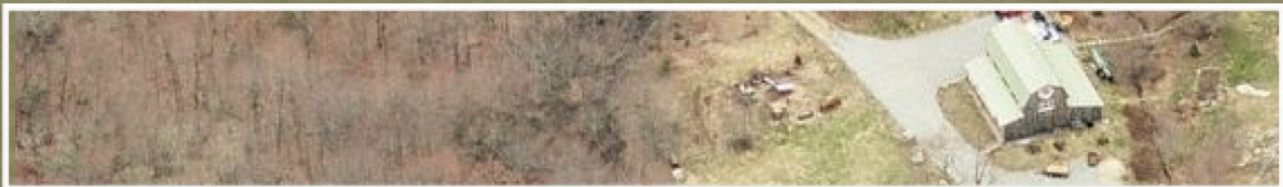


RHODE ISLAND STATEWIDE HISTORIC BARN AND AGRICULTURAL OUTBUILDING FRAMEWORK



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CHAPTER 1: INTRODUCTION

The Rhode Island Historical Preservation & Heritage Commission (RIHPHC) received a federal Preserve America Grant in 2008 totaling \$150,000 to fund local historic preservation planning projects statewide. The Preserve America grant program, which began in 2006, is administered by the Department of the Interior's National Park Service in partnership with the Advisory Council on Historic Preservation. The competitive matching grants fund Preserve America Communities, State Historic Preservation Offices, and Tribal Historic Preservation Offices to support their preservation efforts through heritage tourism, education and historic preservation planning. The Rhode Island Historic Preservation and Heritage Commission used its grant to fund Preservation Is Local, a comprehensive program to assist local preservation projects across all 39 cities and towns of Rhode Island. Sixteen locally based projects were selected for funding through a competitive statewide application process, including this project.

Beyond community desire for this project, this project is necessary for several reasons. Old barns and other agricultural buildings are often community landmarks and in many ways, make the past present. Such buildings embody cultural traditions and local customs and they also reflect changing farming practices and advances in building technology. The primary trend which spurs the completion of this project is the overall decline in agricultural pursuits in Rhode Island. In connection with the decline in farming, a projected increase in suburbanization and sprawl by the year 2025, could have major implications for historic architecture in Rhode Island – especially barns and other

agricultural outbuildings not in current use (Rhode Island Department of Administration 2006).

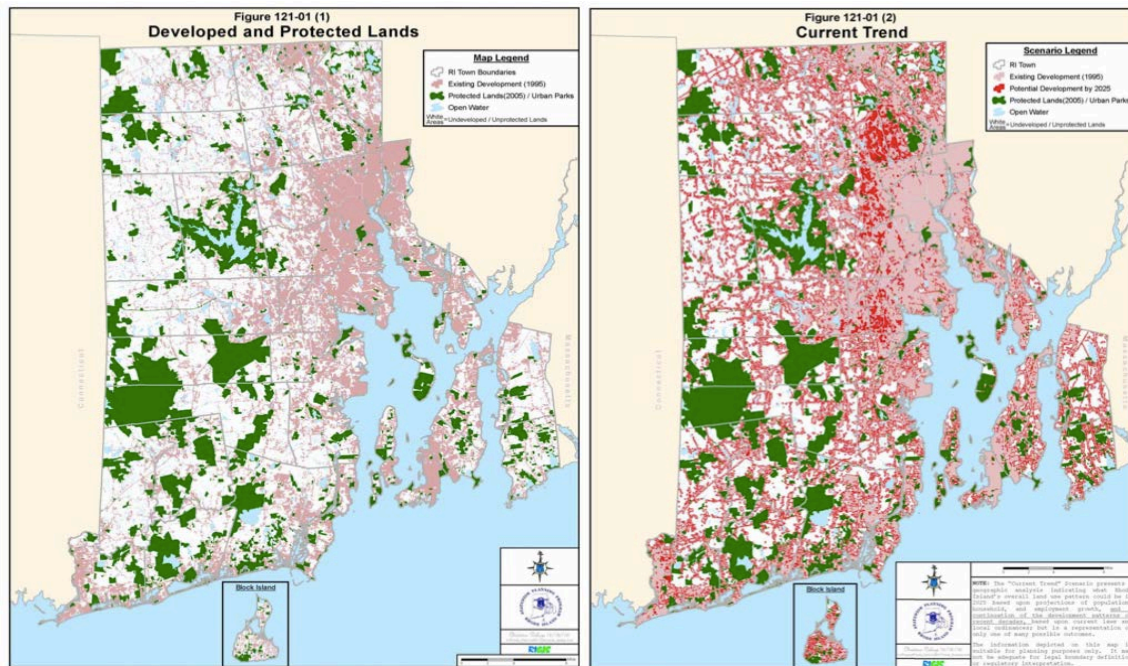


Fig. 1: The 2006 map on your left shows developed areas in pink – and the map on your right shows continued development in red projected for the year 2025. (Rhode Island Department of Administration 2006: Figure 121-01(1) and Figure 121-01(2).

In 2009 and 2010, JMA (John Milner Associates) worked with RIHPHC as well as interested Rhode Islanders to learn more about the history of agriculture and barns throughout the state of Rhode Island. This project has two main objectives. The first is to create as complete an inventory of barns and agricultural outbuildings as possible in three pilot towns, Foster, Glocester and Scituate. The information collected from the surveys helped to create a typology of barns in Rhode Island and helps to guide future preservation efforts. The second project objective was to enrich public understanding of the state’s historic barns and agricultural outbuildings through a written historic context document.

This document is designed to look chronologically at the history of Rhode Island providing a context for indentifying and evaluating historic agricultural buildings.

Beginning with the Native Americans who inhabited the land that would become Rhode Island, agriculture has played a key role in the survival of those who settled in Rhode Island. Beginning as early as the 1850s, Rhode Island saw a decline in commercial agriculture as farmers migrated to areas with better farming conditions and the industrial revolution took hold in many parts of the state. By the 20th century, farmland gradually began to disappear. Today, while there are still parts of the state that are agriculturally focused, many farms are being sold, while historic farmland goes unplanted. Logically, as farming ceases, barns and other agricultural outbuildings are no longer needed. Further threats to historic barns and other farm structures are posed by changes in farm technology, involving much larger machines and production facilities, and changes in the overall farm economy, including increasing farm size and declining rural populations. Without purpose, there is no economic motivation to provide costly maintenance to barns and other outbuildings. Some barns continued to be used as storage spaces; others are dismantled for lumber and their beams sold for reuse; still others are demolished due to neglect and lack of purpose.

For example, the barn at Goddard State Park in Warwick, Rhode Island, was demolished after deteriorating from lack of maintenance. The barn was built for the Russell Estate in 1875-6, designed by the noted Rhode Island architects, Stone & Carpenter. Once it fell out of use, areas of the roof were allowed to decay, and broken window glass panes were not replaced, allowing water to penetrate the interior. Once the floorboards began to rot, it was only a matter of time before floors were unable to be walked upon. This rotting is likely due to years of weather allowed inside the barn. Another example of unfortunate demolition is that of the Holbrook-Perry Barn in Lincoln, RI. Located on a former farm where the agricultural land had been set off for development, the barn, which was probably

built circa 1860, was demolished last fall after the owner concluded that without a real need for the barn, he couldn't afford to maintain it, and chose to tear it down rather than have it deteriorate to the point of collapse (Rick Greenwood, personal communication 2010).



Fig. 2: Deterioration at Goddard State Park in Warwick, Rhode Island. The barn was demolished after deteriorating from lack of maintenance (Rhode Island Historic Preservation and Heritage Commission. Photographs on file).

This project, while not miraculously preventing owners from demolishing their unused barns or outbuildings, creates several tangible reference products for the people of Rhode Island. It aims toward several intangible outcomes as well, including further educating current barn owners about this history of agricultural in Rhode Island, while giving owners the tools and resources necessary to learn more about the history and the overall value (historic and sentimental) of their barn. The project products can be used to increase public recognition of barns' heritage value. What do these buildings mean to a community? Finally, the survey and written document encourage the preservation of barns

and other agricultural outbuildings. Adaptive reuse of barn and other outbuildings is certainly plausible and should be encouraged. With a little work, a well made barn from the 19th century can be transformed into a living space, a home office or recreation space. Although preservation of the physical structure is ideal, if it is not possible to keep a barn or outbuilding we encourage other preservation techniques such as historic research, measured drawings, and archival photographs which can be used to properly document a building.

CHAPTER 2: EARLY AGRICULTURE OF RHODE ISLAND

Native Americans have a long history in Rhode Island, reaching back at least ten thousand years before Roger Williams was granted the land that would become Rhode Island in 1636 (McLoughlin 1986:3). For much of this time, Native Americans were nomadic people, traveling with the seasons, while hunting wild animals and gathering local plants for sustenance. During the Paleo-Indian period (10,000 to 8,000 BP), small groups of Native American people moved frequently as hunting and gathering seasons dictated. They often traveled from the inland areas to the coast in the spring and summer. During this time, the coastal areas of Rhode Island offered an abundance of herring, salmon and shellfish. In the fall and winter, the inland areas offered an abundance of firewood, hunting grounds and protection from the elements (Rhode Island Historical Preservation Commission (RIHPC) June 1982: 4).

By the Woodland Period (2500 to 450 BP), larger groups of Native Americans began living together. With a warming climate, Native Americans could finally start planting domestic crops, like corn and other sub-tropic plants. By 3000 BP, Native Americans started Rhode Island's long history of farming. Initially, they planted corn, squash, beans and pumpkin (Lazzerini 2006: 1 and RIHPC June 1982: 3). The use of ceramic food storage containers and fire pits that have remnants of crops, such as charred corn show that Native Americans cultivated domestic crops. Although Native Americans in Rhode Island continued to hunt and gather, the ability to plant domestic crops ensured that they had enough food in all seasons. Also, it encouraged semi-permanent settlement. By the 1500s, Native Americans were settled in villages and organized into four distinct tribes. By 1620, when the pilgrims settled in

Plymouth, there were ten major Native American sub tribes of the Algonquin nation living in New England (Access Genealogy).

