

# Agriculture in New England

Introduction  
Native American Roots  
To Improve the Land  
Farm Size and Land Use  
Economic Factors in New England Agriculture  
Farm Layout, Buildings and Tools  
Farm Products  
The Seasonal Workload of Men on the Farm  
Women's Work on New England Farms  
New England Agriculture Today

## *About the author:*

George Christie's first contact with commercial agriculture was as a summer field worker in the potato plots at Cornell University, where he received a bachelors degree in entomology from the Agriculture and Life Sciences College. He received his masters in entomology at the University of California, Riverside, where he specialized in biological control of greenhouse leafmining flies. As a sole proprietor, he ran a mosquito-control business in Rhode Island for fifteen years, and was the lead author in revising the Massachusetts State Generic Environmental Impact Report for mosquito control. He created "Elementary Entomology," a series of programs on insects, and gave over 200 programs at schools, libraries and other childrens' venues before coming to SPNEA as the Casey Farm School and Youth Program Coordinator in 2000.

## **Introduction:**

All natural processes are interactions. Agriculture, often thought of as something people do to nature, is a much more dynamic system than that. Weather patterns, soil type, and growing season are just three factors that nature imposes on the farmer. Add in the passage of significant periods of time, and the system becomes more complex still.

My goal is to distill the larger messages into a form useable in answering the simple questions. To do so I have divided the subject into a series of short essays, ranging from one to four pages in length. They can be read sequentially or by section, on an as-needed basis. The topics dealt with cover those areas about which I am most often asked questions as the education coordinator at Casey Farm in Saunderstown, R.I. For example, I have a section on gender roles, as people often ask about who did what jobs.

Obviously there is much more to know than can be presented here. *A Long, Deep Furrow*, by Howard S. Russell, is perhaps the most complete overview of agriculture in New England from the 1600s to the early 1900s. Another excellent source on farms, farm building layouts and the seasonal workloads of men and women is Thomas Hubka's *Big House, Little House, Back House, Barn*. Two good books which deal extensively with the change from Native American to European-based agriculture are *Changes in the Land*, by William Cronon, and *Ecological Revolutions*, by Carolyn Merchant. Cronon's book emphasizes the fact that Native Americans were active shapers of the land, and that the landscape the Pilgrims sailed into was not a wilderness, but an actively, if very differently, managed world. Merchant pursues the topic

further, delving into the philosophical differences between the two cultures, and their effects on the landscape. Another book I have just discovered is David Foster's *Thoreau's Country*. Foster provides a modern ecological framework for an extensive selection of statements and brief paragraphs taken from Henry David Thoreau's journals, written between 1837 and 1862.

## **Native American Roots**

Native American agriculture in southern New England had developed, by the time of the first contacts with Europeans, into a well-ordered system. Corn (maize) was the single most important food crop, accounting for some 65% of the diet (Merchant 1989, 75-76). Corn was planted in hills in clearings the Native Americans cut in the woods. Beans, squash, and pumpkins were planted with the corn. The bean vines climbed the corn stalks. The squash and pumpkin trailed along the ground, where their broad leaves blocked weed growth and their sharp spines may have deterred animals to some extent.

Farm work was almost exclusively women's work. Men might help with the work of clearing a new field, and children performed various jobs, such as young boys assigned to scare away the crows.

Tobacco was the other main crop grown. It was generally cultivated by men, who were also the ones who smoked it. Additional crops were Jerusalem artichoke, strawberries and melons.

The agricultural system was a cyclical system found in many pre-industrial farming communities. Fields were cleared of their trees, which were burned on-site to provide phosphorus to the soil through their ashes, and crops planted. Fields remained in use for five-plus years when they were allowed to revert to woodland. In New England, where forests regenerate quickly, and top soil is thin (due to recent glaciation), such a system worked well.

Soil fertility could be extended in fields close to the shore, or along streams where anadromous fish (those that migrate from salt water to fresh to spawn) migrated, by using fish as fertilizer. This was a time-consuming technique, made effective by the massive amount of fish available in the spring spawning runs.

In northern New England, agriculture was less well developed because the growing season was shorter. Hunting and fishing, along with gathering wild berries and nuts, provided a larger proportion of the total diet.

## **To Improve the Land**

The dominant theme that runs through New England agriculture is "improvement." The first colonists, whether they started at Plymouth, Providence, the Connecticut Valley, or along the Piscataqua River in Maine, saw heaven's work before them, improving a land barely touched by the Native Americans. Improvement, of course, meant recreating England, with its fields of wheat and barley, and its barnyards of cattle, sheep, hogs and geese.

Ironically, the farming practices of the Pilgrims and Colonials were exploitative rather than sustainable, and, by the early 1800s, much of the land was worn out. This led to a second wave of improvement, led by the agricultural press and a small but influential number of experimental farmers. These were buttressed by land grant colleges (started in the 1860s) and the extension system (starting early 1900s). The colleges researched agriculture and the extension service provided a link between researcher and farmer.

But science-based, economics-driven agriculture created its own set of problems. Farmers became overly dependent on chemical solutions to natural problems, fertilizers to rebuild depleted soils, pesticides for animal problems, herbicides for weeds. A second problem, highly magnified in New England, was the battle of land use, with large tracts of farm land being built over by factories, stores, and houses. The organic and sustainable agriculture movements have arisen in direct response to the problems of chemical use and land loss. Their philosophy centers on creating a sustainable system that works in alliance with nature, rather than seeking to subdue it to humanity's will.

*While the Sun Shines* (Yale, 1991) is an excellent study of the effect of changing technology on haying in New England. Covering the time period 1789 - 1990, Yale takes the reader from scythe to haybine and baler. Though he only discusses haying, the changes mentioned for haying occurred in roughly the same order and time periods.

### **The Three Main Waves of Improvement in New England Agriculture**

#### **Time Period**

Pilgrim through Colonial

#### **Problems**

Undeveloped Wilderness

#### **Improvement**

Recreate English farm system

Tame the wilderness

#### **Time Period**

1800s to mid-1900s

#### **Problems**

Farm lands worn out

Farming based on tradition, not science

#### **Improvement**

Increase yields through applied science

#### **Time Period**

1960s to Present

#### **Problems**

Loss of land to development

Problems with chemical solutions

People disconnected from earth

#### **Improvement**

Create sustainable farming systems that are economically viable

## Farm Size and Land Use

The first Europeans to settle in New England found extensive “meadows” ready for planting. These meadows, however, were what remained of the farms of the Native Americans. In the Plymouth area, epidemics of measles or small pox had all but wiped out Native American populations, leaving their empty fields to be taken over by Europeans. This process continued throughout the 1600s, with warfare and disease reducing Native American populations in the areas adjacent to European settlement by approximately 95%, enabling the growing European population to expand.

Some definitions for various agricultural land uses

**Kitchen garden:** Land used for mixed vegetable and herb growing for farm family consumption Included medicinal and ornamental plants

**Tillage:** Land on which crops were grown for harvest

**Hay or mowing field:** Land planted to hay or grains to be mowed and used for winter feed or sold for profit

**Pasture:** Land used to graze livestock

**Fresh meadow:** Land in native plants that could be mowed for hay or used as pasture

**Improved or English meadow:** Land planted to English grasses or clovers to be mowed for hay or used as pasture

Even as the cleared land filled with European farms, there was still plenty of land available for new farms. But two factors limited the sizes of these farms: they needed to be cleared and there were few draft animals available for the work. Clearing therefore had to be done by human labor alone, and was a long, back-breaking process. Far from the neat fields of today, where up to 300 years of work has removed stump and stone, the early fields were studded with the stumps of trees, and filled with rocks too large to be removed by hand. The stumps were left to rot, though a large number of devices were invented to pull stumps from the field as time permitted, and the farmers just planted around the rocks.

