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Agricultural land utilization in the Connecticut Valley in Massachusetts

Martin P. Plantinga
University of Massachusetts Amherst

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by

Martin P. Plantinga

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I

INTRODUCTION

A historical review of agricultural land utilization in the Connecticut Valley of Massachusetts shows that farm land in this area has been used in a manner which differs considerably from that which has been employed in other parts of the Commonwealth. This difference in utilization has been due to the Valley's characteristic location, topography, soil, and climate. Since the changes which have occurred in the agricultural land utilization of the Valley have never been described and investigated, it is the purpose of this study to determine the following:

1. What changes have occurred in the agricultural land utilization in the Valley as regards crop, orchard, pasture, and wood lands?
2. What factors have caused these changes, such as shifting of markets, improvements of transportation facilities, shifting of crop areas in other farm lands of the United States?
3. What has been the general long-time trend with regard to land utilization in the Valley?
4. What were the causes and what will be the probable results of these trends?

For convenience in this investigation agricultural land of the Valley may be classified into five types: 1. tillage or crop land, which includes all land tilled or cultivated for crops other than hay; 2. hay land, which includes all lands used for growing grasses for hay; 3. orchard land, which includes all land used for the growing of fruit trees; 4. pasture land, which includes all land used for pasture; 5. wood land, which includes all forest areas and also waste land not used as pasture. The last two named types may overlap to some extent, due to the use of partially wooded land for pasture.

This investigation divides land utilization in the Connecticut Valley into five periods as follows:

1. The Aboriginal Period, including all agricultural practices before 1635 when most of the land was unforested, and little farming was done.
2. The Colonial Period, which extends from 1635 to 1786. Self sufficient agriculture was carried on in conjunction with the grain and livestock industries.
3. The Diversified Agriculture Period, from 1786 to 1845 when new and diversified types of farming were introduced.
4. The Transitional Period, from 1845 to 1875 when there occurred major changes in the livestock industry, and in the areas of land used for cereals. New specialized crops replaced the many staple crops of the previous

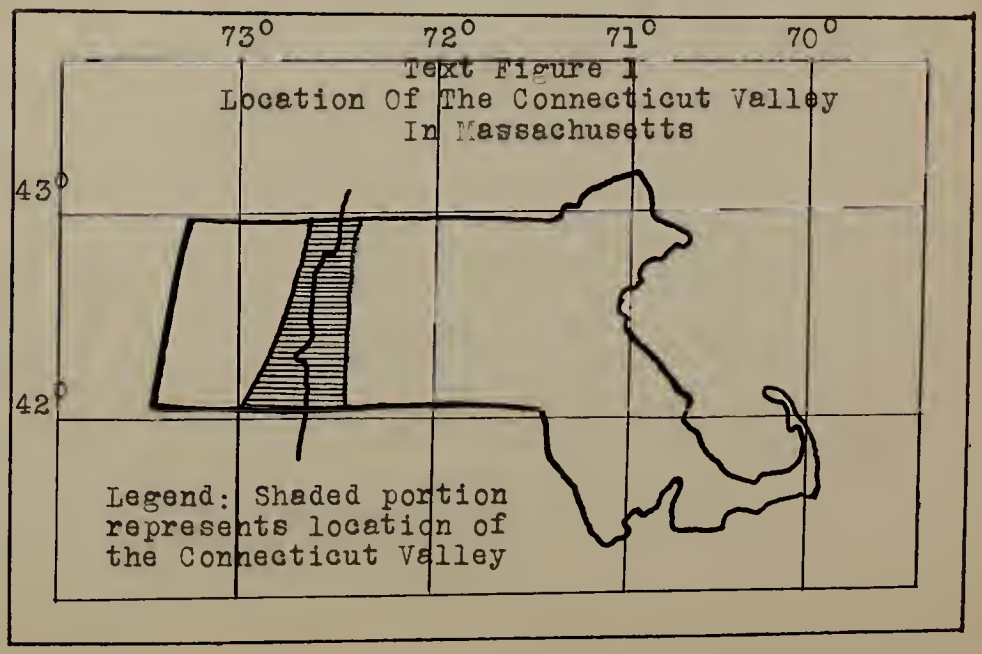
period.

5. The Intensified Utilization Period, from 1875 to 1930 when more capital and labor were applied to the soils in order to obtain a greater productivity. Farms became smaller and various sections tended to specialize in certain types of agriculture. Farming became concentrated on the smaller areas where the better soils exist.

II

LOCATION AND DESCRIPTION OF THE CONNECTICUT VALLEY

The Connecticut Valley, in Massachusetts, is located in Franklin, Hampden, and Hampshire counties. It forms a wedge shaped section extending longitudinally and centrally through the three counties and is cut in the center, longitudinally, by the river after which it was named. Roughly the area is fifty miles long, about twelve miles wide at the northern end, and twenty miles wide at the southern extremity. The approximate position of the Valley in the State of Massachusetts is shown in Figure 1.



Text Figure 1
Location Of The Connecticut Valley In Massachusetts

The extent of the Connecticut Valley has been determined arbitrarily on the basis of soils topography and climate, and includes the thirty towns which are shown in Figure 2. These towns comprise 438,719 acres, approximately 38 per cent of Franklin, Hampden, and Hampshire Counties or 9 per cent of the total area of Massachusetts.

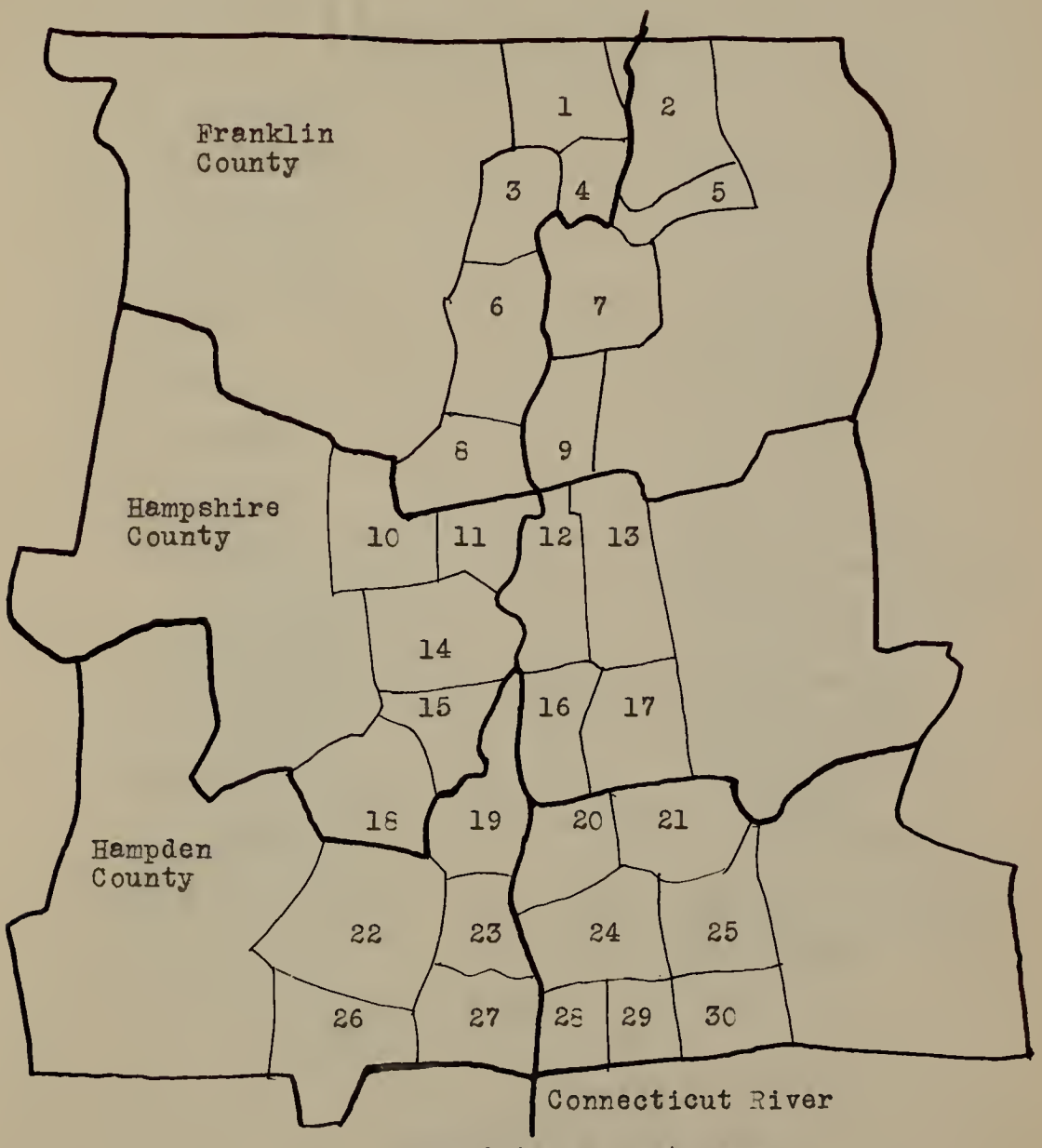
Geology and Topography

Geologically, this area belongs to the Paleozoic and Mesozoic periods as is shown by the rocks which underlie the region.

The topographical formations are partly due to glacial forces as can be clearly seen in the great drumlins or hogbacks and the heterogeneous masses of boulders, clay, and sand bordering the Valley. A shallow glacial lake also is supposed to have once covered the whole section as the result of a natural dam near Hartford, Connecticut. Sediment was brought into this body of water by rivers and streams, so that when the lake was drained it left a comparatively flat area with rich alluvial deposits. Then the Connecticut River and its tributaries carved a series of terraces and intervales through the locality leaving the present Valley floor which consists of rolling plains broken by numerous drumlins and occasional mountains such as those in Holyoke and Deerfield.

Text Figure 2

Towns Located In The Connecticut Valley Of Massachusetts



Legend is on next page

Legend For Figure 2

1. Bernardston
2. Northfield
3. Greenfield
4. Gill
5. Erving
6. Deerfield
7. Montague
8. Whately
9. Sunderland
10. Williamsburg
11. Hatfield
12. Hadley
13. Amherst
14. Northampton
15. Easthampton
16. South Hadley
17. Granby
18. Southampton
19. Holyoke
20. Chicopee
21. Ludlow
22. Westfield
23. West Springfield
24. Springfield
25. Wilbraham
26. Southwick
27. Agawam
28. Longmeadow
29. East Longmeadow
30. Hampden

The elevations of the Valley vary from 200 feet to 500 feet above sea level while the surrounding hills and mountains range from 500 feet to 1500 feet above sea level. These comparative elevations are shown in Figure 3.

Text Figure 3

Land Elevation In Western Massachusetts

Soils

The soils in the area are of three general types. First, those formed by direct glacial action. Second, those formed by stream currents, and consisting chiefly of gravel and coarse sand. Third, those derived from materials deposited in quiet lake waters and consisting of sands and various grades of silt. Most of the soils are composed either of a light gravel or a sandy silt. Some of the land, which was formerly very stony now presents a different appearance as a result of the removal of stones during the last two hundred years of cultivation.

Climate

The climate is temperate. The mean maximum temperature ranges from 69 degrees Fahrenheit in May to 82 degrees Fahrenheit in July with a mean daily variation of twenty degrees. The rainfall is four and one-half inches during May, June, and July, the rain being well distributed through the growing season. Sudden temperature changes are unusual during the summer months.

Artificial Physical Modifications

Next to nature, man has been the most important agent in forming the physical characteristics of this area. Roads and improved highways are numerous, having been built as needed. Railroad facilities are excellent and four systems have tracks which traverse the section.

III

THE ABORIGINAL PERIOD BEFORE 1635

Indians occupied the Connecticut Valley previous to its settlement by the white man. The important tribes were the Pocumtucks, the Agawams, and the Warranokes. The Pocumtuck Indians were the most numerous, the most powerful, and more agriculturally inclined than the others. Various accounts place the number of Aborigines, which lived in the Valley and its vicinity, at about one thousand persons.

Western Massachusetts was not unbroken wilderness during the Aboriginal period. Slyvester (13)+ describes the Connecticut Valley as resembling the western prairies because of the comparative scarcity of forest land. Other writers (12) compare it to English parks, describing the landscape as a mixture of plains and scattered groups of trees. Judd (9) writes that some of the open meadows were 500 acres in extent and were broken only by a few trees. On these open spaces, grass and weeds grew lush "up to a man's face".

From the above description it may be concluded that there was more open meadow land than wood land before 1635. This conclusion is substantiated by Wells(16)

+ Numbers in brackets refer to references on page 99.

who states that some of the early settlers passed ordinances restricting the unnecessary cutting of wood and occasionally prohibiting the exportation of lumber products. The openness of the country was due to the Indian practice of burning over the land each year. This stunted the growth of trees and brush, and permitted green herbage and wild berries to prosper.

