns of Agricultural Production

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

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

-AND-

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

Social Organization of Agricultural Practice

Historic production patterns are necessary but not sufficient to determine eligibility. Social organization of agricultural practice had a profound influence on the landscape that must be recognized. Labor, land tenure, mechanization, and cultural practice should be considered. For example, in the Central Limestone Valleys, share tenancy was an important and enduring practice that significantly influenced the architecture and landscape of farmsteads, farms, and farm districts. In the Northern Tier, conversely, high rates of owner-occupation lent a different appearance to the landscape. The level of mechanization was related to labor practices, and also shaped the landscape through field patterns and architectural accommodation (or lack thereof) for machinery storage. Insofar as cultural factors influenced agricultural production or practice, they should be taken into account in determining the eligibility of farmsteads, farms, and farm districts. For example, Pennsylvania German food ways may have influenced agricultural production patterns and hence architectural forms; Yankee/Yorker families brought with them the English barn (which, because of its organization, shaped farming practice) and the penchant for classical revival styling.⁸⁹

Issues of Chronology

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

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

-OR-

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

How to Measure a Property in its Regional Context

Whether it depicts one chronological period or change over time, a farmstead, farm, or historic agricultural district will normally be significant under Criterion A only if:

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

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

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

3a) levels of mechanization: in highly mechanized areas (relative to the state levels) we would normally expect an array of machine sheds, machinery bays integrally placed in barns, horse-power extensions, etc.⁹⁰ Conversely, in low-mechanization areas such as the Northern Tier, these facilities will likely be less visible.

3 b) labor organization: Patterns of collective neighborhood labor may be present; for example, a butcher house might be located near the road. For early phases of agricultural development, we would not expect to find overt architectural accommodation for hired laborers. But in the wage-labor era, those expressions would range from accommodations on the farm (rooms over springhouses, wings of houses) to purpose-built migrant housing. Mechanization could affect labor organization because it eliminates workers. Architectural and landscape elements that illustrate

patterns of labor organization should be assessed for significance (with respect to agriculture) based on the level of clarity, intensity, and chronological consistency with which they show labor patterns. For example, if a c. 1850 farm house has a c.1880 workers' wing with back stair and no access to the family living area, that is both a clear and chronologically consistent illustration of shifts in hired labor's status.

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

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

Cultural Patterns

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

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

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

Property Types and Registration Requirements – Criterion A, Lake Erie Fruit and Vegetable Belt, 1870-1960

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

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

To be considered significant for Agriculture under Criterion A for the period 1925-1960, "Diversified Fruit Culture”

A **farmstead** should have architectural evidence of diversified fruit / vegetable growing, namely at least one of: packing barn, migrant quarters, roadside stand, cold storage. A **farm** should have landscape evidence extant for more than one

fruit or vegetable culture. So, it should have both vineyard and orchard, or vineyard and vegetable truck garden, etc. And a **historic agricultural district** should have a more or less contiguous collection of farms representing these features.

To be considered significant for Agriculture under Criterion A representing the major agricultural changes in the Erie Fruit Belt from 1850-1965

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

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

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

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

Typical examples are encouraged to satisfy Criterion A for agriculture, but average or ordinary examples are not likely to qualify under Criterion C for Design and Construction. A farm or farmstead will not be eligible under Criterion C simply because it has farm buildings that retain integrity. Under Criterion C, to be eligible as property must exhibit the “distinctive characteristics of a type, period, or method of construction or that represent the work of a master, of that posses high artistic values, or, as a rural historic district, that represent a significant and distinguishable entity whose components lack individual distinction”.⁹¹

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 ...”.⁹² 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.⁹³ This section lays out some considerations for how to assess architectural significance for farm buildings and structures based on their engineering and design characteristics related to agriculture.

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

What does qualify as a significant design?