As an example of farm size, an average farm in Gloucester, located in the northwest corner of Rhode Island, in 1778, had about 9 acres of meadow, 7 of pasture, and 3 to 4 planted to grain. Including the kitchen garden, house and buildings, the improved land of the farm was slightly over 20 acres (Jones 1992, 7-8). This represented about one-third of the property, the rest being considered “undeveloped,” typically being a wood lot and/or swamp. A much larger analysis of 15 Massachusetts towns in 1771, by Carolyn Merchant (1989, 278), gives figures that are very similar, though tillage acreage is typically a bit higher. Although this does not sound like a large farm by modern standards (the *World Book Encyclopedia* gives average farm size in the United States in 1990 as 461 acres), it did represent the approximate size farm a single family, without significant hired labor, could maintain with the farming implements of the day.

Larger farms were found where conditions favored them. Along Long Island Sound, where the weather was milder and soils deeper, plantation-type farms came into being, with sizes of 200-plus acres being

typical (Casey Farm in Rhode Island, is a perfect example of such a plantation). These farms used slaves, indentured servants, and hired help to work the land. Another variation was the Pettaquamscutt purchase in 1657/58 in which the proprietors acquired approximately 65 square miles of land including most of what is today South Kingstown and the southern half of Narragansett, R.I., for the purpose of raising livestock, specifically horses, sheep and cattle (Romani 1995, 52 & 60).

More-open sections of Massachusetts also contained larger farms. Philemon Shepard was farming 127 acres in Sturbridge, Massachusetts, in 1827, and, "...remained a farmer of average land holdings and middle tax ranking." (Baker and Paterson 1988, 101). Of note though was that Philemon's brother also helped on the farm, and that the farm Philemon had received from his father in 1816 was sixty-three acres in size, again suggesting that it took roughly sixty-plus acres to support a farm family in comfort.

In most of the rest of New England it was rare for a farm to start large. Initial lot sizes in Providence (founded 1636), Portsmouth (1638) and Newport (1639) were between five and six acres (Carrier 1923, 190). Of course, substantial land was held in common for the community as a whole, but the small number of acres given to individual families is indicative of the amount of land it was assumed a family could improve at that time.

The community lands were used for grazing, and for lumber (persons could petition the town for the right to cut wood). But such lands were also used as dividends to be given to property owners who made an initial investment in the town. As an example Edward Richards purchased twelve acres in Dedham, Massachusetts, in 1639. As a proprietor of the town, he had significant civic responsibilities, including road-building, militia duty and fence viewing, and received parcels of land in return for his investment and work. By 1653, he owned over 55 acres, and ranked twelfth of 78 property owners in terms of the size of his holdings (Kane 1978, 23-24). Eventually the Richards' family controlled several hundred acres of land, enough for Nathaniel Richards, Edward's son, to give 80-acre farms to two sons while a third retained the central farm after he died. In addition, Nathaniel sold approximately 75 acres of land, using the family's surplus property much as one would use a savings account today, as a means for raising cash when necessary (Kane 1978, 27).

## **Economic Factors in New England Agriculture**

At first, farms throughout the region were designed to provide a comfortable life for an extended family. Most years produced small surpluses for most farmers, and so the community as a whole grew steadily. A classic children's book, *Ox-cart Man*, despite the silly idea that a farmer would walk ten days to market (a more-standard time frame would have been one night away from home (Cohen 1988, pp. 56-57)), does represent the small but steady gains a new England farm family would make in the course of a year. As J. Hector St. John de Crevecoeur stated in his *Sketches of Eighteenth Century America*, "Great parts of the profits of summer are expended in carrying a family through this wintry career—but let not that reflection diminish our happiness! We are robust, healthy, and strong:..." (1986, p. 239).

But the subsistence-to-comfort economy was connected to the larger world through trade. Furs and lumber are well-known early exports, but horses from Rhode Island and tobacco from Connecticut were other products exported early on. Beef and pork were raised to provision the sailing ships and cheese for the cities was an important product. Even within the local farming community economic inter-dependency was larger than the traditional image of the self-sufficient farmer might depict.

## Some Examples of Reciprocity in New England Farm Communities

**Barn raising:** Community members would gather to help raise barns and other buildings.

**Oxen:** Not every farmer owned a team of oxen and teams were routinely hired for plowing or for work where more than one team was needed. A lesser known fact is that not every farmer owned a plow, and would swap labor for the right to use a plow.

**Spinning wheels and looms:** Both these items were rather expensive to purchase and bulky to store and use. Looms in particular would be shared.

**Meat:** Butchering an animal created large amounts of fresh meat, which would spoil quickly if not eaten or preserved. Families could coordinate their butchering with neighbors such that each farm would supply several farms with fresh meat in sequence.

**Home industry:** At one farm the man would operate a blacksmith shop or work as a cabinet maker, while at a nearby farm the woman was noted for her fine weaving, or her straw hats.

Not unexpectedly, the Revolutionary War signaled change in New England. The war years, which caused a temporary spike in the need for agricultural products to supply the army, seem to have initiated a rather lengthy depression in New England farming. Three significant factors were involved.

First, ecologically destructive European land uses, including over-grazing, poor crop rotation, and little fertilization, had worn out the land. Although the need to fertilize crops was understood, as were the rudiments of crop rotation, there was no scientific body of knowledge on which to base soil-improvement decisions. Furthermore, where land was abundant, the need to protect it wasn't obvious.

The second factor tied directly into the first, as the reality of scarce quality farm land in New England began to assert itself. The best lands were already under cultivation, and the marginal lands could only be improved so far.

Third, there were limits on the ability of most farmers to connect with larger markets. Turnpikes were only starting to be developed, canals were not yet in existence and railroads hadn't been invented. The ox-cart may make a romantic children's story today, but it was a poor vehicle for economic expansion.

However, there seems to have been a sense of awakening with the new century and the period from 1800 to 1850 was a time of remarkable change in which people began to address all of the above issues. Howard Russell (1982, 186) gives four key factors in understanding the changes agriculture underwent in the 1800s:

1. Rapid expansion of means of transportation
2. Marked improvement in education and information
3. Better tools and machines
4. Tremendous growth in industry and population

A fifth key was that large amounts of new land became available in the midwest in the early-to mid-1800s. The Louisiana Purchase in 1803, and the destruction of the Native American tribes from Florida up through Minnesota, essentially complete by the Civil War, brought vast tracts of land into European-style cultivation. An industrial depression starting in 1819 gave further impetus to migration and many New Englanders left for western New York and Ohio. If there had not been better farm lands readily available elsewhere, one can only assume New England would have retained a much stronger agricultural base into the present than it has.

Some farmers left, but many stayed, or purchased vacated farms with an eye towards making them profitable. Swamps and bogs were drained to improve them as pasture. Farmers also continued to increase the percent acreage planted to English plants such as timothy and clover, which produced better hay for livestock. They continued their struggle to pull boulders and rocks from their fields, and shifted land from cultivation to pasture, recognizing that much of the land was more productively used for dairy cows or sheep. All these efforts paid off. In the previous century it had not been uncommon for two-thirds of a farm to be listed as unimproved, but an 1860 census of Rhode Island farms listed 335,128 acres of improved land and only 186,096 as unimproved. (Gates 1965, p. 278)

Transportation problems throughout New England were slowly solved by improved roads, canals and, finally, the railroad. Turnpikes, privately owned and operated, were both appreciated for their quality and disliked because they charged fees. The advantages of reasonably well-kept roads to get to market generally outweighed the cost involved, and the turnpike network rapidly expanded in the early 1800s.