Native Americans did not practice agriculture and build barns and agricultural outbuildings like we know today. They grew a variety of crops to supplement the meats, nuts and berries that they were able to glean from the wild. However, it is clear that they had some system for storing and curing food. Whether food rations were kept in the homes of individual families in storage pits, baskets or ceramic containers or in a common semi-permanent building, the importance of properly storing and curing food cannot be underestimated.

When early colonists settled in northern Rhode Island they utilized some of the best farm land, which had already been cleared by Native Americans. These cleared areas eased the transition for early colonists and were crucial to their early survival. Over the last three hundred years, the face of Rhode Island's landscape has changed dramatically. As agricultural historian Lucy C. Griffiths writes, nearly all the land in Rhode Island was farmed at some point in the 300 (plus) years since European settlement (Griffiths 1965). Originally, much of the state's inland areas were either covered with hardwood forests or coastline. The inland areas had pockets of good farmland but were largely ill suited for agriculture, with sandy loam soil and extensively forested areas. Conversely, the Narragansett Bay area and the coastal plain had many favorable conditions for development including rich silty soil and relatively mild climate, more extensive areas of arable land and proximity to water transportation routes. While many farmers inland worked closer to the subsistence level, those on the coast were often wealthier and had larger farming operations, many doubling as traders and ship-owners. Many of the successful plantations of Rhode Island were in South Kingstown or Narragansett, with others being in North Kingstown and the bay islands (RIHPC 1991, RIHPC 1979).

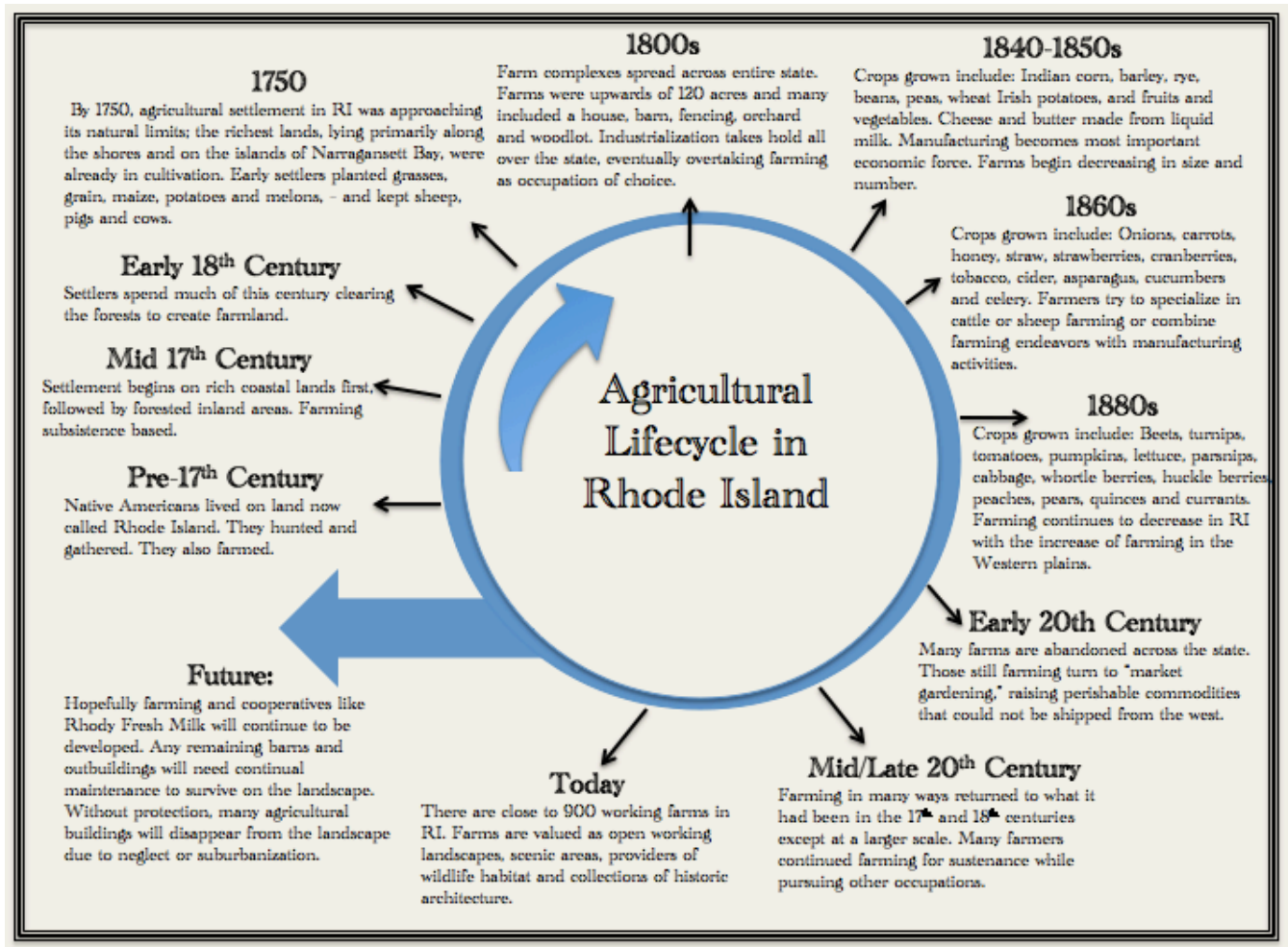


Fig. 3: Agricultural Lifecycle in Rhode Island. 300 years of agricultural history (Illustration by Stephanie Shaw).

The first recorded European contact with Narragansett Bay occurred during the 1524 voyage of exploration by Giovanni da Verrazano (Davies and Carnes 1998). It wasn't until the seventeenth century that any European settlement occurred. Settlement of Rhode Island was slow and sporadic in the seventeenth century, with many areas, both inland and coastal, established between 1635 and 1700, most between 1635 and 1640 (James 1975). Initial settlers were typically farmers, and scattered agrarian settlement characterized Rhode Island beginning in the mid- seventeenth century. Where the English farmer generally focused on mixed agriculture with an emphasis on raising tilled crops, the colonists around the Narragansett Bay quickly shifted their emphasis to pastoral husbandry, or breeding and raising livestock. Several

factors contributed to the change in their farming habits. Foremost was the environment - the islands and shoreline around Narragansett Bay were rich in grasslands, perfect for grazing animals. Secondly, Native Americans had already cleared land for their own gardens, leaving wide-open expanses immediately ready for grazing and cropland (Greenwood 2005: 2).

Around 1635 William Blackstone, settled in present-day Cumberland, Rhode Island. Blackstone dedicated his life to studying and agriculture. At his farm, “Study Hill,” he tended cattle and a garden until his death in 1675 (Lind 1993). In 1636, Roger Williams established Providence and was the first to take advantage of the fertility of coastal Rhode Island, which offered some of the most fertile farmland in New England (Greenwood 2005: 3). Williams established a trading post in what is present day North Kingstown so he could be close to land and water transportation. In 1643, Williams built a house and stayed in North Kingstown as a farmer, raising goats and trading with the Native Americans (RIHPC 1979). In 1638, John Clarke and William Coddington settled in present day Portsmouth and established farms. Neighboring Newport was a help to Portsmouth’s agricultural economy. Not only did Newport have a ready market for farm produce, Portsmouth’s farm products were sold along the entire East Coast. Cattle, brought by the first settlers in 1638 were bred and sold to those in Boston and Barbados, large flocks of sheep were established, as well as horses and hogs. Farmers were required to put fencing around their fields and orchards (RIHPC Portsmouth 1979). Many early settlers, like those mentioned above, had farmsteads complete with gardens and livestock.

The first animals in Rhode Island, introduced by the Newporters were sheep. The raising of sheep on a large scale started in the early 1640s. By the mid-1650s, there were thousands of sheep in Rhode Island (RIHPC 1995). As early as the mid-seventeenth century, Rhode Island also had market dairy farming. Settlers on Aquidneck Island (now Portsmouth,

Middletown and Newport) saw ready markets for their products in the ports along the Atlantic seaboard and the Caribbean. The most important commodities these planters produced for trade were livestock, salt beef and pork, leather and wool (Greenwood 2005: 3).

Though not as great in volume, butter and cheese also appeared regularly in the ships' cargoes that left Newport. Initially, liquid milk was only consumed by farm families or those that had access to a milk cow. Without refrigeration, milk spoiled too quickly to transport it to urban markets. Therefore, butter and cheese provided the only means to preserve milk long enough to get it to market. It would not be until the mid to late 19th century that transportation and refrigeration methods improved enough to get liquid milk to urban markets. Early settlers grew grasses, English grain, maize, potatoes, squash, beans, carrots, turnips, melons, orchard fruits and tobacco. In addition to sheep, they also kept pigs and cattle.

Those settling in the seventeenth century were focused on survival. Most farmers other than the wealthy planters like those described above were focused on subsistence, growing what they needed to support their own existence – often trading any excess with neighbors. Nearly every colonial farm had at least one or two milk cows to supply milk, butter and cheese, which were staples in the traditional English diet (Jensen 1986: 97-99). Cheese and bread was a common lunch for the herdsman or field worker and milk and bread made a light supper (Greenwood 2005:2).

King Phillip's war (1675-1676) put a halt on new permanent settlement throughout the region during that time. William Blackstone's farmstead, along with many farms in Rhode Island were destroyed during this war. Even with the unfortunate King Phillip's war, by 1700 most settlers were successful farmers. Many farms in the inland areas were fairly small and operated to provide basic crops and livestock to growing families. Inland parts of the state were

still being cleared as a result of both agricultural endeavors and forest-processing industries. There were exceptions to this, as larger, more prosperous farmsteads did exist.

Three factors encouraged the rapid development of inland areas. One major influence was the continuing expansion of maritime ventures in Newport, Providence, Bristol, Warren, and Wickford, as well as in Boston, Massachusetts. Increased commerce created increased demand for a wide range of products, some of them incidental to land clearing and thus an added inducement to settlement. A second stimulus to rural development, intimately related to the rise of commerce, was the concerted if not coordinated effort to build roads to link outlying areas, particularly fertile eastern Connecticut, to the Rhode Island coast. Roads laid out to connect existing population centers at the same time encouraged further settlement and the building of local roads. The third factor effecting the rapid growth of the hinterlands in the mid-eighteenth century was the increasing scarceness of unsettled land elsewhere in the colony (RIHPC June 1982: 17).