A barn might qualify if its design reflected essential characteristics of specific barn types, such as Pennsylvania bank barn, Stable barn, English Barn etc. (The salient architectural features of each type are defined within the narratives that accompany this MPDF.) The significant elements of barn layout (location of threshing floors, hay mows, stables, granaries; typical interior organization for a given type; vertical work-flow arrangement where relevant) should retain integrity. The same would be true for outbuildings, for example if a granary or spring house retained essential characteristics of its type. A house, barn, or outbuilding that has been altered or modified to accommodate changing maintenance habits, popular taste, or the convenience of the farmer would not be considered significant unless the new features are demonstrably tied to regional patterns in agricultural buildings and the built environment for the period of significance. For instance, a mid-19th century vernacular farmhouse that was Colonial Revivalized in the early 20th century might be significant for its stylistic features outside this MPDF but would not be architecturally significant under this MPDF because the alterations are not associated with the needs and priorities of farm life. But a farmhouse modified to reflect important transitions in the relationships of farm family members to each other, labor, or the market could be considered significant (such as the addition or removal of quarters for hired hands, cooking facilities for feeding threshing crews, social spaces separated from spaces devoted farm matters, etc). Changes reflecting access to modern amenities and willingness to adopt modern amenities could also be considered significant, such as the addition of a bathroom, running water, a heating plant, or electrification. However, the design features reflecting these changes must be demonstrated to be part of a local or regional pattern of construction; individual, personalized or idiosyncratic alterations that lack design features not adopted elsewhere in the community would not be considered significant under Criterion C, but would support significance under Criterion A for their association with labor and production patterns. In the post World War 2 era, many farmhouses have undergone dramatic changes in ways that make them indistinguishable from contemporary suburban residences in their materials, styles, amenities, and use. Thus it will be difficult to evaluate the Criterion C significance of post war farmhouses without further study.

Design includes massing, proportion, fenestration, and ornament. Ornamentation will be very important in determining Criterion C eligibility. It could include decorative ironwork

(hinges especially); roof-ridge cupolas; gable-end “stars”; painted or trimmed louvers; datestones; painted decorations; cutout designs; cornice detailing; brick-end patterns; and bracketing.

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

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

What qualifies as significant workmanship?

Workmanship is evidenced in quality of masonry, timber framing, durable construction, including evidence of skilled workmanship in details such as hardware or even nails. Masonry, for example, might exhibit carefully cut stone rather than fieldstone. Another facet of workmanship would be cases where there is a good quality example of particular construction method such as log, *blockstanderbau*, plank, timber frame, Shawver Truss, etc. Workmanship applies primarily to individual buildings.

What qualifies as significant “artistic merit”?

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

Examples

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

This is a double-decker Pennsylvania barn with decorative ornament, double bankside bridges, and struts under the forebay, located in Centre County. This barn would qualify under Architecture because of its design features (double decker with multiple mows and floors), its workmanship (technical mastery represented in bridges, struts, and interior framing), and its artistic merit (decorative ornament).