As transportation along waterways was often easier than over roads, canals were a logical development. The first canal in the United States was on the Connecticut River in Massachusetts in 1793. The Erie Canal was completed in 1825. As railroads developed, though, the canal system was superseded. Some canals continued to be made though, and the Cape Cod Canal was finished in 1914 (World Book, 1999).

Above all else, at least until the advent of the Interstate system in the 1950s and -60s, was the railroad, the arrival of which permanently altered the shape of the communities through which it traveled. The transformation was rapid and victory complete. Starting in the 1830s, the railroads dominated all non-oceanic traffic, with the exception of the major rivers, by the eve of the Civil War. The reason for this success was obvious. In an 1852 report to Congress the cost of transporting goods by rail was given as 10% that of transporting them by ordinary roads. Because of this vast reduction in shipping costs, farm lands increased significantly in valuation, as lands which were heretofore outside the limits of efficient transportation became tied into the expanded web of commerce (Anonymous 1852, 178-9).

This proved to be a mixed blessing in New England. Local railroads first tied many farmers into regional markets in a way that had been impossible earlier. But, as the local tracks tied in to the national network, New England farms increasingly had to compete with western agricultural products such as wheat, corn, wool and even pork and beef. A. J. Downing, editor of the *Horticulturist*, summarized the problem for the New England farmer:

The system of railroads and cheap transportation already begins to supply the seaboard cities with some of the fair and beautiful fruits of the fertile west. When the orchards of Massachusetts fail, the orchards of western New York will supply the Boston market with apples; and, thus, wherever the finest transportable products of the soil are in demand, there they will find their way (1848, 443).

Sheep raising in New England dramatically illustrates the effect of industrialization and the railroads. Prior to the mills, farmers raised sheep for wool which the farm women spun into thread for cloth, a portion of which they produced on looms at home. As the mills began producing, they needed wool to make the cloth, and produced fabric much more easily than the farm women could at home. As a result, farmers increased their flocks, and sought ways to improve the quantity and quality of the wool derived from each animal. By the early 1830s New England sheep flocks were much larger than they had been twenty years earlier. However, western wool quickly edged out eastern wool and, as an example, Worcester County, Massachusetts, flocks fell by nearly 45% between 1831 and 1841 (Baker and Paterson, 1988, 98).

But A. J. Downing continues:

There are, however, many of the finer and more perishable products of the garden and orchard which will not bear a long journey. These it should be the peculiar business of the cultivator of the older and less fertile soil in the seaboard states to grow (1848, 443).

Not only did it make economic sense to switch to products which could not yet travel long distances, but the ever-expanding milltown populations required feeding and fresh produce and milk were in high demand, so the first farms truly specializing in dairy cows arose. Poultry farms, producing meat and eggs for local consumption, came into being, and tomatoes and potatoes found their way into the diet of Americans. The region exported lumber, beef, pork, barley, hops, butter and cheese, and beeswax. Provisioning the merchant fleet, as well as the fishing boats, also required agricultural products.

During this time period the American agricultural press was born (Bullion 1988), with the express purpose of improving American farms and farming practices. Although the debate raged between time-tested traditions and modern science-based innovations, many farmers were clearly willing to try new ideas that would improve their yields. A. J. Downing saw this in imperative terms:

He who will do this [adapt to new markets] most successfully must not waste his time, labor, and capital by working in the dark. He must learn gardening and orcharding as a practical art and a science. He must collect the lost elements of the soil from the animal and mineral kingdoms, and bring them back again to their starting point. He must seek out the food of plants in towns and villages where it is wasted and thrown away. He must plant and prune so as to aid and direct nature, that neither time nor space are idly squandered (1848, 444).

Not every idea was a success, as the failure of the silkworm craze of the 1830s illustrates, however, the agricultural press created a mental framework in which many farmers discovered the benefits of getting advice from others. This led directly to the land grant college system with agricultural colleges being founded throughout the country in the 1860s.

The Civil War tended to confirm, rather than alter, the agricultural trends already taking place. As a whole, the region suffered during the war from a manpower drain to the armies, yet benefitted from a need for supplies by the armies, and actually saw trade increase with Europe as southern ports were blockaded. Dairy farms were a dominant fixture of the landscape, attended by their corn, hay fields, and pasturage. Poultry farms produced eggs and meat for the cities, helped in part by lower feed costs. High-value fresh produce also found a ready market. The Connecticut Valley continued to specialize in tobacco, and Maine potatoes were sold far and wide. The Massachusetts cranberry industry expanded. A lesser known farm crop was onions, of which 1.25 million bushels were produced in New England in 1900 (Russell 1982, 269). New England agriculture settled into a general system that would remain in place for nearly one hundred years.

Supporting this system, and helping it modernize, were several federal initiatives. The land grant college system, initiated in the 1860s, helped professionalize agriculture. The Smith-Lever Act of 1914 created the county extension system. Although the merits of some aspects of the modern agribusiness system can be debated, scientific research into pesticides, fertilizers, crop rotation and plant and animal breeds did do much to increase food production.

Nursery products were a specialty that benefitted from the growth of the cities and, later, suburbia. Starting in the early 1700s “gardeners” had supplied Boston residents with a wide variety of vegetables and fruits for their gardens (Benes 1996), and seed catalogs were common in the 1800s. Fresh-cut flowers such as roses, carnations and lily-of-the-valley were popular in the early 1900s and perennial shrubs and annual flowers to decorate home gardens have increased in importance in New England.

A vivid example of the shift from practical to decorative was the switch from potatoes to turf in Rhode Island in the 1980s. Problems with Colorado Potato Beetle caused farmers to use ever-increasing amounts of pesticides which drove up costs, and contaminated nearby wells. With profits gone and a legacy of pesticide mismanagement, potato growing was no longer viable, but the rise in new housing created a demand for turf. Today few potatoes are grown in Rhode Island, but South County turf is used throughout New England.

One final note about farm economics is that, throughout New England history, many farmers have supplemented their farm income with other work. Thomas Hubka (1984, 66) notes that over two-thirds of the farms studied in his survey of connected farm buildings (centered in, but not limited to, southern Maine) had some sort of home-industry shop. Typical industries were blacksmithing, tanning, carpentry, and animal slaughtering. Specialties included shingle makers, coopers, and wagon and toolmakers. In a recent issue of “The Natural Farmer” Victoria Ladd-De Graff (Winter, 2001-02, 8) notes the importance of her full-time job off the farm in keeping the farm going, demonstrating that off-farm income continues to be a vital part of the farm-family economy.

It is worth going back to the Winter 2001-02 issue of “The Natural Farmer” before ending this section to point out that farming continues to exist in New England. Though overshadowed by the much larger farming regions of the midwest, south and west, there is a vibrant, dedicated farming community throughout New England. Organic farming is growing throughout the region as people seek alternatives to highly processed food produced thousands of miles away. Farming also provides people with a sense of connectedness with the earth and with themselves, as the list of positive features of farming given in “The Natural Farmer” indicates.

Table 1. Positive and negative features of Family Farming as given in “The Natural Farmer” editorial in the Winter, 2001-02 issue.