By 1750, agricultural settlement in Rhode Island was approaching its natural limits; the richest lands, along the shores and on the islands of Narragansett Bay, had already been under cultivation for a century. Farming and agriculture remained much the same in the eighteenth century, as they had been in the seventeenth century. Farmers with the greatest prosperity during this time were in settlements along the Narragansett Bay, where farmers and their slaves raised cattle and sheep, which, with their by-products, especially cheese, found ready markets along the east coast and in the islands of the West Indies, largely through the port of Newport. During the 18th century, Tiverton developed into a moderately prosperous agricultural community where townsmen also looked to the sea for livelihood (RIHPC 1983: 18).

Most farms in the 18th century included at least one hundred and twenty acres, and many holdings were considerably larger. Joshua Winsor of present-day Foster, initially purchased three hundred and sixty acres in 1723, and John Harrington (also of present-day Foster) amassed six hundred and seventy acres by 1730. As farmers, like Joshua and John, became more successful, specialized outbuildings were added to farm complexes. These buildings included corncribs; cow sheds and separate horse barns; root cellars for cold storage; and even icehouses (RIHPC June 1982: 17). Continued construction of roads, not just main arterial roads, but smaller local roads began. Road access helped farmers get products to local markets. Early crops grown include corn, grain, apples, root vegetables and fruits. Products manufactured included wool and pork as well as more perishable commodities such as cheese and butter. By the 18th century, water-powered mills were important adjuncts to the farming communities of Rhode Island. Every town in Rhode Island had one or more local water-or wind-powered grist mills where corn and other grains were ground to meal or flour. These small rural mills also included sawmills, oil mills, bark mills and fulling mills.

The Revolutionary War, beginning in 1775 with the battles of Lexington and Concord, affected some regions of Rhode Island more than others. For example, while Scituate supported the war by contributing soldiers and supplying corn, rye, woolen goods, pork, beef, pots, kettles and axes, there were no battles fought on Scituate ground. Life continued in Scituate much as it had before the war (RIHPC May 1980). On the other hand, Jamestown's period of prosperity and population growth came to an abrupt halt with the onset of the Revolutionary War. On December 10 1775, a British contingent wreaked havoc on the island, burning houses and confiscated livestock. Following the war, the island's population grew again, and Conanicut enjoyed a long period of rural tranquility (RIHPC 1995).

In 1790, the first American cotton mill opened in Pawtucket. This mill initiated a process of industrial development that would have massive effects on the overall economy of Rhode Island and beyond. Cotton, and woolen textile factories began to proliferate in the first decades of the 19th century and industry, led by textiles, became the driving force in the Rhode Island economy. Other successful industries emerged as economic leaders including maritime commerce – including shipbuilding and whaling. Although maritime commerce was common in Rhode Island throughout its history, the end of the 18th century into the 19th saw many Rhode Island coastal towns become maritime based as opposed to agriculturally based. With this said, many coastal towns in the Narragansett area had a class of farmers known as Narragansett Planters who were stock and dairymen but also traders and shipowners (RIHPC November 1979: 10).



Fig. 4: Hamilton Mill Village Airview, Houses and buildings from circa 1825 (Photographer Joseph McCarthy, Providence Public Library Rhode Island Image Collection).



Fig. 5: Russia four-masted ship built in Newport, 1926 (Providence Public Library Rhode Island Image Collection).

CHAPTER 3: A NEW CENTURY OF AGRICULTURE

The nineteenth century witnessed transformations in American agriculture whose effects were found in Rhode Island, as elsewhere. Three of the important trends, which affected both the character of farming and the buildings constructed to house agricultural endeavors, were the establishment of professional societies, the spread of agricultural periodicals, and the emergence of systematic agricultural education and research.

In Rhode Island, the first professional organization concerned with agriculture was the Rhode Island Society for the Encouragement of Domestic Industry, established in 1823. The society published annual reports compiling experiments in new methods of farming, new crops, and new fertilizers, as well as, on occasion, having the results of the judging for the most effective farms in the state. The first American agricultural periodical, *The Agricultural Museum*, began publication in 1819, followed several years later by the *New England Farmer*. By 1840, agricultural journalism had become permanently established, with about 30 journals and a total circulation of over 100,000 (Growing a Nation n.d.).

Along with the rise of the agricultural periodical came the emergence of books providing examples of farm building plans. The first popular American book containing farm building plans was Lewis F. Allen's *Rural Architecture*, whose first edition was published in 1852. By the end of the century, many books of plans were available, some compiled by agricultural engineers, others by periodicals, while still others were published by manufacturers of farm machinery. A probably unanswerable question is the influence of designs found in national publications on the farmers of a particular locality. It is not known

how many nineteenth century Rhode Island farmers subscribed to any of the periodicals or purchased any of the books.

Rhode Island was relatively late in establishing both an agricultural college and an agricultural research organization, the Experiment Station. The Experiment Station was founded in 1889, while the Rhode Island College of Agricultural and Mechanical Arts was founded in 1891. The same evolution in agricultural information occurred on the national level. The U.S. Department of Agriculture launched its long-lived series of farmers' bulletin, straightforward guides to farming techniques and building construction, among other topics with #1, *The What and Why of Agricultural Experiment Stations*, in 1888.

With the advent of industrialization, typified by Pawtucket's Slater Mill, agriculture declined as residents sought occupations offering larger rewards, more regular hours, and less isolation and hardship. Writing in the second decade of the nineteenth century, Yale President Timothy Dwight remarked that the country around Providence was "so lean as scarcely to supply its inhabitants with food" (as cited Committee of Inquiry 1916:9). At the same, the growth of mill towns offered local farmers an increased market for their produce (Federal Writers' Project 1937:94).

Oxen were commonly used for plowing. Almost every farm had at least a few sheep to supply wool to the burgeoning New England textile industry. The sheep stock was improved by the introduction of the Spanish Merino to interbreed with native animals. Devonshire cattle were crossbred with Holsteins from New York to make a breed that became known as the "native cattle." Cattle were especially numerous in the Narragansett Bay portion of the state where pasturage was plentiful, the market good for salted meat, and large amounts of cheese were imported.

The most consistent crop was corn used both for grinding with rye in local mills and as the chief food for fattening poultry, cattle, and swine. Grass was also a major crop, and other grains included barley and oats. The Irish potato was ubiquitous, and other vegetables included pumpkins, as well as root vegetables. The latter were primarily cultivated in coastal towns. Fertilizer was provided by fish, seaweeds, ashes, and lime (Bicknell 1930:I: 42-44).

By the 1830s, three distinct types of New England farming had been identified: self-sufficient farms whose owners had a principal trade or profession, self-sufficient farms whose owners were principally farmers, and commercial farms that were agricultural businesses (RIHPC 1990:12-13).

A cross-section of the agricultural economy of the state at several points in the nineteenth century is available in compilations of decennial agricultural censuses which were begun in 1840. At the time of the 1840 census, the leading field crops in the state were potatoes (912,000 bushels the previous year), Indian corn (450,000 bushels the previous year) and oats (171,000 bushels the previous year). That decade was marked by the New England sheep boom that continued until the advent of western stock raising. In 1840, there were 90,000 sheep in the state, and these animals produced 139,000 pounds of wool. The farmers of the state also raised 39,000 dairy cows, 31,000 pigs, and 62,000 chickens and turkeys (U.S Department of State 1841).

The first systematic survey of the geological character of the land of the state and the effects of this character on its agriculture was undertaken during 1839 and 1840 by a geologist, Charles T. Jackson. The result of his survey are summarized in the following table:

Town	Soil Type	Fertilizer	Product
Gloucester	Granite, gneiss, and mica slate		Corn, wheat (20 bush./acre), grass; carrots, millet, potatoes
Smithfield	Granite	Lime and ash	Hay, Indian corn, coats
Johnston	Hornblende rock, dark blackish, and peaty		Clover
Scituate	Detritus of primary rocks	Compost	Barley, corn
Foster	Decay of primary rocks	Cow manure	Corn (25 bush./acre)
West-Greenwich	Rocky, muck, peat	Compost, stable manure`	Corn, rye, oats, and potatoes
Westerly	Granite, peat	Fish	Corn
Seekonk	Detritus of grauwacke rocks	Stable and hog manure	Corn, oats, potatoes, hay, barley
Barrington	Fine grauwacke rocks, peat	Stable manure and peat	Onion, beets, carrot, corn, hay
Warren	Clayey loam	Fish	Barley (30 bush./acre), rye (20 bush/acre), oats (27 bush./acre)
Tiverton	Slate and loam	Fish , barnyard manure and swamp muck	Indian corn, oats, wheat
Compton Plain	Granite (clayey loam)	Fresh fish	Corn, oats, potatoes, and barley
Johnston	Detritus of hornblende		Clover, herds grass, red top, potatoes, and root crops
Boston Neck and Point Judith	Stiff loam, peat	Peat, seaweeds, fish	Grasses, corn, potatoes, and rye
Centreville	Peat	Fish	Hay
North Kingston	Peat and swamp muck	Peat and hog pen manure	Corn, potatoes, hay
South Kingston	Peat	Stable manure and peat	Potatoes

Table 2: Character of agriculture in Rhode Island towns (from Jackson 1840:138-178).

The Rhode Island census survey reports provide an excellent account of agricultural development for each town. For example, in Jamestown on Conanicut Island, 45 farms were

scattered about its area in 1850. The two largest were at the northern end of the island. Each farm had milking cows and made butter but a smaller number made cheese. Pigs were raised on all farms, and sheep were generally raised for their wool. Hay and Indian corn were generally raised and Irish potatoes were raised on most farms (RIHPHC 1995:14). A contrasting type of agriculture was found in mid-nineteenth century Smithfield. The town contained farms from 20 to 200 acres with notable crops including rye, Indian corn, Irish potatoes, and hay. Butter production occurred on few farms, and few sheep were raised (RIHPC 1992:13).