The wood lands contained wild animals, fruits, roots, and nuts, and the streams abounded with fish. Consequently the Aborigines had no great incentive to engage in agriculture. Indian agriculture was primitive. Crude implements were used to break up small lots of soil for the planting of a few seeds. Sometimes fertilizer was used in the form of a few small fish. Most of the work of raising the crops was done by the women and children. The squaws planted, hoed, and harvested, while their lazy husbands and sons looked on in disdain. The plants were carefully cultivated and weeds were suppressed to a considerable extent.

It is not accurately known how much land the Aborigines tilled, but certain factors indicate the area was fairly large for a civilization of their type. Sheldon (12) relates something of the extent of the agriculture of the Pocumtucks. In the winter of 1638, there was a food shortage in Connecticut, and the General Court instructed Pynchon of Springfield to purchase corn from the Indians. Pynchon navigated up the Connecticut River as far as the

present town of Sunderland where he bartered with the Pocumtucks for food. A few days later he returned to Connecticut at the head of fifty canoes laden with 500 bushels of corn on the cob. Slyvester (13) states that early settlers reported Indian corn fields totaling 300 acres in the northern end of the Valley. However, he believes the estimate was exaggerated, and states that the area was probably under 100 acres. Judd (9) writes that the Indians never cultivated more than 70 acres between the towns of Holyoke and Deerfield. Judging from these descriptions a conservative estimate of the total annual cultivation of land by the Aborigines would vary from 100 to 150 acres. Most of the tilled land was used for raising corn, but squash, beans, pumpkins, tobacco, hemp, and silk grass were also planted.

The Indians recognized private ownership of land. It was held in fee simple by petty chieftains, heads of families, and occasionally by women, in tracts with well defined bounds. There is no evidence of feudal tenure or service to the chief Sachem. There are four known instances (12) where Pocumtuck women owned land and sold it to English settlers.

As a whole, agricultural land utilization was limited and unimportant during the Aboriginal period. However, it had a marked influence on the farming practiced after 1635. The Indian burnings had cleared the land and made it possible for the early settlers to engage in extensive agriculture.

IV

LAND UTILIZATION IN THE COLONIAL PERIOD: 1635 - 1786

Settlement

The first white man to see the Connecticut River was Adrian Block who sailed from Long Island to the New England coast in 1614. He navigated the river until stopped by the falls at Enfield, Connecticut, and made notes on the green meadows and tracts of Indian maize surrounding the stream. A few years later the English named the river, Connecticut, after an Indian name, Quonektacut.

The first English settlement in Massachusetts was made at Plymouth in 1620. Thirteen years later two parties journeyed westward to trade. They returned with accounts of the fertility of the Connecticut Valley, and reported that large quantities of hemp grew wild in the region. In 1635 the General Court gave permission to William Pynchon to make a settlement in the area. He made out a deed and purchased, from the Indians, the land now occupied by Springfield.

Pynchon's motives, for establishing a settlement, were economic. The population of eastern Massachusetts was 100 in 1620, 300 in 1630, and 9000 in 1640. He saw the possibilities of an expanding market for agricultural products in Boston where relatively large quantities of meat

and grain were consumed. Clemens (2) states that by 1638, Boston had a livestock market where cattle were regularly sold for beef. It was Pynchon's intention to raise beef cattle and to drive them overland to Boston or to ship them as dressed beef down the river and up the coast. He also intended to sell small quantities of grains and furs.

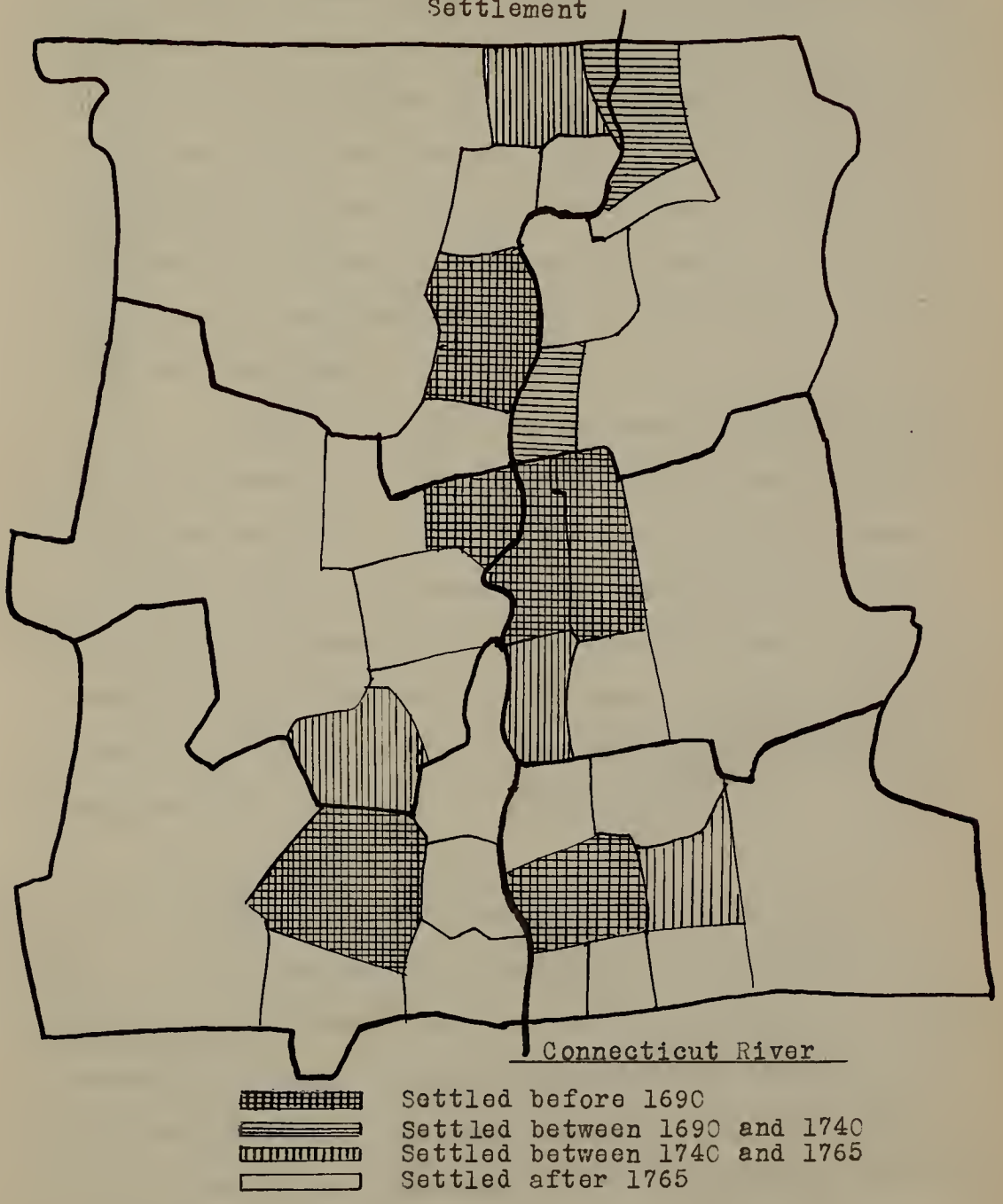
The colonization of Springfield was followed by the establishment of other settlements so that by 1690 white men were living in what are now the towns of Deerfield, Hadley, Hatfield, Northampton, Westfield, and Springfield. Figure 4 shows that all but one of these settlements were close to the river, which offered the only convenient means of communication with the rest of the world.

During the fifty years between 1690 and 1740, two new settlements were made at Sunderland and at Northfield. After 1740, occupation of the Valley was so rapid that half of the land had been taken up by 1765. Following the latter date, and especially during the years between 1781 and 1800, the remainder of the region was settled. Figure 4 shows the periodical order in which the various parts of the Valley were occupied.

Settlement was slow before 1781 because of the area's position in a frontier region. In 1700 only three small settlements separated it from Boston. Unknown wilderness lay to the north in Vermont and New Hampshire. In the

Text Figure 4

Towns Of The Connecticut Valley Shown In Order Of Their Settlement



west the nearest white men lived in the Hudson River towns. The closest neighbors were to the south in Connecticut and Rhode Island. The end of the frontier period came with the collapse of Shay's Rebellion in 1786. Before that date the continual Indian wars and political upheavals prevented any great expansion of agriculture. Soldiers passed almost continually through this locality. There was a resultant scarcity of labor and crop production was hampered.

After the cessation of hostilities, particularly those between the French and English, the population increased rapidly. In 1765 the area contained eleven thousand people, but twenty-five years after that date, the population numbered twenty-five thousand. This shows that the wars acted as a check upon the increasing rural inhabitants which were so necessary to agricultural development at that time.

Factors Which Affected Land Utilization

Three factors affected the agricultural land utilization before 1786: 1. scarcity of labor; 2. distance to markets; 3. inadequate means of transportation. Lack of sufficient labor resulted from the plentiful supply of land which encouraged ownership of farms. Moreover laborers were inefficient compared with those of modern times, and work was done with poor tools.

Transportation over land was slow because of

poor roads laid out in inconvenient routes. Before 1750 the only overland routes to Boston were Indian paths, and trails blazed by the early settlers. Vehicles with wheels were somewhat of a novelty as late as 1750, and most travel was by necessity confined to the winter months when sleds could be used. Holland (7) remarked on the inadequacy of transportation facilities. He stated that shortly after the settlement of Hadley and Northampton farmers had surplus grains, but were without means of transporting them to the market in Boston.

The Connecticut River was the main route of travel before 1800 and the use of boats on it was coeval with the first settlement. Small boats were used which carried light cargoes because of the falls in the river at Enfield, South Hadley, and Erving. Lack of other than human power to propel the boats was another drawback to river transportation. Sail boats were sometimes used, but the wind was an unreliable source of energy. Steamboats were not much used before 1840.

Three main export markets absorbed most of the surplus agricultural commodities produced in the region. The area in and around Boston was an important center of meat consumption. It was costly to transport grains to eastern Massachusetts, so the farmers fed these foods to fattening cattle. The cattle were driven to market over land or shipped as dressed beef down the river in the warm months, and over land by sled during the winter. Consider-

able amounts of pork and some non-perishable foodstuffs such as grain, also, were sold in Boston.

New York City was a second market, but was relatively unimportant because it was well supplied by the farming areas in New York, Pennsylvania, and New Jersey.

The West Indies were a third market, and rivaled Boston in importance. Before 1641 they had imported large quantities of meats from England, but in that year the Puritan Revolt in England put a stop to this trade. As a result the Indies sought to import meats from the American Colonies, and developed an active trade with New England. The Valley farmers exchanged large quantities of beef, pork, grain, potash, staves, and shingles for West Indian rum, salt, molasses, and tea. William Pynchon, whom Clemens (2) calls the first American Packer, alone bought, dressed, packed, and shipped great numbers of hogs and cattle to the West Indies between 1662 and 1683. This market lost its importance to New England after the middle of the nineteenth century because of competition from the Carolina Colonies which had an advantage in lower transportation costs.

Land Tenure

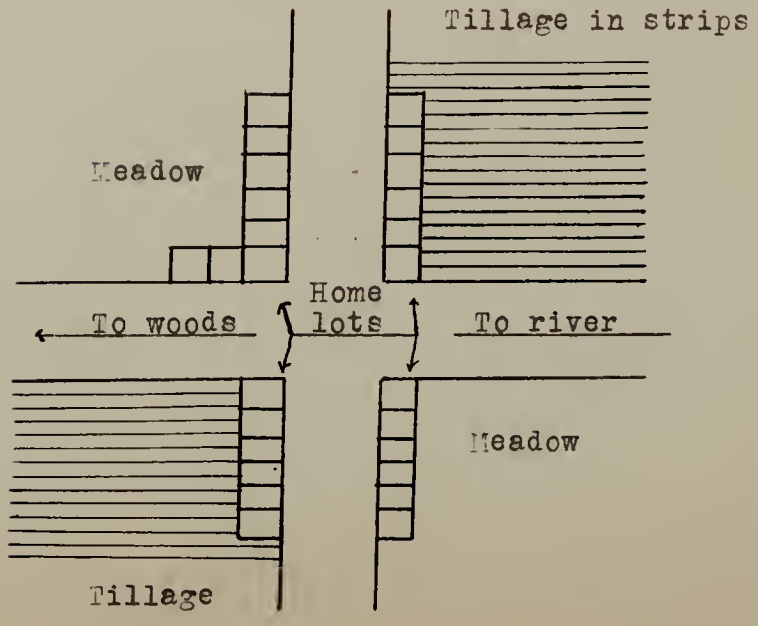
The settlers in Massachusetts were fairly conscientious about compensating the Indian for the loss of his land. This was particularly true in the Connecticut Valley where land was purchased directly from the Aborigines

and the transaction recorded in the form of a deed. Judd (9) states that the Indian was fully aware of the significance of a land transfer, both to himself and to the white man. The Pocumtucks wanted the protection afforded by the presence of the settlers and were eager to sell land.