<p><i>Positive Features</i></p> <p>Good food Clean air and water Healthy lifestyle Self-reliance Customer appreciation The innate value of the work</p> <p><i>Negative Features</i></p> <p>Ridicule of farm children Inadequate financial returns Difference between spouses in dedication to farming Demanding work ethic Issues about declining health and inheritance</p>
--

## **Farm Layout, Buildings and Tools**

Creating a farm plan which takes full advantage of the land itself, while being efficient to run, has vexed anyone who has ever farmed. The rocky soils, variegated terrain and temperature extremes of New England all combine to make farm layout a critical component of its ultimate success.

At its most basic, the typical farm of New England was laid out on a “four-field” system. The house and barn were located near a public road. The acreage dedicated to crop production, and hence requiring the most work, was located as close to the barn and house as possible. The next fields were those dedicated to mowing hay, for once mowed, the hay required transportation to the barn. Next came the pasture, to which the cows were driven daily. Finally, the wood lot was furthest away, for although wood is heavy to transport, it is the area less frequently visited, and by using sleds on the winter snow, the farmer could minimize the transportation problem.

Naturally, many factors influenced this layout such that few farms could follow it exactly. Crops were planted on the better soils, even if that meant transporting them further after harvest. Poor soils, steep slopes, boulders beyond the farmer’s capacity to move, and/or marshy ground all could preclude mowing, so that land could only be used as pasture. Drainage was always a problem, such that houses would be set on higher ground, even if that meant they were set further back from the road than might otherwise be desirable. Countering setting the house on well-drained land was the need for water. Most homes relied on wells, and because water was essential in large amounts and heavy to carry, it was desirable to have the well as close to the house as practical, some houses actually having the wells within the house, or else enclosed on a porch connected to the house. The problems inherent in wanting a reliable well close to the house, meaning a reasonably high water table year-round and having a dry basement at the same time, are obvious.

The farm buildings consisted at first of a house and a barn. The first barns were built in the English style, with the main door located centrally in the side of the barn. By the 1850s, most barns were being built in the “New England style” with the main door built in the gable end. This newer type had the significant advantage that, if the farmer wanted to expand the barn, it was much easier to lengthen it to the rear than it was with the English-style barn.

Other farm buildings were built on an as-needed basis. Despite the fact that unfenced swine were reported as a problem as early as the 1640s, pig sties did not become common until the early 1800s. Some farmers also began to house their pigs under the main barn, as farmers exploited the pigs’ natural tendency to root through the ground to use them as “manure mixers.” Manure would be shoveled into the pig pen, where the pigs would mix it thoroughly with dirt to create a good fertilizer (farms on the shore used this same attribute of pigs to grind up shells for calcium and seaweed for nitrogen, for use as fertilizers).

Chickens were left to run free even longer than swine, with most farmers building coops only in the second half of the nineteenth century. A stable would be added if the farm owned a horse, and farmers might build a separate sheep barn if their flocks were large enough. If hay fields were located some distance from the main barn, a farmer might build a second barn for hay storage.

Most other buildings did not come into widespread use until after the Civil War. Corn cribs provided ventilated storage for corn, while silos permitted controlled fermentation of corn for use as an animal feed, in New England typically for dairy cows. Other specialized structures, such as sap houses for boiling down maple sap into sugar or syrup, and carriage houses, for protecting wagons and carriages, were also common.

One final building of importance on many farms was the home-industry workshop. Most farmers found it necessary to have some sort of income from work other than farming, with carpentry, blacksmithing, cabinetmaking and coopering all being rather common. Other trades included tanning leather or producing leather goods, wagon making and repairing, and tool making.

The tools of a New England farmer have gone through three significant alterations since the 1600s, change in the materials used to make the tools, change from single-operator devices to machines, and change in the means of powering the tools.

The first plows, shovels, axes and rakes were made of wood, or wood with iron parts for strength at the point of use. In the 1800s steel replaced iron, being much stronger at a given weight than iron. Tools were also improved in design, with the grain cradle, a series of wooden “fingers” attached to a scythe, improving the efficiency of reaping by holding the hay or grain as it was cut and allowing the reaper to deposit it in rows to one side as he cut. Modifications in design also worked to increase the efficiency of steel tools, though most shovels of today are not significantly different from those of one hundred years ago. Fiberglass has had some impact, however, as one can readily purchase tools with fiberglass handles.

Paralleling the switch from wood to metal farm tools were changes in other equipment. Copper and brass pots gave way to stainless steel and, for many uses, to aluminum. Wooden buckets were replaced with tin, which were replaced with plastic.

The second change in tools was to take a single-person device, such as a scythe, and turn it into a machine capable of being pulled by a horse or tractor. The first such device was the seed drill, which was invented by Jethro Tell around 1700 in England, but it didn’t come into widespread use until much later in the century.

This device cut a small trench, dropped the seed into it and covered it back up—a much more efficient way to plant most crops than sowing by hand (World Book 1999, A157-58). Mowers, which cut hay, and reapers, which cut grain, were both developed in the early- to mid-1800s and were rightfully seen as revolutionizing agriculture. A horse-drawn mower could cut ten acres of hay per day, whereas a trained person, using a scythe or grain cradle, could cut but one acre. Threshing, the act of removing grain from the husks and other plant parts, was also mechanized, with the flail giving way to a threshing machine powered by a horse walking up a slightly inclined treadmill.

The third alteration in farm tools was the means of powering them. For two-hundred-and-fifty years people, oxen, and horses supplied the power that ran the farm. On an occasional farm a wind mill might pump water or grind grain, but that would have been the exception, not the rule. Steam engines initiated the transformation of farming, but were too bulky to pull the mowers and reapers that had recently been invented. They found use however on larger farms, where they could be used as stationary power sources in the fields. The internal combustion engine, however, transformed the farm completely. Tractors took some time to perfect, but were in common use by World War I. Though we think of them as machines designed to pull, tractors were also valued as mobile power sources. Called a PTO, or power take off, a turning axle extending out from the motor could be used to turn a thresher, a water pump, or any one of a number of other devices.

## **The Seasonal Workload of Men on the Farm**

Our winters are so severe and so long that we are obliged to consume during that season a great part of what we earn in the summer.

Crevecoeur (1986, p. 289)

Agriculture always is dependent on the weather, but because the seasons vary so much in New England, both during the year and from year to year, farmers needed to be flexible and opportunistic. One irony of European agricultural practices, in which extensive land was cleared for pasture, hay and tillage, was that the weather extremes were accentuated. People quickly saw that cleared land heated up faster in the summer, and cooled off more quickly in the winter. It was also drier than nearby woodland. As an additional problem, the ground froze more deeply than in the forest, so that it thawed later in the spring (Cronon 1983, 122-3). The frozen soil, lacking a leaf-litter zone, held less water than the forest, so runoff increased on farm land, increasing the risk of erosion and decreasing groundwater recharge.

The two goals of the farm family in the face of these variations were to keep the workload relatively constant through the year, and to ensure adequate harvests for the winter. The solution to the former was to schedule non-season-specific tasks during slack periods in seasonal work. The solution to the latter was mixed farming, where a variety of different crops were grown so that, should the weather operate strongly against anyone, the family would not suffer too severely.

Thomas Hubka plotted out the seasonal work cycles for men on a New England farm in the mid-1800s. Maintenance tasks, such as fence building and road repair, filled in the gaps between planting, haying and harvest, and lumbering was done in the winter. Home industry, examples of which would be carpentry and blacksmithing, was concentrated in the winter as well, though a successful craftsman might well hire day labor for the fields if his other work was proceeding successfully (Dibble 1978).