The area encompassed by Glocester, Scituate and Foster developed in the nineteenth century as the apple-growing center of the state. Along with the distinctive landscape organization of the orchard, farmers in these towns erected specialized barns to store apples, as well as buildings to sort, and, in some cases, sell apples. The Andrews-Luther Farm, listed on the National Register inventory in 1985, is located in the town of Scituate. It comprises about 45 acres and is an excellent example of a late 18th -early 19th century Rhode Island farmstead. The property includes an eighteenth-century dwelling that is set off from the road by a picket fence, a corn crib, two late nineteenth century wood-frame outhouses, and the stone foundations of several outbuildings. The property also contains the Luther family cemetery and numerous well-preserved stone' walls, which bound former pastures and fields, now overgrown with brush (Youngken et al. 2008). The 1850 census records that the Luther farm produced an annual yield of 250 bushels of potatoes, 240 bushels of corn, and 20 bushels of rye, as well as \$75.00 worth of orchard produce. Luther also possessed 10 milk cows, which produced an average annual yield of 500 lbs. of butter. Of the 295 Scituate farms reported, Luther had the seventh largest dairy herd. In the late 19th century, Luther took on other types of

work to augment his income from the farm. By the early twentieth century he was operating a sawmill in an outbuilding to produce cordwood for sale locally.



Fig. 6: The Andrews-Luther Farm barn, a New England Bank barn in Scituate Rhode Island. Documented in 1985, the barn no longer stands (RIHPHC Illustration on File).

The development of the state's best known agricultural export began in the mid-nineteenth century. In Little Compton, Captain William Tripp and John Macomber began poultry experiments in 1854 crossing Malay and Java cocks with Cochin China hens, and then crossing the resulting breed with Light Brahmas, Plymouth Rocks, and Brown Leghorns, the final product, the Rhode Island Red, being a breed with both a high egg yield and sound flesh. The Rhode Island Red was officially recognized as a legitimate breed at the Providence Poultry Show in 1895 (Federal Writers' Project 1937:94-95).

Some information about the characteristics of mid-nineteenth century farms may be obtained from reports of the Awards Committee of the Rhode Island Society for the Encouragement of Domestic Industry included in the society's annual report. Two farms were described in the 1858 report, the first owned by Elisha A. Lawton, consisting of 253 acres in Cranston and Johnston, and the other of 42 acres owned by A.D. Chadsey.

Chadsey raised corn on three acres of the farm, potatoes on 3 and $\frac{3}{4}$ acres, onions, beet, carrots and turnips on a total of three acres; salt grass on 2 $\frac{1}{2}$ acres, and rye on two acres. About 14 acres was devoted to pasturage. All of the grain, hay and corn fodder were consumed on the farm, as was half of the root vegetables, with the exception of the onions. Livestock included six cows, three calves, two heifers, and one pair of oxen. The cows produced milk and butter which was sold. Elisha Lawton's substantially larger farm, which he indicated was developed from two "miserable old farms," was primarily a producer of pork, beef, and hay for the outside market. Lawton raised rye, wheat, oats, and corn. All except for a portion of the oats were consumed on the farm. Other crops included potatoes, of which more than half was sold, pumpkins, apples and turnips. Livestock raised included cows and calves, sheep, and poultry. He also helped his bottom line by the rental of a portion of the land and tools, the rental of four tenant houses, and the hiring out of his team (RISEDI 1858:107-110).

In 1865, over 492,000 acres of the state was in farmland. \$27.7 million was invested in farms, and 10,764 people were employed by farms. In that year, the major livestock included 40,717 sheep, 17,518 dairy cows, and 16,269 pigs. Major agricultural products included 2.2 million gallons of milk. 114,781 pounds of wool, and 857,465 pounds of butter. Clearly dairy farming was one of the most important sectors of the agricultural economy of the type. Leading field crops included nearly 467,000 bushels of Indian corn, 176,000 bushels of oats, and nearly 711,000 bushels of Irish potatoes (Dana 1867:290-292). The raising of poultry for eggs and meat increased steadily from 1865 onward. Other Rhode Island crops, newly recorded in the 1860 census, include onions, carrots, honey, straw, strawberries, cranberries, tobacco, cider, asparagus, cucumbers, and celery (1860 Census).

An informal picture of farming on the “Island” of Rhode Island in the years after the end of the Civil War was provided in an article in the 1869 edition of *The New England Farmer*. The Irasburg, Vermont correspondent Z.E. Jameson, described seven farms ranging from the market garden owned by J.E. Macomber to the professionally-run gentlemen’s farm owned by New York financier August Belmont.

Macomber was described as “perhaps more extensively engaged in raising seeds, vegetables and small fruits than any other man.” His crops included early potatoes, cabbage, strawberries, raspberries, and dwarf pears. Toward the middle of the island sat E.J. Anderson’s 130 acre farm on which he raised ten cows, eight oxen, one hundred sheep, and twenty horses. The cows were of the mixture referred to as “native.” Grain crops included corn and barley, while root crops included turnips. Production of the farm included butter, veal, and mutton. Belmont’s farm, operated in conjunction with his villa in Newport raised imported cows for milk. East of the Belmont farm was Leonard Brown’s property on which he had 16 cows, a varying number of oxen, and 40 breeding ewes. Close to Brown’s property was another market gardener, a Mr. Walker, who raised cabbages. Another farm owner on the island was Colonel George E. Waring, author of the *Elements of Agriculture*, whose farm was dominated by a three level barn that measured approximately 50 by 100 feet in footprint. The cellar was used for manure, the first floor, had a central aisle flanked by stables for cattle, horses, and mules, while the second story was used for storing forage. The final farm described by Jameson was that of the importer R.L. Maitland on which he raised Breton and Alderney cattle, and a variety of imported poultry (Jameson 1869a:357-360).

During the late nineteenth century, the agricultural economy of the United States rapidly shifted west. The Midwest and western states had larger farms, less-depleted soil, and a greater use of mechanized equipment. As a result, this section of the country raised and supplied increasing quantities of grains, beef, and pork, and inexpensively transported these products to eastern markets on the growing network of railroad lines. Eastern farmers increasingly turned to “niche” farming, many specializing in market gardening, raising perishable commodities which could not be shipped from the west. An example of the transformation of agriculture is found in Smithfield. In mid-century, grains had been major crops but by the end of the century, crops with a ready nearby market were raised including apples, strawberries, cucumbers, lettuce, melons, pumpkins, radishes, rhubarb, squash, tomatoes, pears, and peaches, along with poultry, eggs, and dairy products (RIHPC 1992:13).

North Smithfield underwent a late nineteenth century agricultural transformation typical of much of Rhode Island (RIHPC 1980:11). In the 1885 agricultural census, much of its land was devoted to hay and pasture. Beets, flat and French turnips, tomatoes, pumpkins, lettuce, parsnips, cabbage, whortleberries, huckleberries, peaches, pears, quinces and currants were also among the fruits and vegetables grown (1885 Census). The number of livestock raised had declined from earlier years, while the amount of orchard crops raised had grown. Surviving barns and other agricultural outbuildings were primarily built in the nineteenth century, although early barns remained at the time of the RIHPC town report compilation. A far different agricultural transformation occurred in Narragansett in the late nineteenth century. While dairy farming was the leading agricultural use in the mid-nineteenth century, steamship and railroad connections brought the influx of wealthy families from New York, Boston and

other locations, and some of the farms were bought as summer retreats. The agricultural use changed, often with stables for horses, and the remaining agricultural use on a smaller scale, providing, for instance, enough dairy products for the residents and visitors to the estate. Buildings built during this time are often much more elaborate than the earlier, functional barns and other outbuildings (RIHPC 1991).

By the turn of the twentieth century, two-thirds of the state's land area was in agricultural use. The total value of farm property was nearly \$27 million. The leading farm products by value were domestic animals (\$2,281,817), dairy products (\$1,923,707), hay and forage (\$1,081,482), and vegetables (\$992,467). Despite the small size of the state, it was divided into several agricultural regions. The western and southern portions were devoted primarily to general agriculture, the northern section to the production of milk, the central-northern portion was the chief fruit-growing area with apples the primary crop, Bristol County had the staple crop of onions, while the island of Rhode Island was a primary potato growing area. The primary agricultural activity of southeastern Rhode Island was the raising of poultry (Bailey 1907:40-41).



Fig. 7: Locust Hill Farm near Barton's Corner East Greenwich (Providence Public Library Rhode Island Image Collection).

CHAPTER 4: THE RHODE ISLAND FARMSTEAD FROM SETTLEMENT TO THE 20th CENTURY

Expected Principal Agricultural Property Types

In Rhode Island, as in much of the remainder of the country, the number of surviving early period barns and other agricultural buildings is expected to be quite low. Based on survey of other areas, it is expected that most of the standing agricultural buildings and structures will be of mid- nineteenth and twentieth century construction.

Agricultural Landscapes and Farmstead Organization

The agricultural landscape described for Little Compton is what was typical for Rhode Island, and, indeed, for much of New England:

The creation of stone-walled fields; the establishment of a network of paths, lanes, and roads among these fields; and the building of farm complexes have created an extremely picturesque rural setting that recalls the farming that occurred here over several hundred years (RIHPPC 1990:13).

The physical features of the earliest farms have not survived intact, but followed basic patterns that stemmed from European antecedents. The earliest colonial farmstead may have included over one hundred acres of property including tilled land, meadow, pasture, orchard, woodlot and uncleared land. The farmhouse and the barn are the most obvious elements of the farm. Along with these, one might expect to find a privy, a cowshed, a corn crib, a woodshed, a wagon shed, a pigsty, a poultry house, a milk house or dairy and occasionally even a cheese house (RIHPPC 1990:14). Dividing these lands were wooden fences, simple stonewalls, or cleared lanes. For example in the 17th century, Nicholas Sheldon of Cranston owned 3000 acres

in the north-central part of town while the Stone family had a considerably smaller 30 acres (RIHPC Cranston 1980).