In the early towns all land belonged to the community as a whole. The settlements were usually laid out in tracts, three to five miles square, with one or two main streets. These streets were fifteen to twenty

Text Figure 5

A Typical Early Settlement



rods in width, and served as a basis for locating family houses. Figure 5 shows the manner in which the typical town was laid out. Each family was given a house lot on one of the main streets. The size of the lot depended upon the personal wealth of the occupant, the number of persons in his family, and the amount he had contributed toward the expenditure which made the settlement possible. Such lots varied from two to eight acres in extent. The rest of the land in the town was usually classified into large tracts known as tillage, meadow, pasture, or wood land. The tillage and meadow lands were then divided into as many strips or lots as there were home-lot owners. Each proprietor or home-lot owner was then given a strip of land, usually determined by drawing lots, in each of the large areas of tillage and meadow land. The size of the individual strips was determined by personal wealth, by family needs, and by the number of livestock owned. Thus in Northampton, twenty acres of meadow were allotted for each 100 pounds of wealth. In addition fifteen acres were always given to each family and three acres for each son in the family. In Springfield, two acres of meadow land were allowed for each cow, and four acres for each horse. Usually the total amount of land granted to each proprietor varied from twenty to ninety acres.

All land outside the home-lots, meadows, and tilled land, was roughly classified as pasture or wood land.

At first such tracts were held in common and not allotted to individuals. Each person was allowed to put his livestock in the common pastures and to cut wood from the forest lands. Livestock were not confined to any area; the usual practice was to build fences protecting the crop lands. After crops had been harvested, cattle were allowed to graze on the enclosed land.

Several factors caused a gradual change in land tenure. First, the proprietors were a privileged group. As the original and legal owners of land they could bar occupation by newcomers. Conflicts often resulted, making it necessary to grant specific permanent tracts of land to various individuals. Second, as long as individuals held scattered tracts much time and labor was lost in going from one field to another. Economy compelled transition to permanent ownership. Third, through purchase and inheritance many holdings went into fewer hands. Where the average farm varied from 30 to 50 acres in 1650, one hundred years later holdings of two to four hundred acres were not uncommon. Fourth, the practice of allotting every family a strip of each type of land became more difficult as the population increased. Much inconvenience resulted in towns (e.g. Deerfield) where attempts were made to secure a truly equitable division of land by the granting of very minute sections.

The change from common holdings to the present system of land tenure was gradual, but it was practically

completed by 1761. Greenfield (15) was the last town to formally put an end to the system in 1824. A few vestiges of the system still remain in the form of town commons.

In general, during this period land was held in common, but worked individually. The inefficiency of such a procedure caused the transition to private ownership of land.

Tilled Land

Statistics for this period are very inadequate, but they help to indicate the relative importance of tilled land. Data for four of the older and better established towns (Amherst, Granby, Hadley, and South Hadley) lying in a representative section of the Valley show that tillage land was predominant on farms. Out of a total of 9086 taxable acres in 1771, these towns had 4498 acres, (49 per cent), in tillage. The area of meadow land was 3504 acres and pasture land occupied 1183 acres. The important conclusion to be drawn from these data is that the agriculture of the period required relatively large areas of tilled land. Actually this type of land did not exceed meadow and pasture in extent. Farmers used large acreages of these last two kinds of land which were not recorded by the assessors.

Cereals: Tilled land was used mainly for raising grain. Exact data regarding the acreages of grains are

lacking, but three reasons justify the conclusion. First, records mention cereals oftener than other crops, and also state that grains were predominant. Second, figures for 1801 when agriculture in the Valley was more diversified than at any previous time show that grain occupied 60 per cent of all tilled land. Third, the type of agriculture practiced required relatively large amounts of grain.

More land was used for corn than for any other crop. The first settlers had intended to cultivate European grains, but found that Indian maize was hardier and yielded more food per acre. It also suited a program of commercial agriculture better than the other cereals. High transportation costs made it impracticable to ship bulky grains to markets as distant as Boston. Instead they were fed to fattening cattle which could be profitably sold as beef. The rich alluvial soils in the Valley gave the farmers a natural advantage over other parts of New England. Enormous crops of corn and hay could be grown on small areas, and much land was available for pasture. Consequently, with the river affording easy access to markets, farmers raised livestock to be sold for meat.

Another cause of the predominance of corn was its importance in the diet of the people. Thompson (15) states that the foods of the farmers were mainly corn meal "mush" and salt pork in addition to some potatoes and milk.

Rye was next in importance. It had value as a food for man and beast, and in brewing. The acreage of this crop rivaled that of corn for two reasons: 1. its relatively lower yield necessitated greater areas of tillage if large quantities of it were to be obtained; 2. it was grown extensively on depleted soils, because it would thrive where other crops barely managed to exist. Crafts (4) states that when other crops such as corn and wheat could not be raised the land was sowed with rye until, as he puts it, the soil was "ryed to death".

Wheat was fairly important because soils and climate were more favorable here than elsewhere in Massachusetts. However, it was early subjected to a series of blasts and other diseases, and its acreage slowly declined after 1700. In 1666, Mortons Memorials (10) recorded the failure of the wheat crop in Plymouth, "This year much of the wheat is destroyed by blasting and mildew, and some by worms". That these diseases did not affect the crop in the Connecticut Valley so seriously is shown by Governor Hutchinson's (10) statement in 1764, "little wheat has been grown in Massachusetts for a long time except in the river towns on the Connecticut River". Before 1725 the Valley farmers had ample wheat for white bread and some was exported to Boston and the West Indies. After that year the crop was grown less because it failed frequently, and by 1780 white bread had become a rarity.

Oats was the most important of the minor cereals. It was used as an animal food and was often grown in conjunction with peas. Some barley was also raised for use in brewing, but it declined in acreage after 1700 when apple trees started producing and enabled farmers to make cider. A little buckwheat was used for human consumption.

Root, Fibre, Vegetable, and Special Crops

Turnips were raised quite extensively before 1760. After this date the acreage of this crop was frequently larger than at any previous time, but relatively it declined in comparison to other plants. Previous to 1760, turnips were grown for human consumption, but as the potato became more popular, turnips were eaten less and often used for the fattening of cattle. Sometimes they were sown after barley had been harvested so that two crops could be obtained from the same piece of land in a single season.

Potatoes were introduced into New England in 1718, but were not grown in the Connecticut Valley until 1750, and did not become very important until twenty years later. In 1780 some of the farmers were using potatoes as a feed for cattle.

Tobacco has always been grown in the river towns (this term will hereinafter be used interchangeably with Connecticut Valley). The Aborigines cultivated it and the

white settlers continued the practice. The type raised was an inferior variety called "Shoestring" and its annual production never exceeded two to four thousand pounds. It was used mainly for domestic consumption and did not become important until 1833 when a new type of plant was introduced. Some tobacco leaves were bartered with the farmers in the surrounding hill towns and a few found their way into commerce with the West Indies.

Large amounts of flax and hemp were cultivated because the soils and climate were comparatively favorable to them. They were important articles of domestic consumption and also entered into the export trade. After 1750 they declined because of the increasing use of wool and later cotton.

Other crops grown were asparagus, artichokes, cabbage, celery, endive, lettuce, spinach, peas, beans, peppers, parsley, mustard,cauliflower, onions, radish, carrots, beets, parsnips, cucumbers, squash, and various types of berries.

Hay Land

The data on taxable land collected in 1771, showed that the area of hay land was not so great as that of tilled land. Actually there was more meadow than tilled land. Large areas of hay land used by the farmers were not reported by the assessors. Other evidences indicate that meadow exceeded other crop land. First, as has been stated, over one-half of the region was unforested when the towns were

first settled. Second, an estimate of the total tillage land in 1771 does not exceed 15,000 or 18,000 acres, leaving a remainder of at least 225,000 acres which could have been used for meadow and pasture land. There were about 100,000 acres available which could have been used as hay land, but it is doubtful if over half that amount was utilized, for the towns were only about two-thirds settled. Third, the practice of raising beef cattle required large amounts of roughage. Lack of labor and machinery limited the amount of grain a farmer could grow, so he had to depend on large areas of meadow for the bulk of his animal feeds. Extensive production of beef cattle would have been impossible without great expanses of grass lands.

At first settlers depended upon native grasses which were high in roughage, but low in nutriment. The grasses growing in swampy places were the best and hence the first meadow lands were near the streams. Later when the improved English grasses were imported upland meadows were also used. The usual practice was to cut hay from the land year after year until a crop could be no longer obtained and then to permit such areas to revert to general pastures and waste lands.

In general hay lands were extensive, first because settlers found them in that condition, and second because cattle raising required them to remain so.

Pasture Land

Pasture lands were large. In fact livestock roamed the entire Valley, and all land not used for pasture was fenced in. Herders were often employed by the towns to take care of dairy cows and sheep. Other livestock was branded, turned loose in the spring, and rounded up in late autumn, a practice similar to that on western ranches at a later date.

Of these livestock, at first swine were the most numerous. They required almost no care since they were allowed to roam the pastures and wood lands. They had arched backs, were good runners, and could usually survive encounters with bears, rattlesnakes, and wolves. They were rounded up, fattened on corn before butchering, and marketed as barreled pork in Boston and the West Indies.

Cattle, though fewer in number, were more important to the system of agriculture because they needed larger amounts of concentrated foods. They were marketed in the form of beef or driven overland to Boston. Milk cows were not numerous because there was only a small domestic demand for dairy products.

Sheep were not extensively raised before 1775. In fact wool was scarce and most of it was imported from England. In 1730, barely enough wool was produced by all of the colonies, to supply each person with a pair of socks. Occasionally bounties were offered for sheep raising and

wool production, and some towns required each family to keep a certain number of sheep. However, little expansion occurred in the sheep industry until the Colonial Rebellion cut off the supply of English woolens in 1776. Before that time the increase in this type of livestock barely kept pace with population changes for three reasons: 1. farmers neglected their sheep, providing them with little food and shelter; 2. the menace of bears and wolves was not completely removed before the end of the eighteenth century; 3. basically sheep were not profitable, so farmers turned their attention to other matters and purchased any wool that they needed.

Wood Land

When the river towns were first settled, wood was not plentiful because of the Indian practice of burning over the region each year. The English continued the practice for a while, but it was wasteful as it destroyed miles of rail fence and impoverished the soil. These burnings were permanently discontinued by a legislative act of the Commonwealth of Massachusetts in 1743. After 1700 the area of forest land increased rapidly so that in 1780 about 70 per cent of the region was covered either with timber or brush. Dwight (5) mentioned in 1810 that many of the plains near the river were overgrown with pine and other soft woods. In some towns the growth of brush was so vigorous that each

male was ordered to spend a certain amount of time annually clearing the roads.

Summary of the Colonial Period

At first land utilization was collective and cooperative. Land was held in common and agriculture was practiced so as to be beneficial to the community as a whole. Gradually a system of private ownership evolved until the present method of private land holding became universal.

Agriculture was both self sufficient and commercial. The latter gradually developed into the form of fattening livestock for markets. It was the result of the increasing demands for meats in Boston and the West Indies, of the natural advantages of climate, soil, and easy access to markets by way of the river, enjoyed by the river towns. Commercial agriculture was established in the Valley much sooner than in any other section of the state since the hill towns were populated more slowly and remained in a self supporting condition until the first part of the nineteenth century.

Farming was unscientific and inefficient. Extensive utilization of land was practised because of scarcity of labor and lack of good tools. Little care was taken of the soil, and crop rotation was introduced by accident or necessity rather than by intention. The practice was to raise corn, wheat, and turnips on the best soils and when

fertility declined oats and rye were cultivated since they required less plant food. Following these cereals, the land was allowed to lie fallow, to become overgrown with brush, or to be turned into pasture. Some effort was made to maintain fertility by the use of manure, but most of this fertilizer remained in unused heaps. In 1786 a few of the farmers were beginning to apply limestone and gypsum to their lands.

V

DIVERSIFIED LAND UTILIZATION
1786 - 1845

The year 1786 marked the end of frontier agriculture and the beginning of diversified and intelligent farming. The self sufficient and livestock methods of farming, as carried on before that year, were both characteristically frontier practices. During this period the livestock industry continued important, but new types of land utilization developed as a result of changes in markets, competing agricultural areas, and transportation facilities.