A more specific example of the workload of a farmer is found in the diary of an anonymous farmer from Hampstead, New Hampshire, in 1817 (Zimmerman 1978, 69-74). The daily workload seems to have been fixed at about 8 hours per person, excluding the daily chores such as chopping fire wood and taking care of the animals. This work level was maintained by distributing non-seasonal jobs (yet important tasks) such as removing rocks from the fields, on days when seasonal work was not required. The farmer would also hire extra help if the workload increased much beyond the eight-hour work day, as it did during harvest season. One other important point was that no work, other than the necessary chores, was done on Sunday.

Haying season in July was the most labor-intensive period, as the hay needed to be cut and dried and then stored away for winter use. This was one season that women might be asked to help in the fields, though apparently less so in New England than elsewhere. Sowing and harvesting were also peak work periods.

Barn raisings typically took place after sowing but before haying, as the weather was good, the ground dry and the field work in a lull. Of course, in order for the barn raising to go quickly, the farmer would have had to assume the requisite pieces ahead of time. This he would have done over the winter, cutting and shaping the framing timbers, siding and shingles so that all was on hand when the day came.

Other jobs had distinctive seasons as well. Henry David Thoreau, living in Concord, Massachusetts, recorded on May 7, 1856, that, "For a week now the road has been full of cattle going up country." Massachusetts farmers would drive the cattle to the green pastures of northern Massachusetts, Vermont, and New Hampshire in order that they might feed in pastures well removed from the farm. Though recorded two years earlier in 1854, he notes that on August 29, "Cattle are driven down from up-country," (Foster 1999, 25 and 28).

March was the month for maple sugaring and the start of lambing. Winter was the season to cut and shape the timbers for a new barn or other building. Moving heavy lumber on sleds over snow was much the easiest way to do the job, as somewhat lyrically described on December 4, 1856, by Thoreau

Already you see the tracks of sleds leading down by unusual routes, where will be seen no trace of them in summer, into fields and woods, crowding aside and pressing down the snow to where some heavy log or stone has thought itself secure, and the spreading tracks of the heavy, slow-paced oxen, of the well-shod farmer, who turns out his feet. Ere long, when the cold is stronger, these tracks will lead the walker deep into remote swamps impassable in summer. All the earth is a highway then (Foster 1999, 31).

## **Women's Work on New England Farms**

In its ideal iteration, the New England farm was owned and run by a married couple, where the man and the woman had separate, but roughly equal, work loads assigned by tradition. Women worked inside, men worked outside. Women tended the house and garden, men tended the barns and fields. Women took care of the milking cows and the chickens, men took care of the oxen and horses. Women cooked and sewed and washed and mended. Men plowed and sowed and chopped and repaired.

Thomas Hubka has developed an excellent image of the way in which work was divided between men and women on a New England farm (1984, p. 151). The house was the responsibility of the woman. The barn, fields and wood lot fell to the man. These demarcations were not absolute and overlaps occurred. The dooryard was a catch-all work area, where the man might be fixing a harness and the woman would be doing laundry. The “back house” could be a home industry area, such as carpentry, or could be a milk room for making cheese or butter, or could serve any of a number of purposes in turn.

Women’s work was less varied in type and more fixed in the amount of time necessary for its completion than was the work of the men. Food preparation, sewing and laundering made up the days of a farm woman’s life, unaffected by the seasons except to the extent that winter cold made virtually all tasks more difficult. Food preservation for winter peaked in the fall, with fruits to dry, cucumbers to pickle, and squashes, potatoes and other vegetables to carefully store away for winter use.

Candle and soap making were major activities that could take a day or more to complete. They were most often done in the fall, just after the slaughter of the hogs, for that was when the tallow was available. However, grease was saved from cooking, as ashes from the fireplace, and soap was made in the spring as well.

Wise use of resources was the hallmark of a good wife. She was responsible for maintaining the fires within the house and one can readily imagine the tension that might develop between the man who chopped the wood and the woman who used it. She had to ensure the stored vegetables in the basement or root cellar were used well, with those showing evidence of spoilage either being used up or removed so they wouldn’t spoil other produce. She had to wash heavily spoiled clothing but, as clothing was both costly and time-consuming to make, she needed to avoid damage to the clothes, even though her washing utensils were a tub, a board and a beater, and her soap was a harsh, home-made paste that left her hands red and rough. Tallow candles, if not properly protected, would be eaten by mice or melt in warm weather.

Women did work in the fields except at peak times, such as haying. Though the usual reason for this was that the work was too heavy for women, particularly when pregnant, one suspects that real reason was that they were already fully employed in the house and garden (where the work could be every bit as strenuous as in larger fields). The importance of the work of the woman in the house is fully emphasized by the fact that the farm man would often use scarce cash to hire labor, rather than take his wife from her work.

The kitchen garden, though often plowed by the man at the beginning of the season, was tended to by the woman. This garden was often an acre or more in size, and was the primary source of the vegetables eaten by the family, as well as the medicinal plants and any flowers the family might grow. Such kitchen gardens were an essential part of the house lots of even town dwellers, such that the workload of a woman on a farm and in a town would typically be more similar than that of a farm man and the town-living shop keeper. As might be expected, the workload of tending a kitchen garden was no small chore. Sarah Bryant, of Commington, Massachusetts, as written in her diary in the early 1800s, expected her sons to help her with soil preparation, sowing, and weeding when they were young (Nylander 1994, 207).

This hint of the help received by Sarah from her sons, reveals another aspect of gender roles and workload, in that the typical farm required more labor than two adults could give. From an early age children were assigned tasks such as gathering eggs, bringing in firewood, and weeding the garden. At first the children followed their mother’s lead. For example both girls and boys would be taught to milk cows. However, roles became more fixed as the children grew. Daniel Drake started to help plant corn as an eight-year-old,

was given an old gun with which to scare the crows at age eleven, started plowing at twelve, and was expected to do a grown man's work at sixteen. Susan Blunt, age ten, while her mother was away, was expected to cook and serve meals, sew clothes, clean the house, and tend the younger children and an invalid father (Larkin 1988, 33-34).

Not only children were put to work. Very often there was an unmarried sibling or an elderly parent of either the man or the woman of the farm, living with the family. These individuals would be expected to deliver a full day's work, depending on their age and sex. In addition, young women from neighboring farms or nieces of the farm wife, would come and stay with the family, very often being given such roles as being the first one up to stoke the morning fire and beginning the breakfast chores.

Housework on a New England farm was backbreaking and tedious, with an endless round of meals to prepare, clothes to wash and mend, and children to watch. In addition, the farm woman had to take care of milking the cows and converting the milk, which would otherwise spoil quickly, into butter or cheese. Add in cloth production (up into the early 1800s) and clothes making (well into the 1900s), and you have a very full day indeed. It is well to remember that the young women who left the farms for jobs in the mills felt their twelve-hour work day at the mills to be significantly less than their work day on the farm.

## **Farm Products**

### Grains

Of all the grain which we plant, the Indian corn is attended with the greatest labour, is the most profitable, and the most necessary, but at the same time the most subject to accidents from seasons, insects, birds, and animals. it is so superlative a grain that all that live would cheerfully live on that grain if they could.

Crevecoeur (1986, p. 291)

From the very first planting season until recently, corn was the primary grain of New England. Flint corn was literally inherited from the Native Americans, when caches of stored corn were found by the Pilgrims, served as the primary food source for colonists and was used as the central item in the barter exchange as it was desired by all and was one of the few items a person might have in excess of immediate needs.

The early corn was Indian corn, which could be eaten green, but which was primarily grown to dry and grind into corn meal. From it came the flint and dent corns common throughout New England until the middle 1800s, when sweet corn for fresh eating and (later) canning became popular. Corn was commonly used as fodder for livestock and animals would be let into the fields after harvest to root out and eat the remaining stalks.