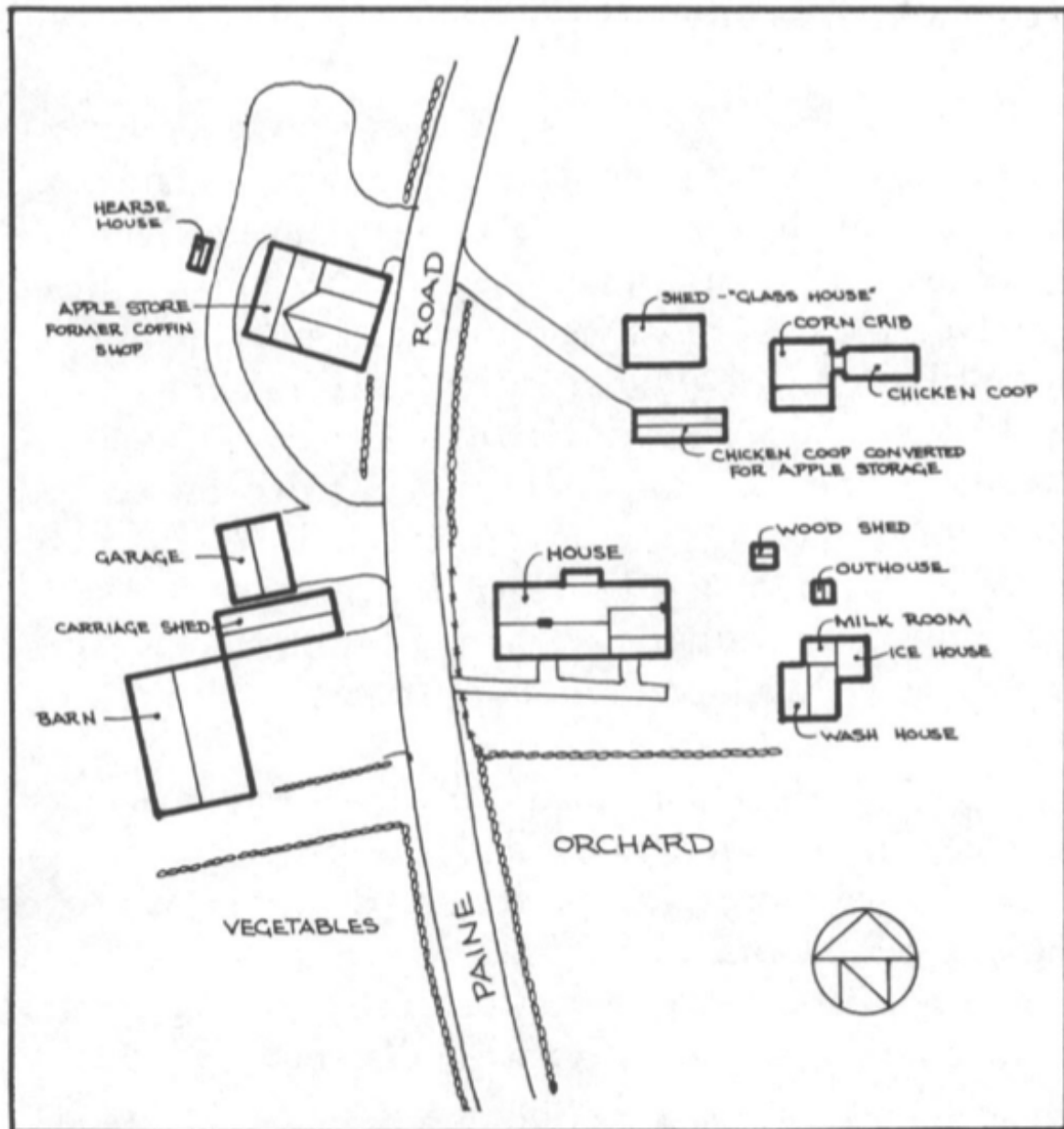


Fig. 8: The Paine Farm plan in 1981. House c. 1785 and c. 1835. This is a prime farm layout example complete with farmhouse, barn, carriage shed, garage, an abundance of outbuildings, an orchard, and vegetable fields (RIHPC 1982: 17).

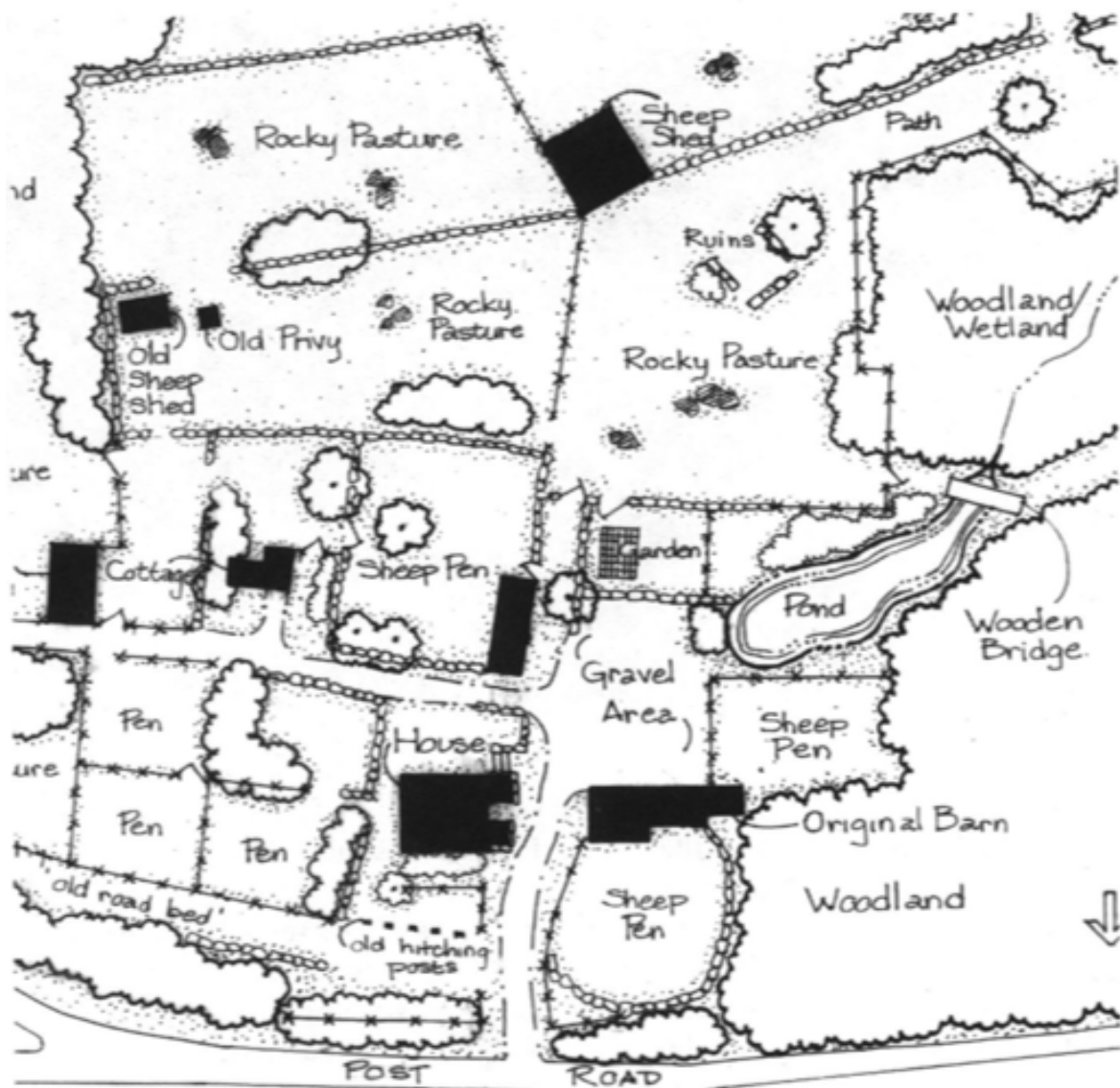


Fig. 9: Rocky Meadow Farm, South Kingstown. This plan shows another variation of farm layout, although containing many of the same components as shown in Fig. 8. (RIHPC 2001: 16).



Fig. 10: Providence Cole Farm, 1940 (Providence Public Library Rhode Island Image Collection).



Fig 11: Early 20th Century Farm Complex on Jingle Valley Road, South Kingstown (RIHPC 1984: 23).



Fig. 12: Dame Farm, in Snake Den State Park, Johnston, RI. (RIHPC 1989: 16)

Several types of nineteenth century farms remain in Rhode Island:

- 1) General farms. These farms typically raised a variety of livestock, a variety of grain crops, and some limited fruits and vegetables to feed the farm family and sometimes for sale in the local community or beyond,
- 2) Dairy farms. Dairy farms usually represent a later nineteenth century evolution of the general farm to serve the milk needs of the growing industrial centers of Rhode Island and beyond. The primary agricultural buildings and structures included the barn, in later years a specialized dairy barn, milkhouse, and silo.
- 3) Orchards. In some cases, orchards formed a part of a regular farm, while in the late nineteenth and early twentieth century, some properties were operated exclusively as orchards. In addition to the trees themselves, orchards are characterized by storage buildings, packing buildings and sheds, and in more recent orchards, often a farm stand.

- 4) Estate farms. In the Narragansett Bay region of Rhode Island, former general farms were converted to estate farms for wealthy industrialists and financiers. The conversion often included replacement of vernacular buildings with architect-designed buildings, frequently echoing the architecture of the main house, and construction of large stables for the owner's show and/or race horses saddle horses, carriage horses.

Early European colonists brought with them agrarian customs or practices and architectural styles from their home countries. In Rhode Island, the primary early settlers were English. Farming and agriculture had a long history in England, going all the way back to at least the 12th century and quite a bit further! Beyond construction methods, early English settlers also brought with them ideas about how a farm should be laid out, agriculture outbuildings that would be helpful, familiarity with English crops, dairying and sheep farming. As they adapted to New World conditions, they made significant changes to their native practices. Established farmsteads did not just appear overnight. It often took years of saving and collecting building material to erect a permanent building. A farmer often harvested his own trees and fieldstones for building, a process that could take a long time. A post-and-beam structure was labor intensive and required that the frame and other building materials be made on site prior to construction. Farmhands, family members and neighbors often helped with raising the building, bent by bent, laying floors, and applying siding and roofing. Additionally, farmers often worked with specialized craftsmen including master builders, timber framers, and carpenters to plan and build envisioned barns (Visser 1997: 5).