Population

The termination of the Revolutionary War had a marked effect on the number of people living in the river towns. Between 1765 and 1790 the population increased from 11,272 to 25,080. After that the growth was fairly steady until 1845 when it numbered 48,958. Settlement of unoccupied land and the growth of manufacturing industries caused the increases. There were 117,352 people employed in the manufacturing industries of Massachusetts in 1837 and 152,776 in 1845. This population change had a double meaning. First, the number of farmers in the river towns was increasing and second, the urban markets were expanding.

Part of the increase in rural population was brought on by more intensive land utilization resulting from new types of farming such as sheep raising and broom corn culture. Urban growth caused agriculture to expand because factory workers were consuming more garden vegetables.

Transportation Facilities

Roads were poor compared with modern highways, but Dwight (5) wrote in 1810 that they were better than most roads in New England. At the time of the Revolutionary War few roads were passable to stage coaches, but after 1780 roads were improved rapidly. Between that year and 1820 numerous turnpike companies formed and constructed a fairly good system of roads throughout New England.

The Connecticut River was an important avenue of commerce, and its navigability was increased by the construction of canals around the shallow parts. By 1800, boats carrying ten to twenty tons of cargo were making regular trips up the river, Later, in 1840 small steamboats were used, which went as far north as Greenfield.

The first railroad penetrated the Valley in 1835 and linked Springfield with Boston. By 1845 it was extended to Chicopee and Northampton. The building of this railroad caused an almost immediate collapse of shipping on the Connecticut River.

The important fact about these changes in transportation was that they gave the farmers a better means of access to their markets.

Land Tenure

Private ownership of land was fully established by 1786. After that date only a few acres remained in the towns as common lands. Greenfield was the last town to abolish common pasturage, in 1824.

In 1786 about two-thirds of the land was settled, but all of it was occupied by 1800. Data for the counties of Franklin, Hampden, and Hampshire show that the area of farm land changed only slightly from 1801 to 1845, increasing from 920,647 to 940,099 acres. Farms became larger as a result of the expansion of the livestock industry, but specialized crop production was causing an increase in the number of small farms.

Tilled Land

County statistics show that tillage doubled during this period. In 1801, about 59,080 acres or 6.5 per cent of all farm land were tilled. In 1845, tilled area equaled 117,488 acres or 12.5 per cent of all farm land.

The changes in the actual and proportionate areas of tilled land were produced by various factors. The increase of population necessitated greater production of human food crops. A tremendous expansion in the livestock industry required larger acreages of grain. Specialized commercial crops were introduced and were grown extensively in many of the towns.

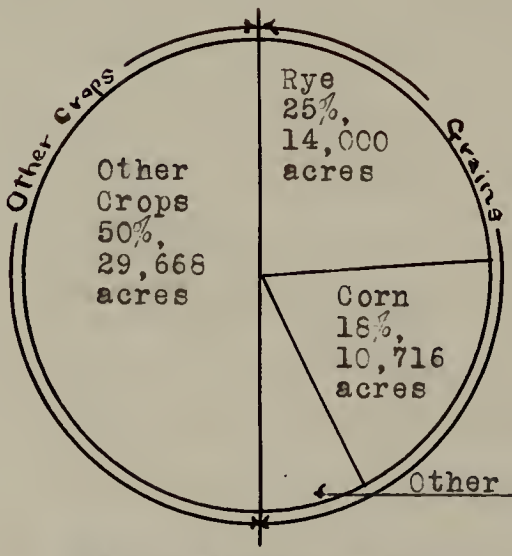
Cereals: As in the previous period, cereals were

most important. From Figure 6 it can be seen that they covered 50 per cent of all tilled land or 29,668 acres in 1801. (Note: All figures in this investigation are indicated as of census years collected. Actually, crop data represent acreages for the year previous to the census year.) In 1845 the percentage was almost the same, but the area had increased to 58,745 acres. Grain was even more important in the river towns where it occupied 40,000 acres or 84 per cent of all tilled land (see Figure 8). The livestock industry was the main reason for the significance of the cereals. Before 1830 farmers tried to grow all of their grains. After that year continued expansion of the livestock industry necessitated the importation of some grain, but cereal production in the Valley continued to increase as the farmers wanted to purchase as little grain as possible. In 1845 the peak acreage was reached and limitations of time and machinery prevented further augmentation. Also more western grains were coming into the river towns at lower costs since improvements in transportation were lowering shipping rates.

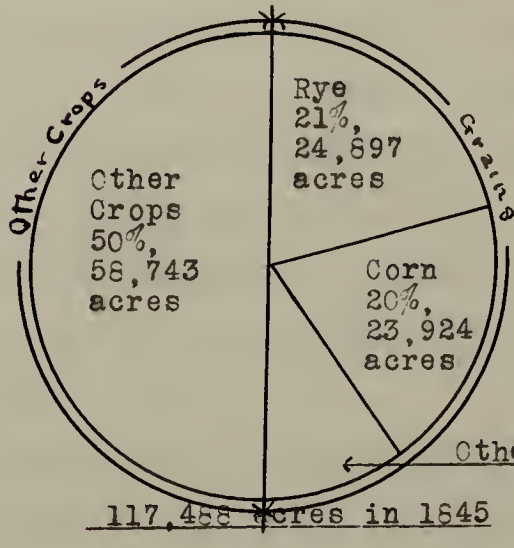
Rye was the most important crop, and its production rose from 14,507 to 24,897 acres between 1801 and 1845. Figure 6 shows that on a percentage basis rye declined somewhat. Rye flour was used for bread because of the scarcity of wheat. It was also used for the stall feeding of cattle. Many of the farmers found it a profitable cash crop for sale to breweries.

Text Figure 6

Utilization Of Crop Land In The Counties Of Franklin, Hampden, and Hampshire



59,080 acres in 1801



117,488 acres in 1845

From Massachusetts Valuation Records, Boston

Corn occupied the next largest area of land. From Figure 6 it may be seen that corn increased from 10,715 to 23,934 acres. This increase in maize may be set over against the decrease in the proportionate acreage of rye. As more western grain was imported, less rye was needed and since corn was valuable as an animal food, a greater proportion of it was grown. Corn was used principally for the stall feeding of cattle. Many more cattle were fattened than formerly, since farmers had abandoned the practice of raising young stock and devoted their entire attention to the actual feeding of steers for the market. The young stock were purchased in the surrounding hill towns, fattened on grain and hay, and driven to the Brighton market. The profitableness of this type of farming declined after 1840. Farmers who had borrowed money in the fall to purchase cattle experienced difficulty in meeting their notes the following spring. They blamed the cattle drovers and the buyers in Boston for collusion in attempts to lower the price of beef. The real cause of their troubles was located in Western New York, Ohio, Indiana, and Illinois where grain and livestock were produced at a lower cost.

Rye and corn made up 85 per cent of the total acreage of cereals. Some oats was grown as a feed for horses, and it was occasionally seeded in with other grains or grasses. The acreage of wheat decreased due to difficulties with plant diseases and to larger acreages of it

in other states. Some barley was grown, but it was a minor crop.

Thus between 1786 and 1845 a tremendous augmentation of cereals occurred. However, by the latter year production was dropping because of competition from other agricultural areas.

Root, Fibre, Vegetable, and Special Crops

Data in Figure 6 show that land used for crops other than grains increased from 29,668 to 58,743 acres between 1801 and 1845. The speculative nature of agriculture during this period caused some sudden changes in crop areas in the Valley. Thus when the craze for the culture of silk worms struck the nation between 1820 and 1840, Massachusetts did not escape the futile attempts to establish that industry. Holland (7) states that "the principal transactions in the business (silk worm culture) in Western Massachusetts were in the river towns on the Connecticut". Here climate and soil were more favorable than in other sections. Furthermore bounties were offered for silk production and a number of farmers tried to cultivate mulberry trees. Colman (3) states that after a few attempts most farmers gave up the project as being unprofitable.

Broom corn had always been cultivated but it was not a significant crop before 1825. After that year, three factors encouraged its production. First, Smith says a Valley farmer invented the improved "Yankee" broom which

became popular. Second, sharp rises in the price of broom straw made the crop an attractive speculative proposition. Third, broom corn was an aid to the livestock industry because it yielded large quantities of broom seed which was valuable as an animal food. The production of broom corn reached its height just before 1837 when two forces caused the industry to leave the Valley: 1. the crop was highly speculative because yields varied tremendously, and brooms were not standardized; 2. better broom straw could be grown in New York, Ohio, and other states at less cost. The river towns used about 1673 acres of land for growing broom corn in 1845.

Considerable quantities of teasels were grown between 1820 and 1840. They were used by manufacturers to raise the nap on cloth and were valuable because domestic demand exceeded production. However, their importance decreased after 1837 because the yield which varied from 40,000 to 160,000 heads an acre made the crop an uncertain source of income.

Potatoes became important after 1800. The first data on this crop were collected in 1845 and showed plantings of 2766 acres. Potatoes were used primarily as a human food though some were fed to cattle. They were supplanting turnips for table use.

The tobacco industry began to expand during this period. Some tobacco had always been grown, but it is doubtful if more than five to eight acres were used for the crop

before 1800. After that year the acreage slowly increased, but it did not become very important until 1840. Land used for this crop expanded after 1833 for three reasons. First, the plant cultivated before that date was an inferior variety called "Shoestring" which was used mainly for local consumption. In 1833 the broad leaf wrapper tobaccos were introduced and found to be so well adapted to the locality that the tobacco area equaled 155 acres in 1845. The second cause of the increased importance of tobacco was the decline of the broom corn industry. After 1840 broom corn culture was gradually transferred to the western states and farmers looked about for another crop to take its place. Tobacco was substituted because both crops thrive on the same types of soil. The transition was slow and lasted into the beginning of the next period, because broom corn seed was an important animal food while tobacco was somewhat uncertain and speculative.

The third and most important reason for the increase in tobacco acreage lay in the growth of the demand for cigars. This demand was reflected in the imports of cigars into the United States which increased from twenty-three million cigars annually to eighty-one million between 1805 and 1845. The influence of demand was shown in the purchasing power of tobacco which was 95 per cent higher in 1845 than in 1801.

Market gardening was started in the Connecticut Valley during this period. The growth of urban population

in the vicinity of Springfield and Holyoke made it profitable for farmers in the southern part of the Valley to grow root and vegetable crops. Squash, carrots, beets, turnips, and cabbage were the most important of these plants. In 1845, the river towns were using 2460 acres, excluding potatoes, for growing vegetable crops.

Orchard Land

It is difficult to determine what change took place in the area of land used for the growing of fruit. Judd (9) states that there was some increase in apple orchards after the Revolutionary War. In 1845 data on the number of fruit trees in the river towns were collected. Later census enumerations which give both the number of fruit trees and the acreages of orchard land furnish a basis for estimating the extent of such land in 1845. An estimate places the area of orchard land at 2400 acres in 1845. Some pears, peaches, cherries, and quinces were grown, but apples were by far the most important fruit. Cider was a popular beverage and great quantities of it were made yearly. Thus it may be seen that land utilized for orchards was important only in supplying the needs of the immediate farmers.

Hay Land

Hay occupied more land than all other crops.

In Franklin, Hampden, and Hampshire Counties, the area of meadow land increased from 79,152 to 146,393 acres between 1801 and 1845. This was an expansion from 8.5 to 15.6 per cent of all farm land. The river towns had about 40,000 acres of hay land in 1845. The augmentation of meadow land was a direct result of the livestock industry. Farmers were raising more cattle and sheep and needed larger quantities of hay, hence they enlarged the acreage of meadows.

Pasture Land

Between 1801 and 1845 pasture land expanded from 156,120 to 207,241 acres in the counties of Franklin, Hampden, and Hampshire, an increase from 17 to 22 per cent of all farm land. The change in area was a direct result of a rise in the number of cattle and sheep in the Valley.

The Cattle Industry: This continued to be the most important phase of agriculture in the river towns. It was the main cause of the large acreages of grain, hay, and pasture, and reached its peak in 1845 when the Valley was supporting 26,775 head of cattle. Practically all of these cattle were stall fed for beef and the average farmer kept only the few milch cows necessary to supply his own needs. Little milk was produced for sale except near the larger towns. Judd (9) states that there was an actual decrease of milk production after 1786. The Massachusetts census of 1845 shows that the river towns produced 924,237

pounds of butter, and 221,533 pounds of cheese.

The business of raising cattle was more or less general in Northeastern United States, but the Connecticut Valley and Southeastern Pennsylvania were two localities which specialized in it. The rise of wool growing in New England (1810 - 1845) caused most farmers to cease production of beef cattle and the industry became concentrated in the Connecticut Valley where conditions were more favorable for its pursuit. Most of the increase in cattle came after 1800. An estimate for 1770 places the number of cattle in the Valley at 5900. Scattered statistics showed that this figure about doubled by 1800. The increase continued until 1845, but after that year the industry declined due to competition from the western states.