Wheat did not flourish in New England at first, because it requires a well-plowed soil and manuring, both in short supply in the early years of colonization. It also does poorly in the sandy soils found in the Plymouth and Cape Cod regions first settled. It did do well in the Connecticut Valley at first, but was devastated by a disease known as Blast. Crops were ruined as early as the 1640s, less than ten years after the first wheat was planted. As a result, wheat has never been a dominant crop in New England.

Rye was an important grain for the English. It was the first grain planted by Englishmen in Connecticut, being planted by John Oldham in what is now Wethersfield, in 1634 (Russell 1984, 27). It was a hardy plant that was less susceptible to disease than wheat, and it often replaced wheat in fields where Blast had destroyed the wheat crop.

Oats became increasingly important as horses replaced oxen as the primary work animals on farms. Oats were also needed for city horses, which grew in numbers along with the human population. Barley was grown for beer.

## Hay

Hay is composed of grasses and legumes, harvested before they set seed, dried, and stored for feed for livestock. It was vital for winter feed, and haying season was the most labor-intensive time period on the New England farm. Native grasses could be used for hay, and salt-marsh hay remained an important crop for several centuries. But early on farmers experimented with various plants brought from England. Red and white clover were common introductions, as was blue grass. Herd's grass, today known as timothy in the United States, was first intentionally used for hay about 1720 by a man named Herd living near Portsmouth, N.H. It was later introduced in the south and west by a man named Timothy Hanson, from whom it takes its modern name (Carrier 1923, 241). Regardless, it was listed as New England's most important hay grass in 1950 (Chase 367), though one should remember that clovers, alfalfa and birdsfoot trefoil, all common hay plants, are not grasses, but legumes.

## Vegetables

That these crops were ubiquitous does not mean they were grown extensively for market. Until the towns began to grow into cities, most families grew their own vegetables, in their own garden plots. As house lots tended to be several acres in size, what by today's standards would be considered a rather large vegetable garden was a part of virtually every home.

Root crops were a critical component of the diet in early New England because they stored well. It is no accident that underground food storage buildings were called root cellars. Turnips, carrots, parsnips and radishes were all grown for immediate consumption but also stored well. Indeed, Lydia Child (1833, 33) went so far as to say parsnips were only good in the spring, after a winter's storage in sand in a cool cellar.

Peas and beans were a vital part of the New England diet early on, and have remained so, though fresh snap beans have replaced dry shell beans as the leading type eaten today. "Pease" and beans are mentioned in all early accounts of seeds brought to and planted in New England. These were dried varieties, which were shelled and stored for winter use, though they could be eaten fresh if picked when tender.

Regarding cooking vegetables, it would appear that the early New Englanders didn't seem to eat fresh vegetables, or even slightly steamed ones. Rather they boiled everything for a lengthy period of time, making "sauces" of their vegetables. However, cooking (boiling) times for vegetables approached modern standards in Lydia Child's *Frugal Housewife* (1833, 34).

Squash and pumpkins were taken directly from the Native Americans and were an important part of the diet. Like the Native Americans, the Pilgrims planted the vines among their corn, but European farming generally went against mixed crops, so squash and pumpkins soon had their own fields.

Unlike root crops, potatoes are tubers, a highly modified stem which stores food (starch) produced one year for use by the plant next year. Potatoes were introduced into New England in the early 1700s but did not become a common crop until the 1800s. This would seem surprising, given that potatoes produce well, store well, and are an excellent food source. Harvesting potatoes, however, is hard work, and changing food habits, except from necessity, can take time.

The Casey Farm records between 1860 and 1870 quietly show the effect of commercial potato production. The yield went from 67 bushels in 1860 to 700 bushels in 1870. Improved land went from 75 acres to 165, and absent other significant increases in yields, we can only assume these 90 acres were given over to potato production. Potato production continued to be a mainstay of Rhode Island agriculture until the Colorado potato beetle arrived and pesticides used to prevent losses resulted in groundwater contamination. At that time, in the early 1980s, most potato farmers switched to turf farming to feed the rising demand for pre-grown lawns. Maine continues to be a leading potato producer.

Onions were another important crop in New England, growing to become the second largest crop in New England in 1900, with 1.25 million bushels being harvested (Russell 1984, 269).

Leaf crops, such as lettuce and cabbages, were grown from the very beginning, and asparagus was popular from an early date.

Tomatoes were decidedly unpopular until the 1830s when their so-called medicinal benefits were advanced by a number of people, including a rather strange phase when tomato pills were being marketed as a cure for every incurable ailment then in existence (Smith 1996, 93-94). Though tomatoes are no longer in demand as wonder drugs, they did become a favorite vegetable by the 1850s, and many varieties, such as the heirloom Brandywine commonly sold today (1870 introduction) were created in the years after the Civil War.

## Fruits

Apples were the dominant fruit tree of early New England, and orchards were a typical part of every farm. The trees, however, were not necessarily planted in the grids of modern orchards, but were often planted along lanes or field edges, using space that could not be used for other purposes.

Cider production was the primary reason to grow apples into the early 1800s. Hard cider was the drink of choice for almost everyone, and was consumed throughout the day. The amounts drunk imply that a certain level of inebriation was endemic, though people of the day looked at rum as being the drink which was most responsible for drunkenness and disorder. Regardless, temperance movements, both within the evangelical revivals of the early- to mid-1800s and on their own, proved successful in reducing alcohol consumption, such that cider declined in popularity (Jones 1992, 154-160) has a good discussion of the temperance movement of the 1800s). But cider remained the most popular juice in the United States until the 1930s, when the orange growers of Florida and California began to heavily market orange juice (Orton 1973, 21).

Apples were used for eating as well, and were one fruit which, depending on variety, could be stored well through the winter. Apple pie was a mainstay at meals, even at breakfast. Apple sauce and apple butter were frequently made, and dried apples were prepared for winter use. But fresh apples could be stored and brought out as a treat even as late as early summer of the year following harvest. The key was to pick unblemished fruit, and to store it carefully so that it would not bruise, in a cool spot, such as the cellar. Variety was important as well, and the orchard of 150 years ago would contain a number of different varieties, some for early harvest and fresh eating, some that would ripen later, some that would store well, etc.

Apples found a ready export market as well. Apples may have started in the Old World, but in 1896, close to one million barrels of apples were shipped to England from Boston (Russell, 1984, p. 273). Pears, peaches, plums and quince are all frequently mentioned along with apples, though none received the same level of attention, the reason probably being that they did not dry or store as easily.

Three sorts of berries were found in plenty in New England: blueberries, raspberries and strawberries. At least initially, little effort was made to bring them into cultivation as they were plentiful in the wild, and it would have been wasted effort to use cleared land for a crop which nature grew so well on its own. Berries were most often eaten fresh, as there was no way to freeze them, drying didn't work, and preserves were considered something of an extravagance, given the amount of sugar required to make them.

Over time blueberry growing as a commercial industry emerged in Maine. Throughout the rest of New England, berry production has remained localized, with pick-your-own farms being popular today. Cranberries were harvested early on, though commercial production was only started in 1816 when Captain Henry Hall of East Dennis set out the first vines for large-scale production (Russell, 1982, p. 161). Cranberries like wet, sandy soil, so they were an ideal crop for the swampy lands south and east of Boston, where the crops remain, at least in terms of New England, centered today. Thomas L. Casey tried to create a cranberry bog at Casey Farm in the mid-1800s, with modest success. The cranberry bog still exists, though berry production is negligible.