Ornament on Hodge Barn, Centre County



Hodge Barn, Centre County, struts under forebay

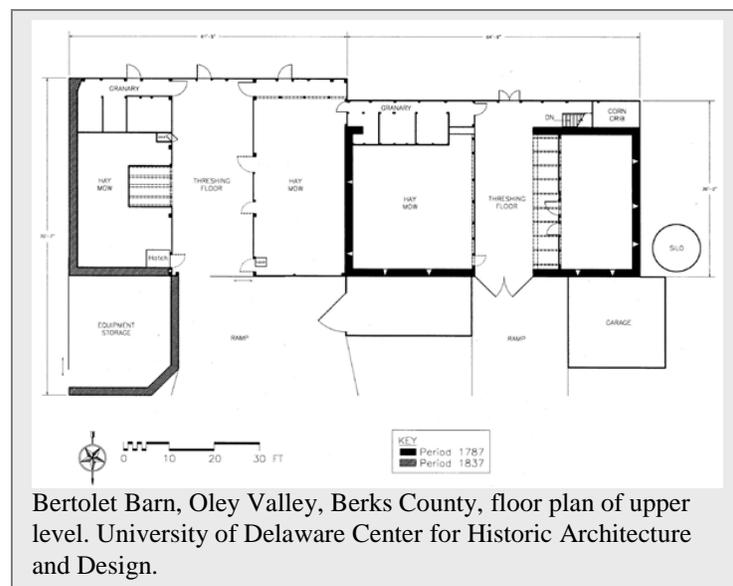


Hodge Barn, Centre County, struts under forebay

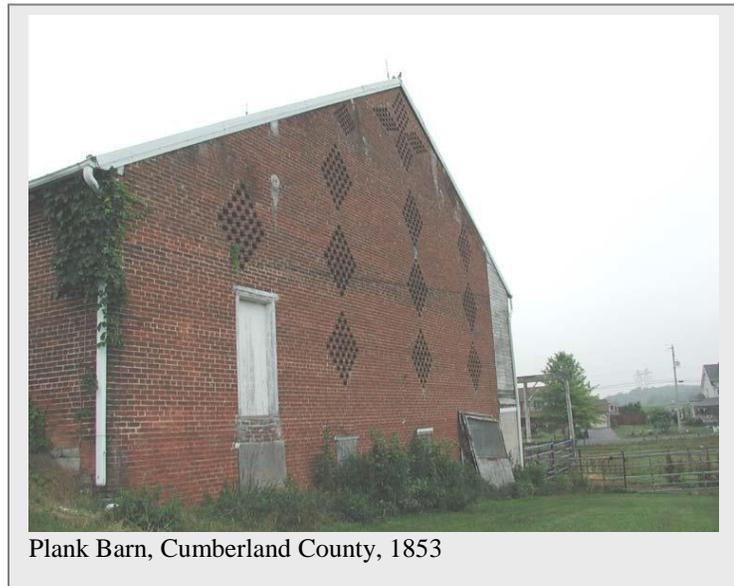
Example 2. The Bertolet Barn in the Oley Valley of Berks County, 1787 and 1839. This barn shows the evolution of the Pennsylvania Barn. The 1787, stone portion has a Germanic *liegender stuhl* framing system; forebay granary with bins; two mows flanking a threshing floor; and intact stable level. It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



Bertolet Barn, Oley Valley, 1787 and 1839.



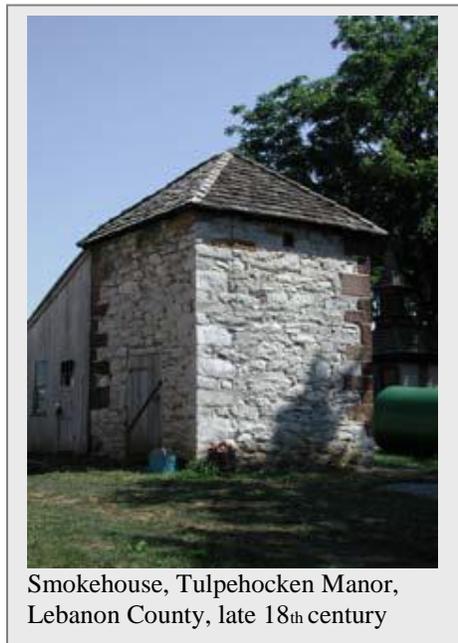
Example 3: the Plank Barn in Cumberland County. This brick-end barn was built in 1853. It is significant for its design, workmanship, and artistic merit. Its significant design features clearly include attention to simple proportions. Its workmanship is important in the significant masonry technique needed to create the openwork patterns in the gable ends. Its artistic merit is represented in the diamond



Plank Barn, Cumberland County, 1853

motifs. The datestone helps to establish chronological frameworks for these barns. The owner manufactured a local plow and the barn is evidence that he was consolidating his wealth.