Two programs were followed in fattening cattle. By one, cattle were purchased in the autumn, fattened in the winter, and resold in the spring. By the other, cattle were bought in the spring, pastured during the summer, fattened for a short time in late summer, and sold in the fall.

Sheep Raising: Sheep constituted the second reason for large areas of pasture land. Before 1810 relatively few sheep were kept and many pounds of wool were imported from other parts of the United States and particularly from England. Eighty-two per cent of the 105,286 sheep in Massachusetts in 1813, were in Berkshire County. The census did not report any sheep in the river towns; evidently the number kept was very small. The next data on sheep were obtained in 1837 when the industry was at its height, and when the

Valley contained 39,107 sheep as compared with 374,614 in the whole Commonwealth of Massachusetts.

The phenomenal increase in sheep between 1813 and 1837 had four causes. First, the population was growing and needed larger amounts of wool. Second, the war with England in 1812 stimulated local production of wool. Third, the duty on imports was rising and the industry was heavily subsidized. The duty was 5 per cent in 1789, 10 per cent in 1792, 15 per cent in 1794, 17 per cent in 1804, 35 per cent in 1812, and 30 per cent in 1824. The resultant increase in wool prices was tremendous. Between 1827 and 1837 the price of wool rose from 36 to 72 cents a pound. Wright (16) says that full blooded Merino rams worth 100 dollars in 1807 were selling for 1000 to 1500 dollars ten years later. Fourth, the wool spinning and weaving industries were expanding. In 1813, Massachusetts contained five woolen mills which required 35,000 pounds of wool annually, and in 1837 there were 192 woolen mills which consumed 10,858,988 pounds of wool.

The increase in the number of sheep in the river towns was but a reflection of what was happening in the rest of New England. In many sections, both old and new farming areas were given over to the production of wool and Vermont was the outstanding sheep state between 1800 and 1850. The sheep were kept mainly for wool, but in the Connecticut Valley many were fattened because urban demand had caused a rise in the price of mutton.

After 1837 the sheep industry began to move westward. The movement was accentuated by the business crises in that year and in 1843. Between 1837 and 1845 the number of sheep in the Valley declined by four thousand in spite of a fifty per cent increase in the wool consumption of Massachusetts factories. The woolen mills which required almost eleven million pounds of wool in 1837 were using 15,387,448 pounds in 1845.

Wood Land

Since all other types of farm land expanded in area woodland inevitably decreased. Data show that wood land in Franklin, Hampden, and Hampshire Counties declined from 626,295 to 468,947 acres between 1801 and 1845. The portion of all farm lands in woods dropped from 68 to 60 per cent.

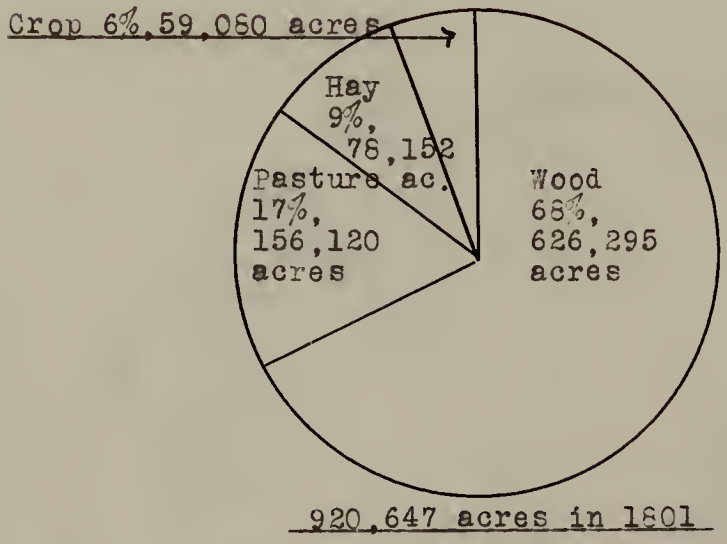
The decline of wood land can be attributed to two causes. First, the growth of population and industry increased the consumption of forest products. Second, the larger pastures required to support great herds of cattle and sheep were obtained from cleared wood lands. Thus forest land decreased for the first time since 1635 because agriculture required large areas of open farm land.

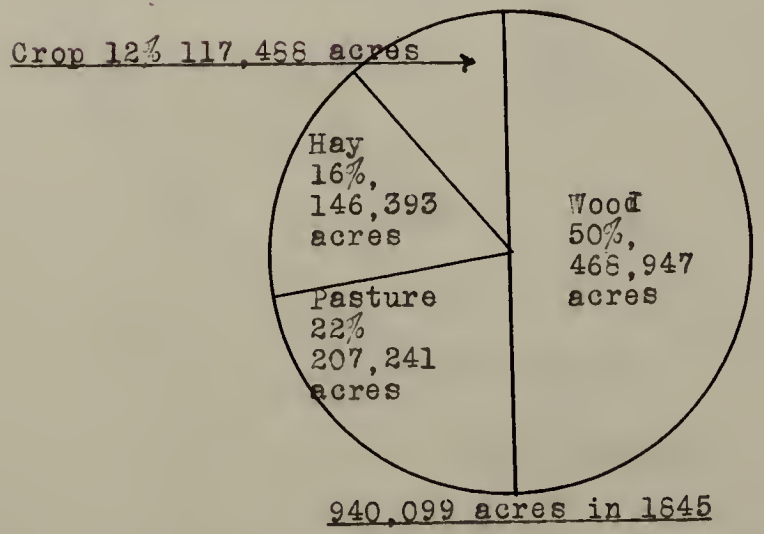
Summary of the Period 1786 - 1845

A summary of the changes which took place in land utilization is indicated in Figure 7 which is self-

Text Figure 7

Utilization Of Farm Land In The Counties Of Franklin, Hampden, and Hampshire



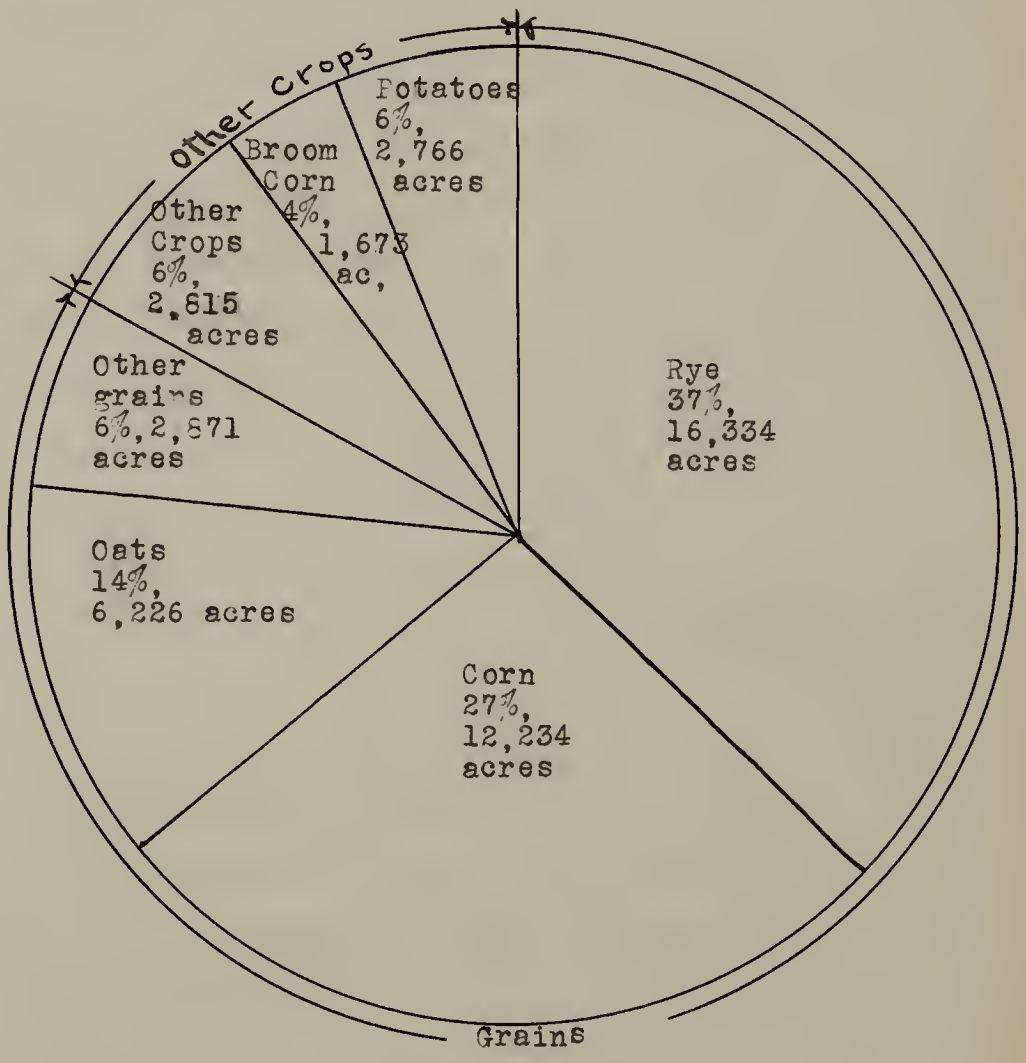


From Massachusetts Valuation Records, Boston

Text Figure 8

Utilization Of Crop Land In The Connecticut Valley

In 1845



44,719 acres

From Massachusetts Census;1845

explanatory. Areas used for crops and pasture increased as new cultivated plants were introduced and the livestock industry expanded. Furthermore Figure 8 shows how cultivated land was used in 1845. The predominance of the cereals was due almost wholly to the practice of fattening cattle.

Other sections of Massachusetts remained specialized, but the river towns developed a diversified agriculture. The Valley farmer could choose one or all of the following for land utilization: the fattening of cattle, the production of mutton, the growing of garden crops, the culture of broom corn, the production of wool, and the raising of grains. On the other hand activity in the hill towns was limited mainly to wool production and the rearing of young cattle for sale to farmers in the river towns, because unfavorable soil conditions would not permit any other types of agriculture. The settlement of many of the hill towns had been made possible only by the increased demand for wool since such regions furnished excellent pastures for sheep. Thus when sheep started to move into the western states, the prosperity of these towns declined.

VI

A PERIOD OF TRANSITION
1845 - 1875

Many changes occurred in the river towns between 1845 and 1875. Types and programs of farming were considerably different at the beginning than at the end of the period. The main forces underlying the changes were the settlement of farming areas in the western states and the expansion of manufacturing industries in New England and New York.

Population

The population of this area increased from 48,958 to 124,679 between 1845 and 1875. Most of this growth was urban because the number of farmers and farm hands decreased from 7573 in 1865 to 7223 in 1875. Data regarding employment in manufacturing industries are available for the whole Commonwealth, and such employment mounted from 152,766 to 308,963 in the thirty years following 1845. The number of farmers decreased: 1. because men were attracted into non-agricultural industries; 2. because the introduction of farm machinery lessened the need for manual labor. Thus population affected land utilization by increasing the market for agricultural products, and by offering optional employment to farm dwellers.

Transportation Facilities

The railroad construction started in 1835, was continued and branches were extended to various towns, such as Amherst, Deerfield, Greenfield, Hadley, Hatfield, Northfield, Westfield, and Whately. Use of the Connecticut River for transportation was almost wholly discontinued because the railroads were safer, faster, and cheaper.

Changes in transportation facilities in regions outside the river towns were more important than those inside the Valley, because they enabled other states to ship in agricultural products at less cost. In 1840 the Atlantic Coast states were fairly well supplied with railroads, and only a few short lines of track extended west of New York, Pennsylvania, and Virginia. In 1850 there were some railroads in the vicinity of the Great Lakes. The years following were an era of tremendous railroad building and in 1860 all of the territory east of the Mississippi River was covered with a complicated network of tracks. In addition some branches extended west of the Mississippi River and other lines were being constructed. The United States contained 3000 miles of railroads in 1840, 9000 miles in 1850, 30,626 miles in 1860, and 52,922 miles in 1870. This growth of railroads was important to the Connecticut Valley. It enabled western farmers to ship beef, hogs, cereals, and broom corn into eastern markets at prices lower than the costs of production in the river towns.

Land Tenure

Land used for farms increased from 940,099 to 983,499 acres between 1845 and 1875. During the same time the number of farms rose from 4899 to 5306. Both of these changes took place in spite of a decrease in farm population and were made possible by the mechanization of agriculture since a marked improvement in the construction of farm implements occurred after 1840. In 1860 farm machinery used by the Valley farmers was worth about 800,000 dollars; ten years later 1,300,000 dollars worth of implements were being used.