General Purpose Barns

English Barns

The English barn was the type of barn the first settlers in Rhode Island introduced and it remained popular through the 18th century. Based on the grain storehouses of the English colonists' homeland, the classic English barn is a post and beam, one-story building with a rectangular plan, pitched roof, and wide doors located near the center of both long sides of the building. The old English barn was primarily used for grain threshing and storage. The interior was generally divided into three sections with large storage bays on both gable ends, flanking a central bay that traditionally served as a threshing floor. The large wagon doors on either side opened to allow wagons to pass through for unloading and for the wind to blow away the chaff during winnowing (Visser 1997: 61-66). In England, early barns were largely timber-framed buildings. As centuries of inhabitation cleared most of the forests in England, making timber a scarcity; other architectural building materials like stone and brick were used.

Early English barns in New England were probably not very grand structures. As farmers became a little more established, the English style barn grew to three bays. Although early colonial farmers and skilled builders generally followed the traditional old English building designs, adaptations were made to adjust for the differing climate and construction materials found in New England. Initially, these barns were not intended to house livestock because winter weather throughout the United Kingdom was not as severe as in New England. Often, small cowsheds and piggeries were built adjoining the barn or near the barn to offer protection for animals. As time progressed in the new world, the old English barn was altered to include space for animals. Thereby having hay stored on one side and animals on the other, with access and grain threshing taking place in the central bay (Cook 1982, Visser 1997: 61-66.)



Fig. 13: COV Place Farm Barn (RIHPHC 2010: Photograph on File).



Fig. 14: William Walley Homestead, Little Compton, RI. Note the English Barn on the left hand side (RIHPHC 2001: 56).

Gable Front Barns (New England Barn)

By the mid-nineteenth century, many New England farmers adopted a new design for their barns that enabled them to efficiently house up to ten cows. The gable front barn had a similar structural composition to the English barn but the internal layout was shifted. The main entrance moved from the side wall to the gable end and inside, a center aisle or drive floor ran the length of the barn with animal stalls on one side and grain and fodder storage on the other. Above the main floor was the hay mow or loft and usually there was cellar below where manure could be shoveled and stored for later use as fertilizer. These barns were often built into a hillside so the cellar could be accessible at the lower grade. They also could be extended by adding additional bays to the rear or adding shed-roofed wings on the sides.

This barn was typically equipped with double-hinged doors or a sliding door in the gable end and had few windows. To reduce winter drafts, farmers frequently rejected traditional vertical board siding in favor of tighter clapboard, wood shingle or board-and-batten sidings. They soon found that roof top ventilators were needed for fresh air and windows for light. The average New England barn measures about thirty feet wide and forty feet deep.



Fig. 15: Gable front barn in Gloucester, Rhode Island (Photograph by Stephanie Shaw).

Specialized Barns

Dairy Barns

Until the late nineteenth century, most dairy farms included general barns that not only housed dairy cows, but other animals including plow horses, oxen, and/or mules, and may have also been used for threshing. With the increase in dairying in many areas, demand grew for barns specifically designed for housing and milking dairy cows. Major proponents of this development were Midwestern agricultural schools, particularly those in Wisconsin and Illinois.

Nineteenth century barns were typically timber-framed structures. Beginning about the turn-of-the-twentieth-century, the timber-framed barns began to be supplanted by new buildings that used alternative framing technology to reduce the amount of material needed and to maximize the size of the unobstructed hayloft. The most common design became known as the Wisconsin dairy barn. This barn featured a ground level stable entry centered in the end wall, regularly spaced windows in the side walls, and hayloft topped with a gable,

or increasingly, a gambrel or round-arched roof. These barns were generally substantially longer than wide.



Fig. 16: Dairy Barn in Foster, Rhode Island (RIHPHC 2010, Photograph on file).

Sheep Barns

Because of the importance of sheep raising and sheering to the nineteenth century agricultural economy of much of New England, sheep barns were among the earliest purpose-built buildings on farms in the area. While some geographic areas needed not provide permanent sheltered housing for sheep due to the variety raised or the climate, the winter weather of New England necessitated construction of a barn. A variety of designs were used. Halsted's design included housing for the sheep on the ground level with storage for forage above.

Apple Barns

As the agricultural economy of much of Rhode Island shifted to the raising of orchard crops in the late nineteenth century, outbuildings were erected to accommodate these new activities. Prior to buildings, caves were used to store apples. A cave was dug into

a slope and the dirt was removed and an interior roof was made using boards, held in place by posts along the sides (Halsted 1881 351). Later, more permanent structures were built. Additionally, many apple barns were older farm buildings adapted for storing apples. The earliest surviving examples of purpose built apple barns hail from the late nineteenth and early twentieth centuries (Visser 1997: 197). The most common apple barns were windowless, wood-framed, generally gabled roofed structures used to store the large crop after the fall harvest. Some apples barns had windows and ventilators that could be opened during the night to let it cool air but closed during the heat of the day. Before electric refrigeration, ice was used to provide additional chill. The ice was generally stored on a separate floor to prevent dampness, which would in turn rot the apples. By the 1940s, storage structures were introduced to electrical refrigeration. Apples barns were often used to store cider as well (Visser 1997: 196-197).

Potato Barns

By 1735, potatoes imported from Ireland were being grown and sold in Rhode Island (Russell 1982). In the northeast, potato farming in the early 20th century occurred on a large scale in northern Maine, Connecticut, Rhode Island, and New Jersey, as well as New York (The New York State Barn Coalition 2010). As potato production became ever more significant to the region's food supply, potato barns were built on farms for the sole purpose of storing large quantities of potatoes. Formerly farmers had stored small potato harvests in root cellars, basements, pits and other small underground structures. The modern potato barn came to the fore at the turn of the century (Visser 1997: 184). Potato barns are low, half sunken gambrel roof buildings designed to provide long term, cool storage for a potato crop (Noble and Cleek 2004: 124). Throughout New England, potato houses were built with a

variety of materials including timber and later concrete block and steel. Examples from the 1920s and 1930s are often concrete block (Visser 1997: 187).

Onion Barns

Little scholarly research has been completed to better illuminate the architecture and use of the onion barn or house. One account, from the Connecticut barn typology seems accurate and aspects are likely transferable to onion barns found in Rhode Island.

In response to the specialization of local farmers in growing onions, a barn type appeared in Fairfield county and the Windsor area. While English onion sheds use a system of louvers to encourage even drying (not unlike our tobacco barns) the examples of onion barns so far located in Connecticut have not used this feature.

Instead, they are called onion barns simply because they were used to store the crop (Connecticut Barn Typology, 3).

Onion barns, like other crop specific barns, came from a need by farmers to have a building that was suitable for storing onions. Onions, much like potatoes, needed to stay cool and dry to prevent rotting. Therefore, one might expect onion barns to be drafty, whether through intentional louvers systems or through natural gaps in wooden siding. Conversely, some onion barns may have been fitted with heating systems to help keep onions dry by heating them. *The Culture and Diseases of the Onion* written in 1924, sheds light on many aspects of the onion growing, harvesting and storing process. This text encourages drying onions at a low heat for a few hours to ensure that any moisture liable to cause rot can be eliminated. Poor storage conditions contributed to diseases of the bulb. Therefore, proper storage was of utmost importance especially in the northern states, where bulbs were stored during the winter months before being brought to market. According to *The Culture and Diseases of*

the Onion, an onion storage barn should have plenty of ventilation, remain dry, store a small quantity of onions at a time, maintain a relatively low temperature and be safe from freezing conditions (Taubenhaus and Mally 1924: 97-100).



Fig. 17: The Charlestown Onion Barn, Rhode Island (Aerial Photographs from Google maps).

Specialized Agricultural Outbuildings

Corn Crib

Corn cribs were an essential part of many farms in the Northeast by the middle of the nineteenth century. Corn cribs were designed to allow moist corn to dry slowly in order to prevent mold and mildew (Noble and Cleek 2004: 155). Unlike wheat, oats, rye, barley and buckwheat that can be cured in a field corn takes much longer to dry. Similarly, it is easily damaged. Due to the fragile nature of corn and its special needs, the corn crib was designed (Halsted 1881: 128). The walls usually have a high proportion of open space and the

building is narrow to ensure proper air circulation. Earlier versions of corn cribs were built with unhewn or split logs resting on stone or log piers. Corncribs often had stone slabs set on top of the supporting posts, creating a shelf that mice found hard to climb past. Later versions were constructed with narrow lumber slates. Corn cribs are most often seen with wooden framing and a gable roof. However, in some parts of the country, perhaps even in Rhode Island, they are also built with masonry and an assortment of roofing styles (Noble and Cleek 2004:155-157).

Root Cellars

While early barns often incorporated a basement storage bin for root crops such as potatoes, turnips, and onions, the growth in yield on many farms made it imperative to have a structure designed for the storage of root vegetables at a cool temperature. These structures were typically referred to as root cellars. Byron Halsted cited several characteristics of the effective root cellar: “cheapness, nearness to the place where roots are consumed, dryness, ventilation, and, above all, it should be frostproof” (Halsted 1881:224). Most such cellars were excavated into a hillside and lined with wood, timber, or masonry. The twentieth century marked the beginning of widespread use of purpose-built structures for the storage of particular vegetables. Root cellars were common on RI farms in the 19th century and perhaps earlier. Generally they have stone slab roofs supported by stone side walls. Cider might be stored in cellars also.

Poultry Houses

While residents of the Mid-Atlantic region are familiar with large twentieth century broiler or laying houses, earlier poultry houses in the North East were primarily much smaller buildings. Halsted cited the essential requirements of a poultry house built in the late

nineteenth century: “a warm, dry, well-lighted and ventilated shelter that will ensure comfort in winter, with convenient arrangements for roosts, feeding space, and nest boxes. It is thought that virtually every farmstead in North America, at one time or another had one or more structures for housing chickens. In many cases, these were small, nondescript buildings often converted from an earlier use. Typical nineteenth and early twentieth century designs were wood-framed, single-story, shed-roofed buildings of varying lengths, with ample windows on the lower side wall, and a central doorway. There were also low poultry houses with little more than a double-pitched roof set on the ground. More modern chicken barns are more recognizable being elongated, low, gentle-pitched pole buildings generally of pole construction (Cleek and Noble 2004: 135-136).