Example 4. Smokehouse, Tulpehocken Manor, Lebanon County, late 18th century. Most examples of architectural significance will likely be larger buildings such as barns, but this smokehouse (in Lebanon County) is an example of a smaller building which might qualify because of its masonry (which qualifies both under workmanship and design, because its decorative corner quoins are clearly ornamental) and the hand-wrought ironwork, which includes a bar against thieves which is inscribed with the owner's name and date. The building clearly exhibits all the characteristics of its type.



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

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



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

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



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

Property Types and Registration Requirements – Criterion D, Archaeology

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

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

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

should have discrete deposits that can be directly associated with different time periods. The above are only two general examples to guide assessments of integrity.

Change Over Time

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

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

Agricultural Production

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

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

Labor and Land Tenure

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

Aside from providing important information on individual farms and individual ownership, archaeology can provide important information on the effects of larger events

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

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

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

Closely related to the above themes of ethnicity, status, and role, is the concept of class. Class has variously been defined as "the relationship of a social group to the means of

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

Cultural Patterns

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

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

Jewish community (Stewart-Abernathy and Ruff 1989: 97 and 105). In Pennsylvania, archaeological investigations at a Quaker-owned farmstead in Chester County were able to provide important information on the interplay (and contradictions) between Quaker belief and Quaker participation in the larger market system (Bailey et al. 2004:131).

Faunal Studies

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

Conclusion

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

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Integrity

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

Location:

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

Integrity of Location for a farm is well defined by the SR 30 context, which says “an agricultural property must be located either where it was constructed or where important trends or patterns in agriculture occurred... Siting with respect to natural features and topography, use of local and indigenous materials, relationship to roadways, the presence of native species... and other responses to the natural environment all add to integrity of location.”⁹⁴

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.”⁹⁵

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”⁹⁶ Integrity of Materials is well covered for houses elsewhere. For the other buildings of the farmstead, barns and outbuildings often are constructed, or reconstructed, of recycled materials, and integrity of materials is present as long as the recycling can be interpreted as contributing to significance for agriculture. On a farm property, some materials may be organic – such as a fenceline made of rubble, trees, and spontaneous growth. (However, the original vegetative material of crops, or the original fence, does not need to be present.). A historic agricultural district retains Integrity of Materials if its constituent properties possess Integrity of Materials collectively. As well, in districts Integrity of Materials can refer to the presence of key materials across property boundaries, or along shared property boundaries. Remnants of irrigation systems would be an example.

Workmanship:

Integrity of Workmanship refers to the retention of traditional or historic craftsmanship. These include such familiar skills as wood joinery (log, plank, post and beam framing), masonry (stone and brick), but also skills more closely related to agriculture such as fence building, contour plowing, windbreak planting, crop rotation, garden construction, farm pond construction, or farm planning. Workmanship can also refer to the skilled use of technologies that are not necessarily hand-tool derived. For example, the Shawver Truss, a barn framing system popular c. 1900, combined artisan skill with industrial technologies. Evidence of recycling or reuse may contribute, as long as it is part of a pattern or historic trend. Integrity of Workmanship applies mainly to the farmstead

buildings and landscape features. However, collectively Workmanship could conceivably have an impact on the overall appearance of a historic agricultural district in some instances, for example, if in a district a group of farms collectively exhibits particularly adroit arrangement of contour strips.