Certain factors indicate that land was being utilized more intensively. Between 1865 and 1875 the size of the average farm dropped from 72 to 70 acres. The number of small farms was increasing and 12 per cent of all farms were under 10 acres in size in 1875. Farmers were using more fertilizer, but accurate data on this are not available until the beginning of the next period. Land values were rising and this suggests that agriculture was becoming more intensive. In 1865 the value of farm land and buildings was 17,062,811 dollars, ten years later it was 24,348,980 dollars. This change occurred in spite of an almost one hundred per cent increase in the value of money; and apparently the only logical cause for the increase in the price of land was that it was producing commodities of a greater value. Generally greater productivity per acre means that land is being utilized more intensively. Crop yields between 1865

and 1875 do not indicate much change in intensity of cultivation. Yields were about the same in 1855 and in 1875, and somewhat lower in 1865. The drop may have been the result of weather conditions or of a labor shortage caused by the war. Similarly, the fact that yields were not higher in 1875 may have been due to climatic influences or to the business recession in that year which caused farmers to curtail their expenditures for labor and fertilizer.

Tilled Land

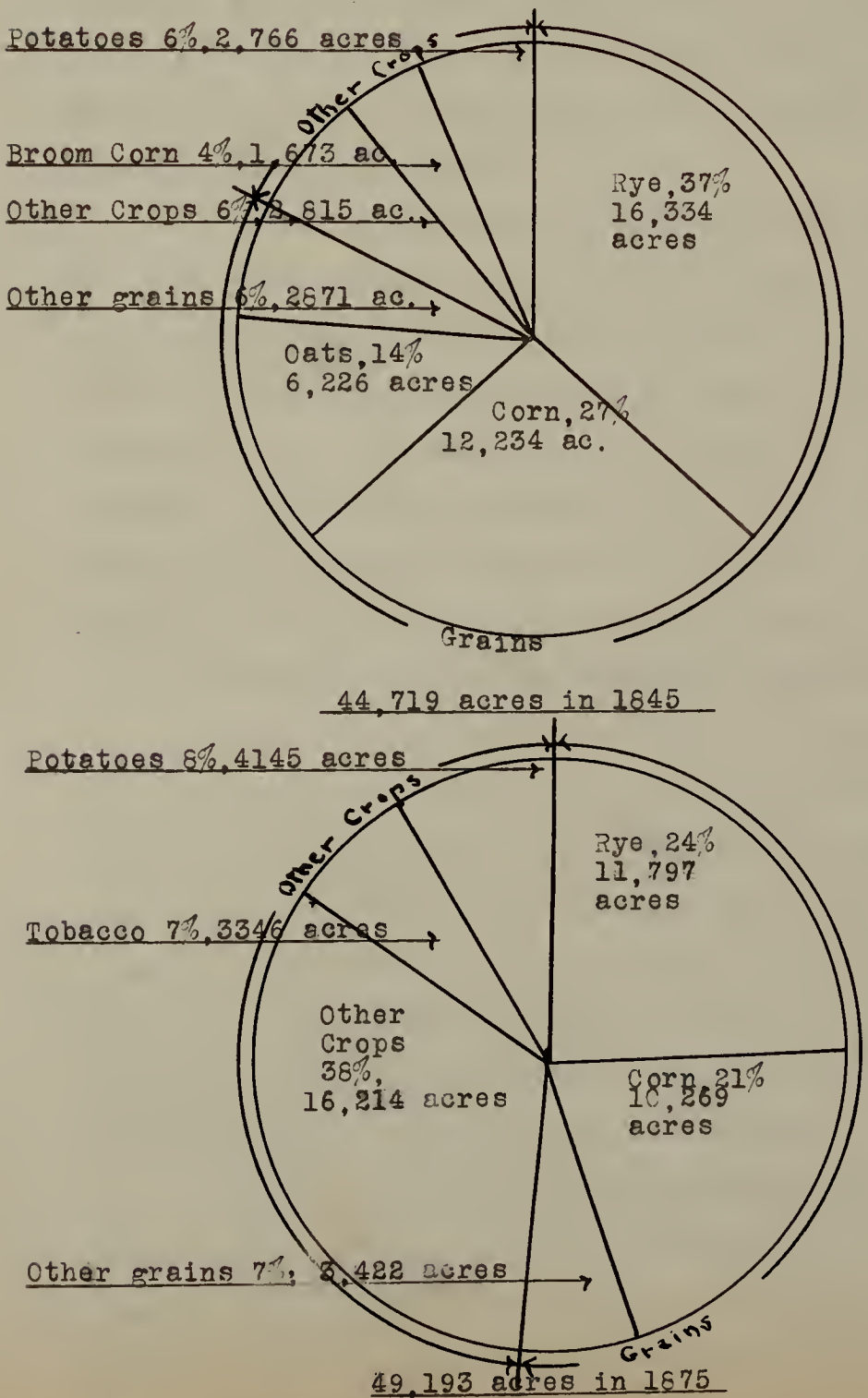
The area of tilled land changed very little. There were 44,719 acres of tillage in 1845 and 49,113 acres in 1875 when 13 per cent of all farm land was cultivated.

Cereals: The grains continued to be the most important crops, but their acreages declined. Figure 9 shows that cultivated land used for cereals dropped from 84 to 52 per cent between 1845 and 1875. Competition from western livestock and grain producing areas caused the decrease. As the practice of fattening beef cattle was gradually discontinued, less cereals were required and those needed could be purchased for less than the cost of producing them.

From Figure 9 it can be seen that rye was the most important grain, but it declined from 16,334 acres in 1845 to 11,797 acres in 1875. Two causes may be cited.

Text Figure 9

Utilization Of Crop Land In The Connecticut Valley



From Massachusetts Census; 1845,1875.

First, the contraction of the livestock industry lessened the need for grains, especially since fewer cattle were fattened for the market. Second, the cost of importing wheat from the West had fallen nearly one-half and New England was able to afford white bread whereas it had formerly eaten rye bread.

Corn retained the second place among grains, but its area also shrunk, dropping from 12,234 to 10,269 acres during the period. Meanwhile the portion of grain land used for corn rose from 33 to 50 per cent. The lessening acreage of corn resulted from the contraction of the cattle industry. The number of cattle in the river towns dropped from 26,775 to 18,137 between 1845 and 1875. Beef animals decreased faster than these figures indicate as the data do not differentiate between beef and dairy cattle. However, it is possible to determine the trend in the type of cattle. During the last ten years of the period dressed beef produced by the farmers fell from 5,945,735 to 2,688,390 pounds while the farm price of beef dropped from 12.2 to 4.5 cents a pound. All prices fell only 25 per cent as compared with 68 per cent in the price of beef. Grain prices had not declined as much as those of meats and this heightened the unprofitableness of the livestock industry.

On the other hand farmers were paying increased attention to dairying, a type of farming which required less cereals. The growing population was demanding more dairy products. Table 1 summarizes the amounts of such products

produced. Cheese making was first adapted as a method of preserving milk which could not always be sold. Later, when the demand became more stable, more milk and cream were produced for immediate consumption.

Table 1

Dairy Products Produced In

The Connecticut Valley

Year	Butter Pounds	Cheese Pounds	Gallons Milk Sold
1845	221,533	924,237	----
1855	152,265	1,273,439	----
1865	30,616	611,117	485,827
1875	42,136	1,559,077	3,599,594

From the Massachusetts Census; 1845, 1855, 1865, 1875.

Figure 9 shows that as a whole grain acreages contracted considerably between 1845 and 1875. The area used for oats fell from 6226 to 2024 acres, while wheat declined from 1108 to 410 acres. For the most part the decrease in grain land was due to the improvement and extension of transcontinental transportation facilities. Farmers began to purchase many of their cereals, and Huntington (8) states that by 1860 Northampton alone was receiving 50,000 bushels of grain annually by rail from the West. It is likely that cereal acreages would have declined even faster but for two reasons. First, grains were needed to support the expanding

dairy industry and second, local breweries were buying large quantities of rye and corn. Table 2 gives a summary of the trend in acreage of cereal crops, and indicates that corn acreage tended to remain fairly stable while that of other grains decreased.

Table 2

Grain Acreages in The Connecticut Valley

Year	1845	1855	1865	1875
Rye	16,334	17,689	10,519	11,797
Corn	12,234	17,383	12,679	10,269
Oats	6,226	4,788	4,202	2,024
Wheat	1,108	643	648	410
Buck-wheat	1,718	278	1,144	988
Barley	45	57	28	--
All grains	37,685	40,838	29,220	25,488

From Massachusetts Censuses.

Root, Fibre, Vegetable, and Special Crops.

Figure 9 and Table 3 show the acreages of tillage crops other than grains, and indicate clearly why the years between 1845 and 1875 were transitional in agriculture. Less broom corn was grown and fewer acres of grain as a result of the declining livestock industry, but more land was used for garden vegetables and specialized crops, such as

tobacco and onions.

Table 3

Utilization of Tillage Land In

The Connecticut Valley

By Acres

Year	1845	1855	1865	1875
Tobacco	155	391	4,884	3,346
Potatoes	2,766	4,070	4,262	4,145
Turnips	2	213	492	305
Broom Corn	1,673	2,982	499	--
Onions	--	25	25	86
Other, except Grain	1,250	719	106	15,823
Total	7,034	8,400	10,268	23,705
Grain	37,685	40,838	29,220	25,488
All	44,719	49,238	39,488	49,193

From Massachusetts Census; 1845, 1855, 1865, 1875.

The total of 23,705 acres given for "other" crops in 1875 is incorrect. This figure was given as a total by the state census and includes several hundred acres of fallow land and odd lots not actually used for crops. The actual acreage was probably not over 12,000.

Broom corn continued to be cultivated, but competition from a half dozen states as far west as Kansas, where

a better quality of broom straw was grown at less cost, caused a steady decrease in the Valley acreage. The decline would have been even more rapid were it not for the fact that broom seed is valuable as a cattle feed. The acreage of broom corn was 1673 in 1845, 2982 in 1855, and 499 in 1865. Data were not reported on the crop after 1865, because it was not grown much after that date. Severe price fluctuations and varying yields made the crop speculative and speeded up its disappearance from the river towns.

Tobacco land increased very slowly before 1855 when it equaled 391 acres. Ten years later the acreage had jumped to nearly 5000, an advance similar to the sudden retreat of broom corn. A temporary drop in the price of tobacco caused some decline in the area of this crop in 1875. Price seems to have had an important influence on tobacco acreage as the tobacco price rose fifty per cent on a deflated basis during the period. The increase in production and price was a response to a greater demand for cigars.

Potato acreage rose sharply after 1845, but changed very little in the years following 1855 when the acreage was 4070. This stability of acreage after 1855 resulted from increased potato crops in other sections of the United States.

Various garden crops became more important during this period. The onion acreage increased from almost nothing to 86 acres. Beans expanded from 50 to 124 acres, and turnips varied from 300 to 500 acres. Crops such as carrots,

beets, tomatoes, and sweet corn were also becoming important. In 1875 about 335 acres were reported as being used specifically for the growing of garden crops for the market.

Orchard Land

In a previous statement it was estimated that the river towns contained 2400 acres of orchard land in 1845. Definite reports later showed the acreage as 2637 in 1875. Most of the fruit was consumed at home and little found its way into the markets.

Hay Land

Hay land was expanded from 40,000 to 60,433 acres between 1845 and 1875 when it occupied 17 per cent of all farm land. This increase took place in spite of a decline in livestock. During the same years the numbers of farm animals in the Valley fell from 68,343 to 35,678. Most of the drop was in sheep, although the number of cattle decreased also. It was not inconsistent that the area of meadow land should enlarge while the number of livestock was contracting. Dairy cows were being substituted for beef cattle and farmers needed less grain but more green hay. Incidentally attempts were made to grow all of the hay as it is costly to import. The yield of hay had decreased considerably, since two hundred years of cropping had extracted the fertility of many meadow lands. Between 1845 and 1875 the average yield dropped from 1.5 to 1.1 tons an acre. This

decrease of yield alone necessitated an almost 50 per cent increase in acreage if production was to be maintained. The disappearance of sheep seems to have been detrimental to the meadow lands. Calhoun (3) states that where farmers stopped raising sheep the fertility of soil declined, and the rich clovers were replaced by coarser grasses. The sheep manure was valuable in maintaining the nitrogen content of the soils.