Silos

Silos were used to store silage, fermenting and fermented corn and other plants, used as winter-feed for livestock, particularly dairy cattle. The earliest such silos, first used in the United States in the latter part of the nineteenth century were pit silos, simply holes in which corn was thrown. Although inexpensive to construct, these structures had numerous shortcomings, and were soon supplanted by the first generation of wood silos.

Several types of wood silos were used, each with the goal of providing airtight storage for the silage and being able to withstand outward pressure from the chemical processes occurring. The earliest wood silos were square in cross-section but had the tendency to not be airtight. Later wood silos were octagonal in shape but that design, too, was found to be problematic. A University of Wisconsin agricultural physicist, F.H. King, designed the first round wood silo, and shortly after a wood silo constructed of vertical staves held in place with iron staves was introduced. Wood silos predominated on dairy

farms at the close of the nineteenth century (Beadle 2001:1-7). More recent silos often hold commercial feed, not silage.



Fig. 18: Metal Silo at the Barton Farm, used for dispensing commercial feed (RIHPHC 2010: Photograph on File).

Privies

Privies were usually small, but tall wooden buildings that were used as toilets prior to the introduction of indoor plumbing in the late nineteenth or early twentieth century. These buildings were generally separated from the house for sanitation and odor reasons, but still close by for convenience reasons. They were generally gable-roofed structures with a hinged door and small window to permit light. Early privies were built over pits and moved when the space beneath was filled. Later privies have pans or bases that can be cleaned out when filled. Most commonly they have one seat per privy. However, larger two seat privies were built as well. The two-holer design allowed waste in one privy to compost while the other hole was in use (Noble and Cleek 2004: 139; Visser 1997: 119-121).



Fig. 19: Privies on right at Harris Mill Village circa 1810-20 (Photographer, Joseph McCarthy Providence Public Library Rhode Island Image Collection).

Agricultural Building Construction

From settlement through the 19th and even 20th century, post-and-beam construction techniques were used for most wood-framed buildings, including barns.

As Thomas Visser wrote,

The typical English barn frame built in eastern New England...has as few pairs of large rafters supporting three or more purlins on each side of the roof. Each rafter rests on a tie beam, which rests on both the plate and the flared post. The flared post has a mortise for the plate and a tenon for the tie beam (Visser 1997:13).

The post-and-beam construction stems from earlier medieval English building techniques English barns and farm buildings, built utilizing the cruck or post-and-truss framing methods, were common sites on the medieval English landscape. The cruck framing

method was an earlier method, with surviving buildings dating from the 13th to 17th century. Cruck buildings could be several bays long, but were commonly of only two or three bays. The post-and-truss method likely evolved from the cruck method, being a simpler construction method (Cook 1982). It is likely that most barns in Rhode Island will be a variation of the post-and-truss framing method, not the cruck method.

Framing Members

Before the mid-nineteenth century, most framing timbers were hand-hewn from oak, chestnut and pine tree trunks through the use of broad axes or broad hatchets and adzes. Builders used locally available wood to frame their barns. Early settlers hewed timbers with broad axes, creating roughly shaped squared timbers. Many English barns were post-and-beam buildings, built on fieldstone foundations with a large wooden sill on top. Bents composed of beams, girts, rafters, braces and plates were erected resting on the sill (Herman and Lanier 1997). Each bent is composed of a pair of posts, the connecting girt and the strengthening braces. The longitudinal plates tie the bents together and rafters, and other roof framing members are erected on top of the main frame. These early barns almost exclusively had gable roofs. To cover the framework, vertical plank-wall construction, clapboards or, more often, shingles were used (Visser 1997: 19).

The nineteenth century marked a period of major change in building construction technology as mechanization of the building products industry was reflected in the buildings themselves. During the second half of the nineteenth century, as timber resources grew scarcer and improved cutting technology emerged, the lightweight “balloon” or “plank” framing initially developed in the Midwestern states spread to the Northeast including New England. Instead of relying upon a small number of strong, heavy posts and beams, the

balloon frame uses pieces of lumber sawn two inches thick for the framing. Heavy girders were made from two-inch-thick planks nailed together. The studs extend from the sill up the entire wall to the plate beneath the roof. Studs are typically 2 by 4s or 2 by 6s. while planks measuring 2 x 8, 2 x 10 or 2 x 12 were used for joists and rafters. With this said, the transition from post and beam framing to balloon framing in Rhode Island was not clear cut. Most farmers tended to opt for modified post and beam buildings well into the 20th century.



Fig. 20: Hand hewn marks on Post and Beam barn (Photograph by Stephanie Shaw).

Joinery

Prior to metal nails, the main fastening methods of the time were interlocking joints cut in the framing members and then pinned together with wooden pegs or treenails. The most commonly used joint for connecting horizontal and vertical members consisted of a projecting tenon on one member that fit into a mortise or pocket on the other member. Other types of joints included dovetail and lap joints. Initially, timber framed buildings were laid out using the scribe rule method. In this method the carpenter adjusted the joint's fit according to the nature of the individual pieces, which meant that each joint was unique. In order to insure each

pecially fitted member would be joined with its proper mate, the carpenter would mark each of the members to be joined together with a common ‘marriage’ mark. Roman numerals were commonly used for these marriage marks.

At the beginning of the nineteenth century, handwrought iron nails (except for the larger spikes) was being replaced by nails produced by machines that cut them from bars of wrought iron. The earliest machines chopped nails off the iron bar like a guillotine, with the operator wriggling the bar from side to side with every stroke to produce nails with a tapered shank. By the 1820s, improvements were made in nail-making machinery and the iron bar was flipped over after each stroke. The cutter was set at an angle. It is possible to discern whether a nail is an earlier “Type A” or a later “Type B” nail. Type A have burrs left by the cutting edge on diagonally opposite edges while the later Type B nails have both burrs on the same side. During the 1880s, the first wire nails were produced using steel produced by the Bessemer process, and their number far surpassed those of cut nails before the end of the century (Visser 1997:24-25).



Fig. 21: Type B Cut Nail, 1820-1900 (Photograph by Stephanie Shaw).

Saw Marks

Most farm buildings constructed prior to 1850 have boards, planks, and some framing lumber cut by water-powered sawmills with sash saws. These saws operated in an up-and-down motion, which left straight, ragged saw marks. By the mid-19th century circular saws were becoming increasingly common and left arced marks on boards (Visser 1997:26-27).

Sheathing

Until the early 1800s the walls of most New England barns were sheathed with a single layer of rough-sawn wide boards, usually pine, installed vertically. By the 1830s and 1840s, farmers covered the gaps between the sheathing boards on the inside with thin rough boards to make the barn more weathertight. Others used wood shingles or board and batten siding on the exterior to reduce air infiltration. By the 1860s, spruce or cedar clapboards were becoming popular for sheathing outside walls of horizontally laid sheathing boards (Visser 1997:30-31).

CHAPTER 5: MODERN AGRICULTURE

Agriculture has been in a steady decline since the end of the 18th century, and the amount of the state's land area under cultivation is now negligible. In 1900, the Rhode Island State Board of Agriculture reported that there were at least 349 untilled or abandoned farms within the state. By 1905, in Foster for example, the population was 1,160 and there were 258 farms. Concern about abandoned farms statewide (there were forty-one of them in Foster in 1900), prompted the State Board of Agriculture to advertise the available properties. One result of these advertisements in Foster were the arrival of a large number of Finnish families who took up farms along the town's western border between 1919 and 1926 (Youngken and Greenwood 2008: 15).

Many remaining farmers returned to farming at a smaller scale. Those still farming turn to "market gardening," raising perishable commodities that could not be shipped from the west. Farming in many ways returned to what it had been in the 17th and 18th centuries except at a larger scale. Many farmers continued farming for sustenance while pursuing other occupations. For example, the Luther of the Andrews-Luther Farm in Scituate, RI took on other types of work to augment his income from the farm in the late 19th century. By the early 20th century he was operating a sawmill in an outbuilding to produce cordwood for sale locally (Hebert 1985:8).

In the second quarter of the 20th century, Foster experienced a slow rise in population brought on by some new farmsteaders as well as ex-urbanites seeking country homes. The second half of the 20th century saw a steady increase in the latter group, as exurban residential development replaced agriculture as the dominant land use in town. By the close

of the 20th century, the number of farms had shrunk to just fewer than thirty, where it remains today. As well as several tree farms, they include poultry farms and a number (including the Borders Farm) that continue to maintain the traditional landscape of cropland, hayfield and pasture while raising beef, dairy cattle, horses, sheep and goats. As the twentieth century advanced, Rhode Island lost farmland—80 percent of it (Youngken and Greenwood 2008: 15).

During the 20th century, innovations in farming technology changed the way farmers farmed, farms operated, and how products got to market. Those farms that remained on the Rhode Island landscape, saw dramatic shifts in the way farming was done. Gasoline powered machinery, like tractors made planting and gathering crops easier and quicker. Mechanical milking machines and cream separators made milking cows easier and faster and butter and milk production a less laborious chore. As dairying became less laborious, the historically female dominated task transformed into a male dominated task. Liquid milk was transported by automobile from individual farms to creameries and sent directly to consumers from there. Mechanized equipment made it so fewer people were needed to complete each task.

The introduction of electricity was one of the biggest innovations of the 20th century. It was not until the 1930s and 1940s that many rural farms in Rhode Island acquired electrical service. Charles Border, Sr. acquired electrical service for his farm in 1938, making his ice house obsolete technology. Electricity lit up the rural Rhode Island countryside. Many farmers installed electric water pumps in their barns, used electric milking machines to cut milking time in half, and cooled milk in electrically cooled storage tanks. With electricity, farming families could support larger herds with the same amount of

manpower. Although electrical farm implements like cream separators, ice cream makers, and butter churns were available from companies like General Electric by 1915 it would not be until the 1930s and 40s that most farms in Rhode Island used them on their farmsteads.