Feeling:

Integrity of Feeling refers to the “Ability to evoke the aesthetic sense of a particular time and place.”⁹⁷ 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.”⁹⁸ For significance with respect to agriculture, a farmstead or farm must have contributed to a working farm for its period of significance. The presence of historic landscape features related to agriculture is a key aspect of Integrity of Association. Close attention should be paid to identifying intact or remnant features. For example, are crop field size, scale, shape, and patterns are retained from the pre-contour stripping era? Are there remnants of early woodlots or sugar bushes? Is there evidence of land use such as pasturing? A majority of farms in a historic agricultural district should have a continued association with agriculture for the period of significance. To ensure Integrity of Association, the inevitable “intrusions” should be kept to a minimum. However, a historic agricultural district could conceivably have a high percentage of noncontributing properties relative to an urban district. For example, a concentrated 25-acre subdivision with 50 noncontributing houses might be contained within a 1,000-acre historic agricultural district with fifty contributing farms. Even though technically, the subdivision elevates the percentage of noncontributing properties, it does not reduce Integrity of Association, because it is such a small percentage relative to the continuously farmed (and contributing) acreage in the remainder of the district land area.

Notes

1. US Census Bureau. <http://quickfacts.census.gov/qfd/states/42/42049.html>. Accessed November 12, 2007.
2. William Francis Kohland, *Soils of Erie and Jefferson Counties, Pennsylvania: A Geographic Study and Comparison of the distribution and Utilization of Soils in a Glaciated and Non-glaciated area*. (Thesis, University of Tennessee, 1969), p.157.
3. *Ibid*, 21, 35.
4. Unmarked article, "Climate in the Fruit Belt," Courtesy of the North East Library. See also Richard Dahlberg, "The Concord Grape Industry of the Chautauqua-Erie Area," *Economic Geography* April 1961, 150-169.
5. Fletcher, S.W., *A History of Fruit Growing in Pennsylvania*, (State Horticultural Association of Pennsylvania 1931), 38.
6. Ralph Hartley, "Old Days in North East," *The North East Breeze* (regular column), 25 January 1989. He also wrote that in 1870 Westfield, New York led North East in grape growing, as Welch's had established a juice factory there; this trend continued until Welch's established a plant in North East in 1911. Further helping the growth of grape culture was the burning of a local woolen mill in 1883 which prompted many sheep herders to turn to farming.
7. U. P. Hedrick, *Manual of American Grape-Growing* (New York: MacMillan, 1919), 18-19.
8. "A Pennsylvania Fruit Farm," *Christian Union* September 17, 1879, p. 234; APS Online.
9. "A Notable Erie County Farm," *Farm and Vineyard*, 3 (August 1889), 9.
10. J. Buckeye, "Grapes, Peaches, and Plums, J. Buckeye Tells about the Ways and Means North Easterners have of Raising them," *Farm and Vineyard*, October 1891, 3.
11. Maynadier, Gustavus and Floyd S. Bucher, *Soil Survey of Erie County, Pennsylvania*. (Department of Agriculture and the Pennsylvania State College, 1910), 150.
12. *American Agriculturalist Farm Directory*, Erie County, 1918. This conclusion is based on a review of just the surnames beginning with "A."
13. Rizzo interview; interview with Ellen Sheridan Eppler, tape #SWV-001.2 box 2 folder 3; and Ralph Hartley, "Old Days in North East: The Town in 1898," *North East Breeze*, no date. Found in North East Library Folder "Fruit Culture."
14. Original research based on the U.S. Federal Census 1920 census images for North East Township and North East Borough; from Heritage Quest Online.
15. *Erie Observer* October 29, 1859; accessed on Pennsylvania Civil War Newspapers,