Pasture Land

Data for the counties of Franklin, Hampden, and Hampshire show that pasture land expanded from 207,241 to 352,454 acres between 1845 and 1875. During the same time pastures in the river towns fell from 203,818 to 177,314 acres. This apparent paradox indicates a situation that actually existed. Histories of western Massachusetts teem with accounts of abandonment of farm areas after 1840 and many of the hill towns surrounding the Connecticut Valley suffered severely in consequence. Agriculture in these towns declined after the sheep industry moved to the West, and the population decreased in these areas. The surviving farmers often consolidated several farms into large pastures. Farmers in the river towns also used such abandoned farms for pasturing livestock. This explains why pasture land in the three counties increased.

The contraction of the pasture area in the river towns was a direct result of a decrease in livestock which

is shown in Table 4. It is significant that the greatest decline was in the number of sheep. The abandonment of sheep in the river towns was so sudden that many writers noted it (The increase in 1865 was a temporary result of the Civil War inflation). It occurred in spite of the fact that woolen mills of Massachusetts increased their annual consumption from 15,387,448 to 49,530,730 pounds of wool during the period.

Table 4

The Number of Livestock In

The Connecticut Valley

Year	1845	1855	1865	1875
Cattle	26,775	26,665	25,176	22,114
Sheep	35,493	12,059	18,067	6,894
Horses	6,075	7,411	9,145	6,555
Total	68,343	46,135	52,388	35,673

From Massachusetts Census; 1845, 1855, 1865, 1875.

Several influences besides competition from the western states contributed to the decline of the sheep industry. Mosely (11) wrote in 1850; "Look back a few years, and as you passed through the county (Hampden) and observed farms, almost every farmer had his 10, 20, 40, 50, or 100 sheep all feeding quietly in his pastures. Then we had good mutton and

fat lambs and cheap enough. Now travel around the county and what do you see? More dogs than sheep as might be proved by a census". Other writers mention the "curse" of dogs. Unlicensed and half wild dogs were numerous, and they killed and mangled sheep often taking a higher toll than disease. Dairying also caused sheep to decrease in number. Sheep and milk cows cannot be successfully pastured on the same land.

For two reasons, sheep did not entirely disappear after 1845. First, a demand for mutton made the stall feeding of sheep profitable. Chart 1 shows that the Merino or fine wool sheep declined faster than the other types which were used for mutton. Second, sheep manure was valuable as a fertilizer for tobacco, and some farmers kept sheep solely for manure. Allis (6) of Whately wrote that this valuable fertilizer was imported into the river towns and that in 1870 farmers were buying sheep manure from Albany, New York at a cost of eight to twelve dollars a cord.

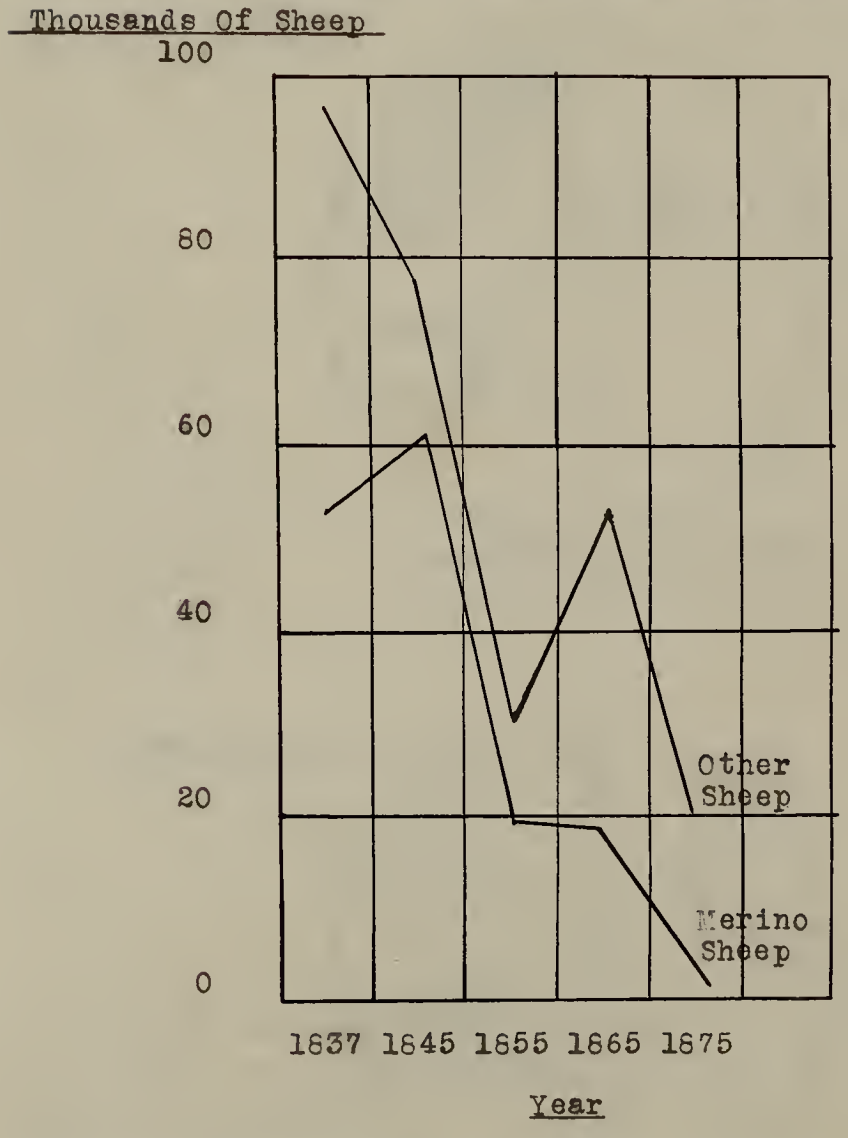
Thus the decrease in the number of livestock in the Valley caused similar contractions in the area of pasture land.

Wood Land

Wood land expanded from 54,233 to 73,704 acres between 1865 and 1875. This increase came from abandoned pasture which was allowed to become overgrown with brush.

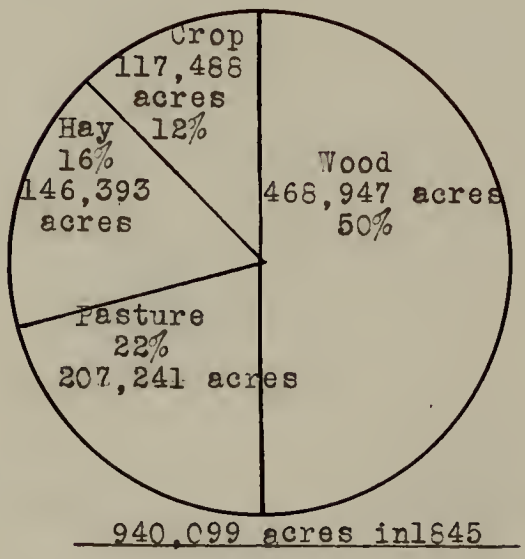
Chart One

The Numbers Of Merino And Other Sheep In The Counties Of Franklin, Hampden, And Hampshire

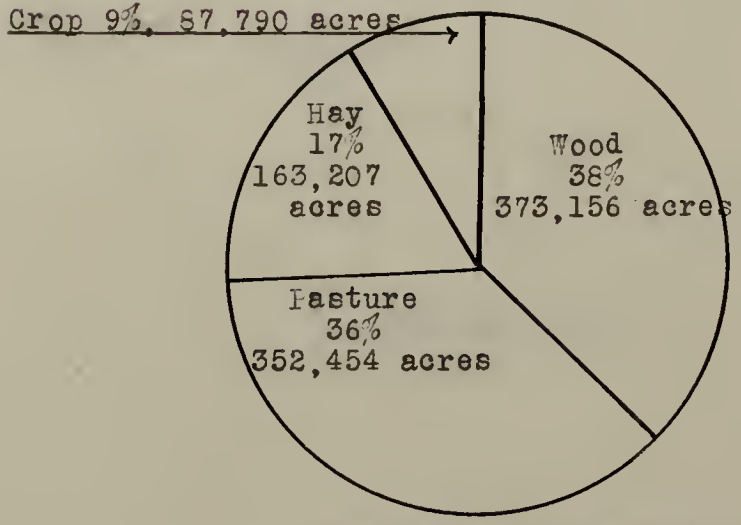


From Massachusetts Censuses For The Corresponding Years

Text Figure 10
Utilization Of Farm Land In The Counties Of Franklin, Hampden And Hampshire



940,099 acres in1845



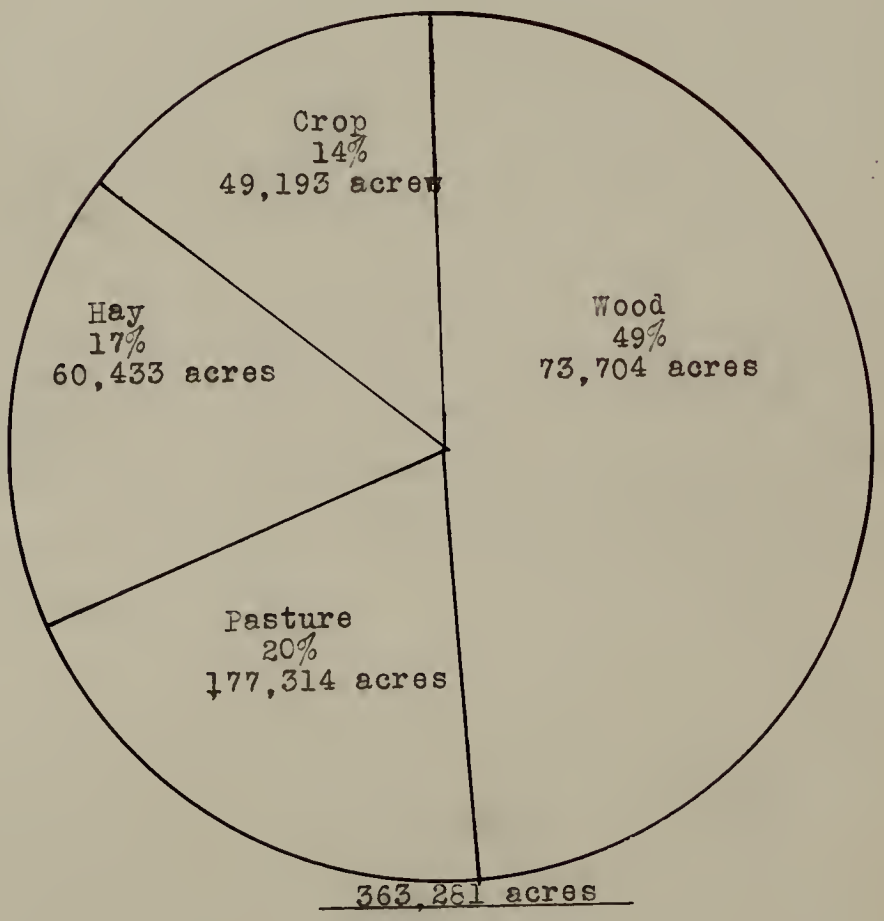
983,499 acres in 1875

From The Massachusetts Censuses;1845 , 1875

Text Figure 11

Utilization Of Farm Land In The Connecticut Valley

In 1875



Summary of the Period 1845 - 1875.

Figures 10 and 11 graphically show the changes which occurred in land utilization during this period. The area of tilled and hay land did not change greatly, but the crops grown became more diversified and the land was cultivated more intensively. Pasture land decreased in the river towns because of declines in the livestock industry, and for the same reason such land increased in area in sections immediately surrounding the Valley. The extent of wood land on farms declined mainly because of the use of cleared lands for pastures.

Modern specialized crops were introduced during this period, and partially replaced the extensive grain acreages which were in existence in 1845. The beef cattle industry was being superseded by dairying, and farmers were growing garden vegetables, not only for themselves, but also for market.

VII

INTENSIFICATION OF LAND UTILIZATION
1875 - 1930

The changes which took place in land utilization during the previous period were established as definite trends by 1875. No influences causing sudden and major changes of utilization arose after that date because the important agricultural areas of the United States were fairly well settled. Most of the factors affecting agriculture were the results of forces already at work, such as continued urban expansion and the improvement of transportation facilities.

Population

Population continued to influence land utilization by furnishing an ever expanding market for agricultural garden products. It more than tripled between 1875 and 1930, the increase being from 124,679 to 407,050. Most of the growth was urban, although some of it took the form of occupation of the smaller farms for residential and part-time farming purposes. This use of small farms by city workers has been important in that it is causing the value of agricultural land to rise.

Transportation Facilities

Very little expansion of railroads occurred in the area as most of the lines were built by 1875. The important change in transportation came in the form of improved roads. After 1910 many hard surfaced roads were built and by 1922 the river towns had a well developed system of improved roads linking them with the rest of New England. In conjunction with motor trucks and street freight cars, these roads played an important part in the development of the area's market garden and dairy industries.