Currents and goose-berries were also planted. The forerunner of today's pick-your-own berry patch could be found in Boston as early as the 1730s, when several businesses advertised for people to come pick and eat currents, cherries, and other fruits for a fee (Benes 1996, pp. 48-49).

## Tobacco

Tobacco was banned in Plymouth Colony, but it wasn't terribly long before farmers started experimenting with it for personal use and as an export crop. The only section of New England that proved viable for producing tobacco as a cash crop was the Connecticut Valley region, where a specialized type of tobacco, used as the wrapper in fine cigars, is grown.

## Fiber crops

Flax was grown in early New England so that the people could make linen. As cotton was not grown in the north, nor was it grown in large amounts prior to the early 1800s in the south, linen was the lightweight

fabric of choice from the Pilgrim era through the 1830s. When cotton replaced linen as an everyday fabric, flax remained an important crop for its seed. Linseed oil was an important component of paints, and remains in demand for a number of purposes even today. One final note of interest about flax is that, though flax grew well in Ireland, it did not set seed well, so seed was sold to Ireland from New England.

Straw hats had to come from somewhere, and rye straw was the material of choice. Although most farm families could braid their own straw, there was opportunity for the hat industry and the early 1800s saw straw bonnets produced in New England for export throughout the world. The industry was centered in Massachusetts, southwest of Boston. Foxboro became the leader, with \$2,000,000 in business sales reported in 1865. Jennie Copeland's Every Day but Sunday (1923) has a delightful chapter on the straw bonnet business (pp. 36-58).

## Animal Husbandry

The Mayflower brought no horses, sheep or cattle. However, three heifers (young, female cows) and one bull were brought to the colony in 1624 and additional cattle arrived in following years (Carrier 1923, 141). The need for livestock was great, but the hazards large as well. John Winthrop's journal for 1630 notes that 10 of 28 cattle died on one crossing and 12 of 18 goats on another (Carrier 1923, 144). Regardless, by the late 1630s cattle were common in Plymouth Colony.

## Swine

Salt pork was the mainstay meat of New Englanders, and hogs were common throughout the region until the feedlot beef and pork of the Midwest took over in the late 1800s. Unlike today, hog raising was widely distributed, with almost all families owning one or two hogs, and relatively few owning significantly more. Even as improved breeds like the Berkshire (1832) and the Suffolk (1844) were brought from England, swine raising continued to be primarily a family and local business (Russell 1982, 205).

Up until the mid-1700s, swine were mostly left to roam the woods, though various towns began to require nose rings, which prevented the hogs from rooting up crops. Neck yokes, which prevented swine from pushing through hedges and fences might also be required. Swine, like other livestock that was allowed to roam free, were most frequently identified by earmarks, one or more distinctive cuts made in the ear of the animal. Each family's earmark was registered with the town clerk, so that stray animals could be readily identified. Towns set up impoundments to which strays were brought and from which the owner would reclaim the animal, after paying a fine (see Herndon 1995, 61-72 for a good description of problems of and solutions to roaming animals in Rhode Island 1750-1800).

Butchering was generally done after Thanksgiving, but before the need for winter feed arose. Most of the meat was salted, being placed in large barrels and covered with brine. Some would be turned into sausage and some would be smoked, often in a closet located off the chimney, rather than in a separate smoke house. Of course, while butchering was going on, there would be fresh meat available and it was not uncommon for nearby families to borrow fresh meat from a farm which had just slaughtered an animal, and repay in kind when they slaughtered an animal of their own (Nylander 1994, 203-4).

## Cattle

One problem with the first cattle was that smaller animals were easier to transport in the early ships, and the death rate on the voyage was so high that generally only cheaper cattle of poorer stock were risked. As a result, of all the types of animals brought over, cattle seemed to suffer most in terms of quality from the voyage (Carrier 1923, 249).

There was also a milk production problem in New England. Oxen were as important as milk cows, so breed, such as the Devon, which provided smaller, sure-footed oxen, were favored over breeds in which the cows produced more milk. As oxen were replaced by horses, this drawback to milk production disappeared and Jerseys, Guernseys and Holsteins (known in Europe as Friesians) were imported (Gates 1965, 215-16). Holsteins were noted for producing large amounts of milk, while Jerseys were favored for butterfat content. Today's dairy herd might contain 90% Holsteins and 10% Jerseys.

Oxen, neutered male cattle, were the "work horses" of New England until the middle of the 1800s. They were slower than horses, but were better on sloping ground, and in rocky, stump-strewn fields, speed was not important. Despite being a vital part of the farm, not every farm owned them. Only 43 % of Gloucester, Rhode Island, farms had oxen in 1778 (by contrast, 92% had milking cows and/or heifers), though of that 43% the vast majority owned two (Jones 1992, 223). Gloucester was a poorer town than most at that time, but clearly milking cows were purchased before oxen.

Because oxen were not owned by every farm, their services were a common barter item. A farmer could trade labor or, for example, wood from his wood lot, for the use of a team for several days for his plowing.

## Sheep

Sheep were easier to import than were cattle, and were necessary for wool production. They were vulnerable to wolves though, so needed to be enclosed. The number of sheep owned by a farmer was generally small, flocks of under ten were common. Even as life stabilized after King Philip's War, this number did not increase significantly. In 1771, as documented by Carolyn Merchant (1989, 280), the number of sheep *and goats* per house exceeded ten in only two of fifteen towns. Even assuming a number of houses had no sheep (in the 1830s in Sturbridge, approximately 30% of the farms had no sheep [Baker and Paterson 1988, 101]), flock size was small.

Improved Marino sheep from Saxony and Spain were imported in the early 1800s, ushering in a period of selective breeding which markedly increased the weight of an average fleece by the time of the Civil War. Addison County, Vermont, a center of sheep breeding, had an average fleece weight of 5.9 pounds in 1870. The national average lagged at 3.5 pounds, but that was up from 2.6 pounds only ten years earlier (Gates 1965, 165). As a specific example, at Casey Farm, during that same time period, the number of sheep dropped from 108 to 80, but wool production rose from 225 pounds to 235 pounds. It may be that other factors were involved, but the change from a little over two pounds of fleece per sheep to just under three pounds suggests that improved breeds were introduced on the farm.

## Goats

Goats were useful animals as they provided milk like cows, but were easier to transport. They also could eat a wide variety of plants, so were easier to maintain. The trade-off was, of course, that they did not produce as much milk as cows. In addition, male cattle were in demand as oxen, whereas billy goats had little practical use.

## Horses

Horses were uncommon in New England for the first 100 years. Even as late as 1778, only 59% of households in Gloucester, Rhode Island, owned horses, and the mean number of horses per household was 0.8 (Jones 1992, 223). A graph of livestock holding for Concord, Massachusetts, for the period 1749 to 1850, shows the average number of horses remained close to one throughout the time period (Merchant 1989, 284).

From a farming perspective, the low number of horses is a clear indication that horses were not being used for work on farms. Horse-based agriculture was a product of the flat midwest, and images of large numbers of horses come from cowboy films.

That being said, horses were a part of the New England farm scene, and in fact, were an important export. The proprietors of the Pettaquamscutt Purchase in southern Rhode Island bred horses for sale to Barbados, where there was a market for horses to turn the mills that ground sugar cane (Romani 1995, 48). The Narragansett Pacer breed was well-known along the eastern seaboard and in the Caribbean throughout the 1700s (Carrier 1923, 260-1), and the Morgan breed was started in Vermont in the late 1700s (Russell 1982, 153).