- PSU Libraries, August 8, 2007.
16. "A Glance at Eastern Agriculture," *Ohio Cultivator* June 15, 1860, 184; accessed through APS online August 8, 2007.
 17. "Lake Shore Grape Growers' Association," *Ohio Cultivator* April 10, 1869, 232; accessed through APS online August 8, 2007.
 18. *Erie Observer* October 26, 1867; accessed through Civil War Newspapers site, PSU Libraries, August 8, 2007.
 19. "Out-of-Doors," *Christian Union* September 17, 1879, 234; accessed through APS online August 8, 2007.
 20. Mrs. John Gaillard, "Notes from Northwestern Pennsylvania," *Ohio Farmer* August 22, 1895, 147. APS online August 9, 2007.
 21. Florence T. Eaton, "Ephraim Bull and the Concord Grape," *Pennsylvania Farmer* October 26, 1915, cover story.
 22. S. S. Crissey, "Management of Hardy Grape Vines," *Farm and Vineyard*, February 1891, 2.
 23. *Gazetteer and Business Directory of Erie County, Pennsylvania, for 1873-4*, p. 98.
 24. "A Grape District," *Southern Cultivator* March 1893, 1121; accessed through APS online August 8, 2007. The Erie County agricultural extension agent reported in 1919-20 that two townships were "devoted entirely to fruit raising," but the figures do not bear out his assertion.
 25. *Soil Survey*, 151. Secondary varieties grown included Delaware, Niagara, Catawba, Worden, Brighton, and Agawam; the last four sold mostly in mixed lots. Grapes were easy to grow in many soil types of Erie fruit belt according to the 1910 soil survey, but in the first decade of the 20th century, farmers paid more attention to the differences between heavy and sandy soils. It was determined that heavy soils were preferable (and less susceptible to rose bug and rose chaffer) especially for grapes processed in grape juice factories and wineries, as they yield more juice per bin and had higher sugar contents than those grown on sandy soil. The most profitable vineyards grew grapes on Dunkirk soils of gravelly loam; by around 1910 farmers experimented with plantings into the ridge hills of Volusia soil, producing quality fruit.
 26. "Jottings from Pennsylvania," *Ohio Farmer* December 21, 1893, 471; accessed through APS online August 8, 2007.
 27. Gustavus Maynadier, *Soil Survey of Erie County, Pennsylvania*, 1910, 151.
 28. North East Advertiser Special Supplement, 1906, McCord Library Historical Collections, North East.
 29. *Soil Survey*, 151-161. See also personal interview with Ruth Wagner and Jean

- Holzhauser of North East, who said that the Stitville Canning Factory received much the asparagus crop from the Crawford farm, which also sent a significant cherry harvest to Erie candy makers and Erie Storage Company for cold storage. Tape #SWV-013.1 Agricultural Extension Records: Box 2, Folder 3, accession # 187, 1964. Interview from 1988.
30. Howard S Loop, "Cherry Farming Shows Tremendous Growth in North East and Area," unmarked newspaper, 19 August 1951.
 31. From interview with Lucy Rizzo who commented on the asparagus growing business, SWV-029.1, box 2, folder 4; and *Soil Survey*, 154-59.
 32. Francis Newton Thorpe, "Grape Culture," *Pennsylvania State Horticultural Society Annual Report*, 1910, 41.
 33. L. G. Youngs, "The Grape in Pennsylvania and Modern Methods of Culture," *Pennsylvania State Horticultural Society Annual Report*, 1909, 73. See also *Farm and Vineyard*, January 1890, p 8, for a list of grape shipments with their destinations.
 34. "A Dismal Fruit Outlook," *Friends' Intelligencer* August 23, 1890, 544; accessed through APS online August 8, 2007. The fruit belt extended along the Erie Shore in New York State as well.
 35. While women and children (and many migrants) worked seasonally during harvest season (from late summer months to early fall), many hired hands and tenants worked year round in smaller numbers.
 36. Roger Coda, "Veteran Grower Uncovers Roots of North East's 'Black Gold,'" *North East Breeze*, 23 April 1995.
 37. Ralph Hartley, "Old Days in North East: The Town in 1898," no date. *The North East Breeze*.
 38. The Keystone Cooperative eventually created their own basket making factory. This information is found in Ralph Hartley's "Old Days in North East," *North East Breeze*, 25 January 1989. A basket factory is depicted in the bird's-eye view of North East that was published in 1896. "North East, Erie County, Pennsylvania, 1896," drawn by T. M. Fowler. Morrisville, PA, 1896. Penn State Special Collections Library.
 39. T. M. Fowler, "North East, Erie County, Pennsylvania, 1896". Morrisville, PA.
 40. Erie school children were also employed for cherry harvesting, and Eppler recalls that orphans from a boys' home in Harborcreek picked tomatoes and peaches. Pickers were often paid daily on the farms.
 41. John Thomas Vandenburg, "The Growing and Marketing of Grapes in Erie County." MS Thesis, Pennsylvania State College, 1930, 70. Based on 1928 data.
 42. Erie County Historical Society Post Card Collection, Collection 114, Box 7.