Changes in transportation methods in the 20th century including automobiles, trucks and increases in railroad lines allowed perishable products to get to market faster. Although the railroad first came to Rhode Island in 1835, new rails like the 1902 Providence and Danielson railway allowed farmers to enlarge their markets by shipping products further and further (Railroad Station Historical Society 2010). This new ability to get highly perishable products (particularly liquid milk) allowed for a new dairy market to grow. Dairy regulations, enforced first by private milk companies and later local and state legislation, profoundly impacted dairy-related architecture, including barns and outbuildings. Although sanitation concerns influenced farm buildings and placement throughout their history, dairy regulations introduced by milk companies in the last quarter of the nineteenth century motivated physical changes. By the 1930s, dairy regulations were enforced on all dairy-related architecture, including dairy barn (Shriber 2002: 4 and 17).

As the trend of agriculture was declining in the 19th and 20th centuries, new construction of barns and agricultural buildings was not overly abundant. A few new architectural innovations did appear in the 20th century. These include pole barns and barns constructed from steel or iron framing. A pole barn, sometimes referred to a cattle barn in North America, is a structure with a gable roof extended over a series of poles. Occasionally, pole barns are enclosed with walls and siding, but many times, the sides are left open. Materials used to cover the barn range from light metal to canvas. Many modern farms use pole barns for hay storage or livestock shelter. Advantages of pole barns include

low cost and the ability to store large quantities of hay in areas easily accessible by vehicles and machines. Metal-framed barns and outbuildings come in a variety of shapes and sizes. The benefits to metal-framed buildings are that they are inexpensive, easy to construct, durable, easy to clean, and owners can really customize the barn very easily to meet their exact needs.



Fig. 22: Metal Framed Barn Interior in Glocester, RI (Photograph by Stephanie Shaw).

While the number of farms in Rhode Island decreased in the first part of the 20th century, the later part saw an increase. For example according to the 1978 census, there were 674 farms. By the 1997 census, there were 994 farms. With this, the average number of acres changed from 98 in 1997 to 65 acres in 1997. This decrease in acreage can be contributed to more efficient farming. It is likely also due to large farmsteads being divided over the years to multiple children who repeated the pattern with their own children. Similarly the average number of milk cows decreased from 4,669 in 1978 to 2,355 in 1997. The reason for this decrease is likely due to two things: increased efficiency in milk

production and a decrease in the number of farms who could compete in the modern dairy industry.

Winding through the country roads of the Rhode Island today, remnants of the past three hundred years survive. A large number of historic farmsteads, complete with house, barn and outbuildings still line the picturesque roads. However, modern infill and sprawling suburban developments are beginning to invade the Rhode Island. Barns and outbuildings are significant for the role they played historically on the agricultural landscape. They are semi-threatened agricultural outbuildings due to both deterioration and to suburbanization and growth in Rhode Island. Public promotion of the importance of agriculture to the economy and the well being of Rhode Islanders is needed to keep agriculture alive. In many cases, this will also help in the preservation of historic farm buildings and associated ways of life.

In 2004, Rhody Fresh Milk, a dairy cooperative began when a group of five dairy farmers joined together to promote fresh, local milk. The program has grown to include nine dairy farms through the state, which sell milk at stores, colleges and other locations in Rhode Island. The cooperative was the proposed solution to a problem in Rhode Island, a problem faced by agriculture in many areas across the country - an aging farm population and the encroachment of urban development into rural areas. In Rhode Island specifically, issues surrounding the high price of milk and increasing land values were forcing producers out of business. Today, Rhody Fresh Milk is a well-known brand across Rhode Island and has seen great success (Rhody Fresh Milk 2010).

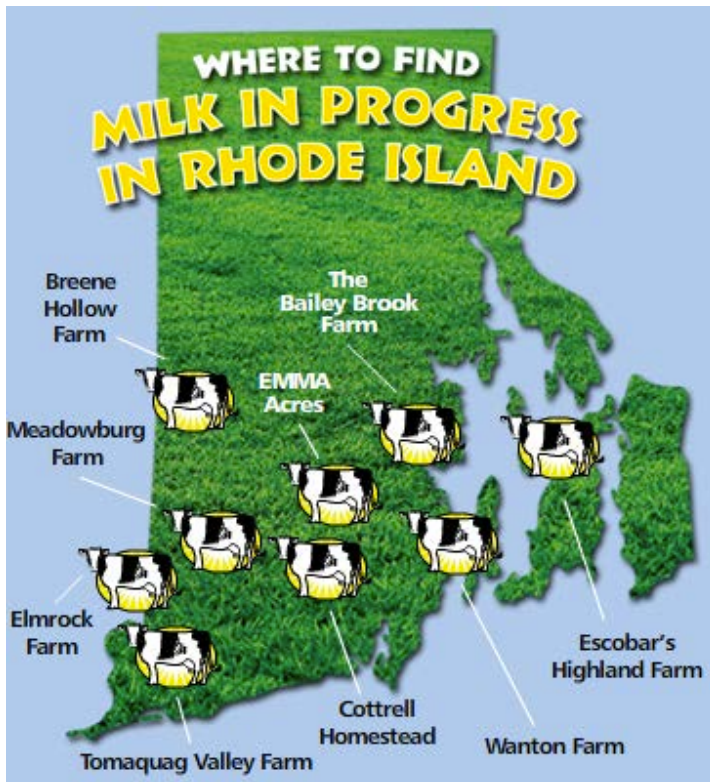


Fig. 23: The farms in Rhode Island that produce milk for Rhody Fresh Milk (Rhody Fresh Milk 2010).

The 2007 census counted 850 farms in Rhode Island. The census defines a farm as any place that sells or produces \$1,000 or more of agricultural products within a given year. Like Rhody Fresh, dairymen, sheep farmers and beef producers have found survival in cooperatives to process and market their wares. Vegetable farmers are thriving through Community Supported Agriculture (CSA) operations, selling shares of the harvest to consumers at set prices (Lieberman 2009). An article written in March 2009 titled (*It's a Farmers' Market* by Ellen Liberman sheds light on local agriculture in Rhode Island. Susan Sosnowski, a South Kingstown farmer and state senator, says "Agriculture has re-invented itself. For the farmer, there's been a paradigm shift, and agriculture is the one shining star in a dismal economy." Beyond farmers markets and CSAs, thirty-six Rhode Island school districts buy local produce to use in school lunches. In 2006, Rhode Island schools bought 544 bushels of apples, along with corn, tomatoes, potatoes and butternut squash. In 2008,

last year they purchased 13,163 bushels of apples and ten other local products. Rhode Island Center for Agricultural Promotion and Education (RICAPE) is a nonprofit works connecting farmers with schools (New England Farmways 2010).

In September 2009, an article titled *Number of Rhode Island Farms is Growing* by Talia Buford shows that cooperatives and farming initiatives designed to encourage support of agriculture in the state may be working. The article highlights the Jaswell farm, a farm that has been operating for over 110 years in Smithfield. The author indicates that public awareness of growing food-safety issues has contributed to a public desire to buy local. As with the Jaswell farm, customers can get to know the produce, the farm and the family growing the crops. Many customers not only become attached to the products, they also have a fondness for the farm itself. This desire to buy local has helped increase the number of farms in Rhode Island. The Jaswells also do their best to support local farms. They sell local cheese, Rhody Fresh milk, Del's Lemonade and Centerdale-based Yacht Club soda in their store, alongside freshly baked pastries using their own produce.



Fig. 24: The interior of the Jaswell's Farm store in Smithfield, RI (Jaswell's Farm 2009).

Today, there are close to 900 working farms in RI. Rhode Island has a history of cranberry, dairy, livestock, maple sugar and vegetable farms. Furthermore, there were nurseries and orchards on the landscape. Today, many of these types of farms remain. Farms across the United States are valued as open working landscapes, scenic areas, providers of wildlife habitat and collections of historic architecture (Massachusetts Department of Conservation and Recreation 2009: 2). As time marches forward, fewer and fewer people in the Rhode Island will remember its farming past. People living in the Rhode Island today are further and further removed from the state's farming tradition and the buildings that support it. It is essential that we continue to learn more about the agricultural history of Rhode Island and the architecture used to support it if we hope to preserve the agricultural heritage of Rhode Island.

Registration Requirements

The criteria for evaluation as determined by the U.S Department of the Interior, indicate that buildings should possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- A.** That are associated with events that have made a significant contribution to the broad patterns of our history; or
- B.** That are associated with the lives of significant persons in or past; or
- C.** That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D.** That have yielded or may be likely to yield, information important in history or prehistory.

Agricultural buildings and properties are most likely to be eligible under National Register Criterion A or C, although some may also possess significance under Criterion D. Under Criterion A, a property must have played an important role in the history of its local community, area of state, or in the history or development of a significant agricultural practice. For example, should there be any remaining resources associated with the initial development of the Rhode Island Red chicken, they could possess significance at the state level or beyond. In the same way, in many states, buildings associated with the research facility of the state agricultural extension program are found eligible due to the important role they played in significant developments in the history of agriculture. At the local level of significance, agriculture buildings can be significant as representatives of the once-dominant way of life in a community.

Agricultural properties may also qualify as eligible under Criterion C. Significance under Criterion C may be due to several reasons: 1) the farm represents an exceptionally intact group of agricultural buildings and associated agricultural landscape. Most outbuildings are by nature short lived, and a farm that retains its complete complement of nineteenth century buildings and structures, as well as associated, agricultural land, represents a rare commodity. Such a farm would be expected to be eligible for the National Register under Criterion C.

Another reason for eligibility would be rarity. While English and New England gable front barns are found throughout the state, other more rare types, such as monitor-roofed barns, round or polygonal barns, and rainbow or Gothic roof barns, would be rare barn types in Rhode Island. From initial surveys and limited recent pilot surveys, it is clear

that some more rare roof and barn configurations exist. Such unusual examples may well be significant under National Register Criterion C.

Although the designers of barns are generally not known, exceptions are the horse barns, stables, and outbuilding designed and constructed in the late nineteenth century as part of estate farms. If the estate is intact, the barns and other outbuildings may be assessed for significance as part of the larger estate. If much of the nineteenth century farm has been demolished and the architect of the remaining agricultural buildings are known, these agricultural buildings should be evaluated in the context of the architect's larger work.

Although many agricultural buildings employ standardized construction, post and beam for some, and plank or balloon frame for many late nineteenth and early twentieth century examples, there is always the chance that a building may employ an unusual construction technique or framing technique. If this is found to be the case, the building or structure may be eligible under National Register Criterion C for rarity or Criterion D for its information potential.

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