Draft horses began to appear on farms in larger numbers in the mid-1800s, as the modern, horse-drawn mowers and reapers were invented and improved.

## Poultry

Chickens were such a common part of the early New England scene that they went unremarked. Virtually every family had a flock, but they were of so little importance that they generally weren't even listed in household accounts. However, eggs represented a readily exchangeable commodity at the general store, and were a source of fresh meat for the family, the arrival of company often being followed by the death of a chicken for dinner.

## Making a Breed

The Rhode Island Red Chicken is said to have started in 1854 in Little Compton, Rhode Island by William Tripp and John Macomber. But the actual story is more complex. Tripp started “experimenting” with improving his chickens in 1854, introducing a red cock from Asia, thought to be either a Malay or a Chittagong, into his flock. What he got was a new type that laid more eggs and was a better meat bird. Along with Macomber, he continued to improve the flock. Isaac Wilbour purchased some cocks from the improved flock and bred them with his “buff” hens, looking for a hardy bird that laid big, brown eggs, and provided more meat. Finally, in the early 1890s, two professors from the Rhode Island Agricultural Experiment Station in Kingston visit Wilbour and, recognizing that he had a new breed of chicken, agreed upon the name “Rhode Island Red” (Patten 1954, 8-9).

The concept of breeds, and “improved” breeds in particular, is a distinctly modern one, coming into being in the 1800s. Prior to that, chickens were commonly known as “dunghill birds” and, while an individual chicken might be considered a particularly prime bird, little thought was given to selective breeding for improved egg laying. Part of the reason for this was that egg laying is dependent on both temperature and day length, decreasing during the shorter, colder days of fall and winter. Egg production maximizes in the spring, which represents the best time for a non-domesticated bird to lay its eggs to maximize chick survival. In the 1600s most households didn’t even have chicken coops, let alone any way to heat them or to artificially light them, so improving egg production was unlikely to occur anyway.

In the 1850s, however, as agriculture underwent a scientific revolution, the benefits of housing chickens to improve egg laying became more apparent, and people began to select chickens for breeding based on egg-laying ability.

Geese were not common in the 1600s, but became more so by the 1700s (Russell 1982, 88). They were noted for their feeding habits, because they removed weeds and bugs from the kitchen garden. They were also prized for their feathers, used as quills for writing, and their down, which was used in feather beds. The task of plucking the feathers was an unpleasant one, requiring the women and girls to wear their oldest clothing, tie up their hair and put a stocking over the goose’s head so that it could not bite (Nylander 1994, 117-8).

Turkeys were rather more common than geese, and were more highly prized for food. Live turkeys were a typical export in West Indies cargoes, ranging in numbers from 10 to 60 (Russell 1982, 89). Other, less frequently raised birds included Guinea fowl and ducks.

Poultry in general was a good market item for the family farm. Without refrigeration, large animals required extensive labor to preserve the large amounts of meat produced by the slaughter of a single animal. Poultry, on the other hand, could be butchered on an as needed basis. Poultry was also exported in large numbers, with an 1810 estimate of 4000 dozen birds sent to three southern states alone (Russell 1982, 157). One interesting problem, though, was that there was no adequate way to move large numbers of poultry to market in either extremely hot or cold weather. Larger towns therefore, might have less access to fresh poultry in winter and summer than would the farms and farm villages (Nylander 1994, 205).

## New England Agriculture Today

I would be remiss if I did not touch on New England agriculture today. Potatoes from Maine, cranberries from Cape Cod, and Vermont maple syrup all remain mainstays of the region's economy.

The United States Department of Agriculture's New England report (<http://www.nass.usda.gov/census/census97/rankings/>) has a one-page report on each state's agricultural production by farms, sales and product as a percentage of the state's total agricultural output. Table 2 below gives the first- and second-place products for each state in 1997.

Table 2. Primary agricultural products for New England states, as a percent of total agricultural output.

<i>State</i>	<i>Product</i>	<i>% of State's Total Agricultural output</i>
Connecticut	Nursery and greenhouse crops	40.9
	Poultry and poultry products	17.1
Maine	Other crops (including potatoes)*	23.2
	Dairy products	21.8
Massachusetts	Fruits, nuts and berries	32.6
	Nursery and greenhouse crops	28.2
New Hampshire	Dairy products	31.4
	Nursery and greenhouse crops	30.1
Rhode Island	Nursery and greenhouse crops	64.2
	Dairy products	9.8
Vermont	Dairy products	74.0
	Cattle and calves	7.5

\*For some reason, the report did not separate out potatoes, but one can assume that the vast majority of Maine's "Other crops" is potatoes ("Other livestock" and "other grains" are separate categories).

The USDA report (website <http://www.nass.usda.gov/nh/01start.htm> as of March 2002), also has page after page of information and statistics on how New England agriculture compares with the other states in the nation.

Maple syrup is an area where the region does well, producing slightly more than half of the nation's maple syrup in 2001. In other agricultural commodities, Massachusetts produced 36% of the nation's cranberries in 2001 (page 59), and Maine was ranked eighth in the nation in potato production in 2000 (page 47). However, one should not be too impressed with rankings. The New England region does rank eighth in the nation in the number of milk cows, but still only represents 3.1% of the milk cows nationally. New England comes in fifth in the acres of potatoes harvested for sale, but achieves that ranking with only 5.7% of the acres harvested (page 158).

On a more personal basis, New England has a vibrant farming community dedicated to creating more sustainable agriculture within the region. *The Natural Farmer* is a newspaper dedicated to organic and sustainable farming and has a "NOFA (Northeast Organic Farmer's Association) Exchange," in which people can list positions available and farms for sale or rent. A glance at some of the farms listed in the Winter 2001-02 issue reveals both the sizes and types of farms then on the market or in need of labor, as well as some of their markets.

There was a 21-acre farm in Dorchester Massachusetts, which runs a community Supported Agriculture (CSA) program and also sells at a farmer's market and to soup kitchens and homeless shelters. In Granby, Massachusetts, a 70-acre farm had between 15 and 20 acres in mixed vegetable production and supplies two farm stands, ran a CSA and sold wholesale as well as at a farmer's market. For sale in southern New Hampshire was a 42-acre farm, including a 30' by 58' barn, and 10' by 16' shed and a colonial house. It was listed at \$469,900.

The CSA system of agricultural production and sales is a recently developed technique for linking local farmers and local consumers. The Casey Farm CSA is a large one, with roughly 200 members, but typical in the way it operates. Members purchase shares for the season and, in return, come to the farm once per week to pick up their produce. Produce is divided up in a number of ways. Items like cabbage and winter squash are usually distributed by the piece, while potatoes are generally given out by the pound. Items like greens are generally given out by volume, say a small basket full. Labor-intensive items, such as snap beans and cherry tomatoes are pick-your-own, with the farm managers setting the amount that can be picked. Fresh herbs and flowers are a big draw, with members typically being given a choice of herbs each week and being allowed to cut a certain number of stems from the flower garden.

One fact that becomes obvious almost immediately at Casey Farm is that many CSA members come to the farm for reasons above and beyond the great food. Children watch the chickens while parents select their produce. A mother kneels next to her toddler between the rows of beans, and shows the child how you pick a bean. Friends walk to the flower garden, and stay far longer than it would generally take to cut twelve stems for a bouquet. Recipes are exchanged and friendships blossom. The name created for this system may be Community Supported Agriculture, but the reality is that it could just as easily be called, Agriculture Creating a Community. In this dynamic, it carries on the tradition of what New England agriculture has always done best, provide a solid foundation for the local community.