43. "Grape Culture in New York, Harper's Weekly," *Friends Intelligencer* October 5, 1895, 645. Accessed through APS, August 10, 2007.
44. "Grape Culture in New York, Harper's Weekly," *Friends Intelligencer* October 5, 1895, 645. Accessed through APS, August 10, 2007.
45. L. G. Youngs, "The Grape in Pennsylvania and Modern Methods of Culture," *Pennsylvania State Horticultural Society Annual Report* 1909, 77.
46. *Farm and Vineyard*, 3 (December 1889), 2.
47. U. P. Hedrick, *Manual of American Grape-Growing* (New York: MacMillan, 1919), 231.
48. Youngs, *ibid.*
49. Erie County Agricultural Extension Reports, 1917, Penn State Archives.
50. Youngs, "The Grape in Pennsylvania," 77.
51. *American Agriculturalist Farm Directory*, Erie County, 1918.
52. North East Advertiser, Special Supplement, 1906, McCord Library Historical Collections.
53. James Fulton, *Peach Culture* (New York: Orange Judd, 1870), 74.
54. "Grape Growing in Chautauqua County," *Farm and Vineyard*, April 1891, 2.
55. L. G. Youngs, "The Grape in Pennsylvania and Modern Methods of Culture," *Pennsylvania State Horticultural Society Annual Report*, 1909, 73.
56. William T. Butz, "Patterns of Fruit and Vegetable Production in Pennsylvania, 1918-1947." Master's Thesis, Pennsylvania State College, 1949. Figures for 1950 and 1930 from the Federal Census of agriculture, http://www.agcensus.usda.gov/Publications/Historical_Publications/index.asp.
57. Richard Dahlberg, "The Concord Grape Industry of the Chautauqua-Erie Area," *Economic Geography* April 1961, 150-169.
58. Dahlberg, 150.
59. Hartley, "Old Days in North East."
60. Data based on U.S. Census of 1930 for the borough of North East
61. William T. Butz, "Patterns of Fruit and Vegetable Production in Pennsylvania, 1918-1947." Master's Thesis, Pennsylvania State College, 1949.
62. The discussion in this paragraph is based on *North American Apples: Varieties, Rootstock, Outlook*. East Lansing: Michigan State University Press, 1970, 50-55, 104.
63. 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.
64. *Pennsylvania Fruit Tree Survey, 1953*, 7.

65. The prominent room upstairs was used for the storage of sugar, while trucks with cherries drove crop to scales in the side of the building, unloaded directly into large tanks of water (six tanks each with a capacity of five and a half tons). Fountains of water flushed from the bottom washed the fruit, giving its 'first bath.' The crop went through five more washings, by machine.
66. Based on interviews with Alfred Pero, tape 017.1, Garth and Lucille Pero tape 004.1, Guy Orton, Tape 050, and Lewis Orton, Tape 035. Erie County Historical Society, "Seasonal Workers in the Lake Erie Viticulture Region," Collection 35, Box 3 and 4. In previous generations, the farm dedicated 100 acres to grapes, indicating that though grapes were the initial fruit specialization crop in period one, period two included many different fruits. Interview with Wagner and Holzhauser, Tape SWV-010.1, Erie County Historical Society, "Seasonal Workers in the Lake Erie Viticulture Region," Collection 35, Box 1.
67. North East Advertiser, Special Supplement, 1906, McCord Library Historical Collections.
68. North East Centennial publication, 1934, McCord Library Historical Collections.
69. 1945 US Agricultural Census.
70. J. W. Park, "Influence of Motor-truck Transportation on the Fruit Industry," *Pennsylvania Horticultural Association Annual Report*, 1933, 63; D. M. James, "The Trucker and the Present Grading Laws," *Pennsylvania Horticultural Association Annual Report*, 1933, 86.
71. John Thomas Site 049-NE-009. This is not firmly documented as worker housing, but its door, fenestration, chimney, and siting suggest possible worker housing. 68% of farmers were born in PA, but the proportion of Germany rose to 5.2%, and 3.6% in Italy. 47% of the farmers had parents born in Pennsylvania, 16% in Germany and 4% in Italy. Italian growth is indicated by oral histories as mentioned earlier (with use of Italian women and children in fruit harvesting).
72. Interview with Garth and Lucille Pero, Tape 004.1, Erie County Historical Society, "Seasonal Workers in the Lake Erie Viticulture Region," Collection 35, Box 2.
73. Agricultural Extension Records, Annual Report for 1944.
74. Ibid; see also interview with James B. Coogle, Erie County Historical Society, "Seasonal Workers in the Lake Erie Viticulture Region," Collection 35, Box 3, Tape 007.
75. Pero oral interview, Erie County Historical Society; Interview with John Griggs of Erie County Extension Office, April 2007.
76. Ralph Hartley, "Old Days in North East," *North East Breeze*, 10 September 1987.
77. Morrison Handsaker, "Seasonal Farm Labor in Pennsylvania: A Study for the

- Pennsylvania State Department of Labor and Industry.” Lafayette College, Easton, Pennsylvania, and Pennsylvania Department of Economics and Business Administration, 1953.
78. Based on interviews with Guy Orton, Tape 050, Erie County Historical Society, "Seasonal Workers in the Lake Erie Viticulture Region," Collection 35, Box 4.
 79. In an interview Garth & Lucille Pero mentioned that in the 1960s they brought in Puerto Ricans by bus who lived in camps on the Howard Orton farm by Route 89. John Phillips, during a site visit by S. McMurry and C. Lee, October 10, 2007, also mentioned housing Puerto Rican workers.
 80. Handsaker, 1953.
 81. Roger Coda, "Veteran Grower Uncovers Roots of North East's 'Black Gold,'" *North East Breeze*, 23 April 1995.
 82. Interview with David Herhold. Today, some growers bring in Mexicans specifically to prune.
 83. Robert Dahlberg, "The Concord Grape Industry of the Chautauqua-Erie Area," *Economic Geography* April 1961, 162.
 84. Site visit, April 24, 2007. The daughter of the last farmer to raise cherries there gave this information. She resides on a small parcel that was separated from farm when it was sold.
 85. John Phillips Jr., interview, October 11, 2007.
 86. Based on interviews with Carol Magenau, Tape 017, and Guy Orton, Tape 050, Erie County Historical Society, "Seasonal Workers in the Lake Erie Viticulture Region," Collection 35, Box 3 and 4.
 87. See Joseph H. Gourley and Freeman Smith Howlett, *Modern Fruit Production*. New York: McMillan, 1941, especially Chapter 12 for a clear description of different types of cold storage.
 88. Dahlberg, 161.
 89. 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.
 90. 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.
 91. NR Bulletin *How to Apply the National Register Criteria for Evaluation*, p 17.
 92. *Historic Farming Resources of Lancaster County*, MPDF, 1994.

93. 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).
94. "Corridor Improvement Study, Reconnaissance Survey and Historic Contexts Report.. SR 0030, Section S01, East Lampeter, Leacock, Strasburg, Paradise, Salisbury, and Sadsbury Townships, Lancaster Couty., 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.
95. "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
96. Ibid.
97. Ibid.
98. Ibid.

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