Land Tenure

This period represents two extremes in the area of farm land. In 1875 there were 394,844 acres of farm land, more than ever previously reported, and in 1930 there were 247,507 acres. In 1880 about 90 per cent of all land was in farms, but in 1930 farm areas equaled only 54 per cent of all land. Two causes were responsible for this decline: 1. use of farm land for non-agricultural purposes; 2. consolidation of farms into forest areas. During the same time the number of farms also decreased from 5206 to 3465.

Land utilization became more intensive. Up to 1905 the size of the average farm increased, but after that date the size decreased. The size of the average farm was 70 acres in 1875, 75 acres in 1895, 80 acres in

1905, 54 acres in 1925, and 75 acres in 1930. Table 5 shows that the relative number of small farms has been increasing, for in 1870, 4 per cent of the farms were under 10 acres, but in 1930 about 13 per cent of all farms were of that size. Rising land values also indicated that land was being utilized more intensively.

Table 5.

The Number of Farms of Various Sizes in
The Counties of Franklin, Hampden, and Hampshire

Year	1 to 10 acres	10 to 50 acres	50 to 100 acres	100 to 260 acres	Over 260 acres	All farms No.
1860	238	2578	2982	---	--	--
1870	352	2717	2744	---	--	8068
1880	496	2697	2521	---	--	9456
1890	440	2321	2145	---	--	10511
1900	789	2721	2223	2972	680	9386
1910	974	2724	1977	2565	638	8809
1920	1014	2322	1769	2230	496	7831
1930	906	2164	1573	2004	330	7069

From Federal Censuses of corresponding years.

The value of an acre was 45 dollars in 1875, 32 dollars in 1885, 30 dollars in 1895, 33 dollars in 1905, and 61 dollars in 1930. This rise in value was made possible by the increased

productivity of the land. Some of the advance in the price of land was due also to occupation of the smaller farms by urban workers for part-time farming. The amounts of fertilizers used show that farmers were trying to obtain higher yields from the land. In 1880 about 120,000 dollars worth of fertilizers were used, but in 1930, 1,450,000 dollars worth was applied to the land, while the general index of prices was almost exactly the same in both years. Of course, fertilizer prices may have increased, but it is doubtful if they advanced to such an extent, especially since modern science has lessened their cost of production. Yields of crops during the period indicate that increased quantities of capital and labor were being applied to the land. The yields of certain crops, as shown in Table 6, have a general upward trend. The drop in 1929 was probably the result of the drought of that year.

Table 6.

Acreage Yields of Certain Crops in

The Connecticut Valley

Crop	1880	1900	1910	1930
Potatoes, bu.	104	123	117	98
Corn, bu.	28	38	42	42
Tobacco, lbs.	1500	1725	1730	1450
Hay, tons	1.1	1.1	1.4	1.3

From the Federal Censuses.

In 1900 the Federal Census first reported expenditures on farm labor in the Valley. If 1910 is used as a base and farm wages are deflated, the expenditures for hired labor per acre have been as follows: 1.65 dollars in 1900, 2.00 dollars in 1910, and 4.10 dollars in 1930.

Aside from the nature of the crops grown, immigration of Polish farmers has played a very important part in promoting intensive cultivation of land. Polanders began to appear in the river towns after 1885. They were eager to possess land, but first worked as farm laborers. Later they rented or purchased small tracts of land which they used for raising highly specialized crops, such as onions and tobacco. By the use of much hand labor they cultivated their land intensively and have succeeded remarkably well. The influx of Polish farmers was reflected in the tenure of the land. The region had 669 rented farms in 1880, 635 in 1890, 669 in 1900, 638 in 1910, 454 in 1920, and 351 in 1930. Considering all farms the per cent rented declined from 7 in 1910 to 5 in 1930. These data on the tenure of farms tend to bear out the above statements that the Polanders first rented and later purchased farms.

Tilled Land

After reaching a peak of 65,762 acres in 1885, the tillage area declined to 32,847 acres in 1930. This decrease resulted mainly from a drop in the total area of farm land, as the percentage of land tilled remained the same from 1885 to 1930.

Cereals: Figure 12 shows that the area used for grain fell off considerably. Tables 7 and 8 indicate that all cereals except corn have decreased until their acreages are almost negligible. The decline was due to three main causes: other crops such as tobacco were more profitable; the cost of imported grain was so low that it did not pay to raise it locally; since less beef cattle were kept smaller amounts of grain were needed. Corn was the only grain to remain important, because of its high yield, and its ensilage value to the dairy industry.

Table 7.

Grain Acreages in The Connecticut Valley

Year	1875	1885	1895	1905	1925
Corn	10,269	19,684	20,148	18,088	9,986
Rye	17,797	11,183	4,510	3,399	
Wheat	410	290	---	---	
Oats	2,024	3,334	823	598	1,014+
Buckwheat	988	1,770	---	---	
Barley	---	25	---	---	
Total	25,488	36,286	25,481	22,085	11,000

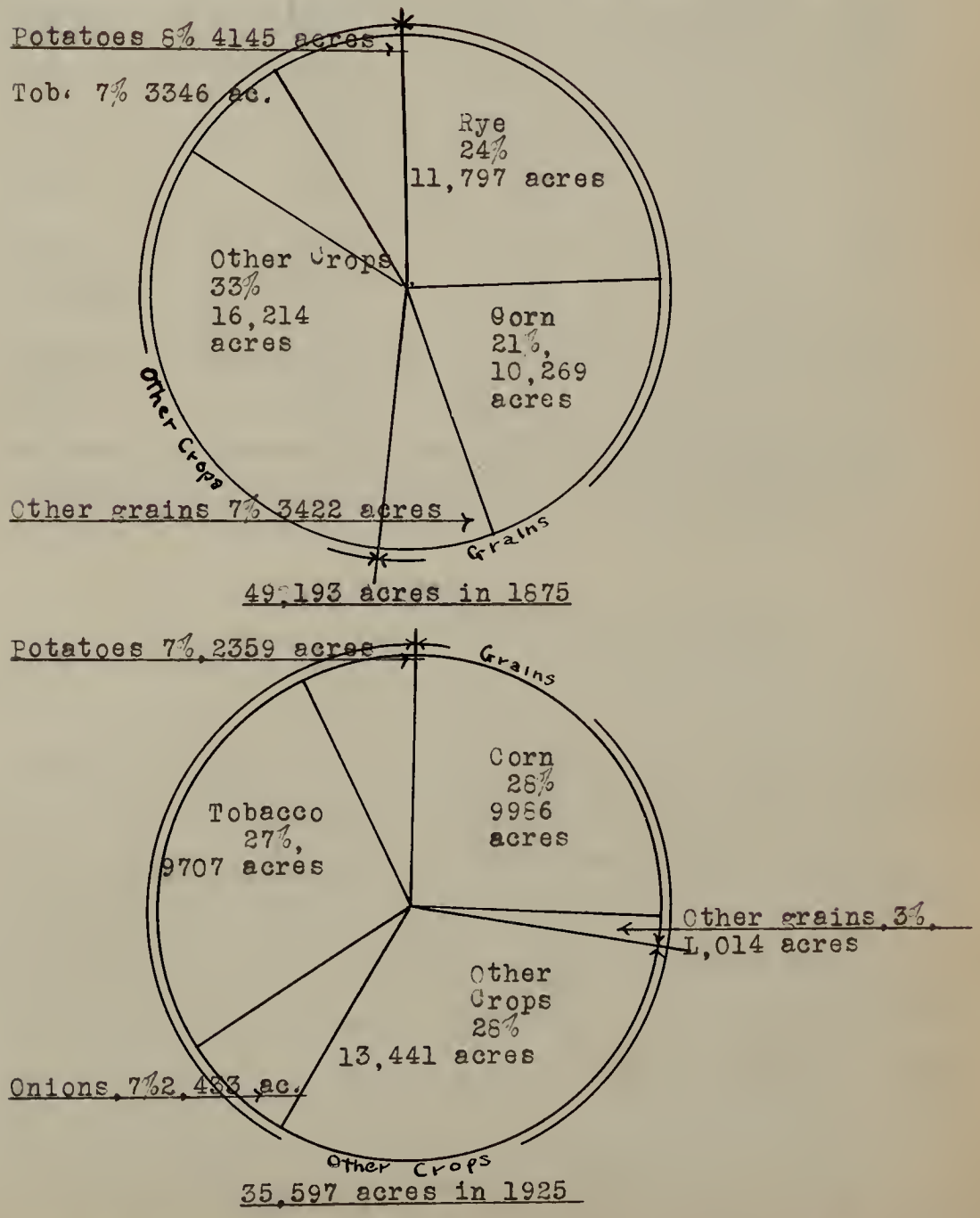
+ Estimated total for all grains except corn.

All figures from Massachusetts Censuses except those for 1925 which are from the Federal Census.

Other grains continued to become less important, and were almost totally discarded by 1930.

Text Figure 12

Utilization Of Crop Land In The Connecticut Valley



From Massachusetts Census for 1875; other from Federal Census

Table 8.

Grain Acreages in the Counties of

Franklin, Hampden, and Hampshire

Crop	1905	1910	1925	1930
Corn	24,634	19,211	10,711	13,278
Rye	872	1,718	277	139
Wheat	3,708	23	28	38
Oats	---	1,179	1,138	550
Buckwheat	---	516	73	37
Barley	---	88	9	---
Total	29,214	22,235	12,236	14,132

All figures are from the Federal Censuses except those for 1905 which are from the Massachusetts Census.

Root, Fibre, Vegetable, and Special Crops

The acreages of crops other than cereals are shown in Figure 12, and in Tables 9 and 10. The acreages given for "other" crops in 1875 and 1885 are not accurate. They were given as totals in the census reports, but include several hundred acres of fallow land and odd lots not used for crops. The tables show that acreages of special and market garden crops have become very important, but cereals have declined greatly. Before 1905 crops other than grain occupied 45 to 50 per cent of all tilled land, but after that year the percentage increased so that it equaled 69 by 1925.

Table 9.

Utilization of Tillage Land in

The Connecticut Valley

By Acres

Crop					
Tobacco	3,346	2,225	2,801	4,143	9,707
Potatoes	4,145	5,343	7,823	4,821	2,359
Turnips	305	169	45	310	---
Cabbages	---	---	---	---	334
Onions	86	287	1,663	3,994	2,433
Other	15,823	21,422	9,705	4,865	9,764
Total	23,705	29,476	22,039	18,128	25,597
Grains	25,488	36,286	25,481	20,085	11,000
All Tillage	49,193	65,762	47,520	40,214	36,597

All figures from Massachusetts Censuses except those for 1925 which are from Federal Census.

Table 10.

Acreages of Tillage Crops in the

Counties of Franklin, Hampden, and Hampshire

Crop	1905	1910	1925	1930
Tobacco	5,624	5,519	10,030	8,091
Potatoes	7,752	9,384	4,280	3,250
Cabbages	---	---	413	2,470
Sweet corn	---	---	1,298	1,204
Onions	4,045	---	3,095	3,220
Cucumbers	---	---	---	1,216
Other Vegetables	---	6,828	---	1,132

Figures for 1905 are from Massachusetts Census and others are from the Federal Censuses.

Tobacco acreage expanded and tended to concentrate in certain towns. Figure 13 shows that the crop was fairly well distributed throughout the river towns in 1875, but fifty years later it was grown in more restricted areas. This change was brought about, first, by the growth of urban population and the expansion of manufacturing in certain sections which eliminated most forms of agriculture except market gardening; second, the soil and climate in certain of the towns were exceptionally well adapted to tobacco culture. Several other factors played a part in causing the increase of tobacco acreage. Between 1870 and 1890, the tobacco

Text Figure 13

Distribution Of The Tobacco Acreage In The Connecticut Valley

One dot equals ten acres

1875 1925

industry suffered a depression because consumers favored the dark wrapper types grown in other sections of the United States. About 1890, consumer preference changed to a light colored leaf such as is grown in the Connecticut Valley. Furthermore, in the same year an import duty of two dollars a pound was placed on tobacco. Improvements in tobacco planting machinery also helped to expand production by saving much time and labor.

The Polish immigration was an important contributing factor in the enlargement of tobacco acreages. Of course, increased consumer demand was the primary cause, but the Polish farmers had a great influence as tobacco is a crop well suited to their intensive methods of cultivation.

The rise in tobacco prices was probably the main reason for the expansion of the area. Chart 2 shows that compared with general prices, the farm price of tobacco has been in a favorable position since 1886. After the World War, cigar consumption decreased and a gradual reduction of tobacco acreage followed. Table 10 shows that the acreage dropped about 2,000 between 1925 and 1930.

Up to 1895, the acreage of potatoes increased, but after that year it declined. Like tobacco, potatoes are an intensive crop, and the two have been grown interchangeably. When tobacco became more important after 1890 fewer potatoes were planted.

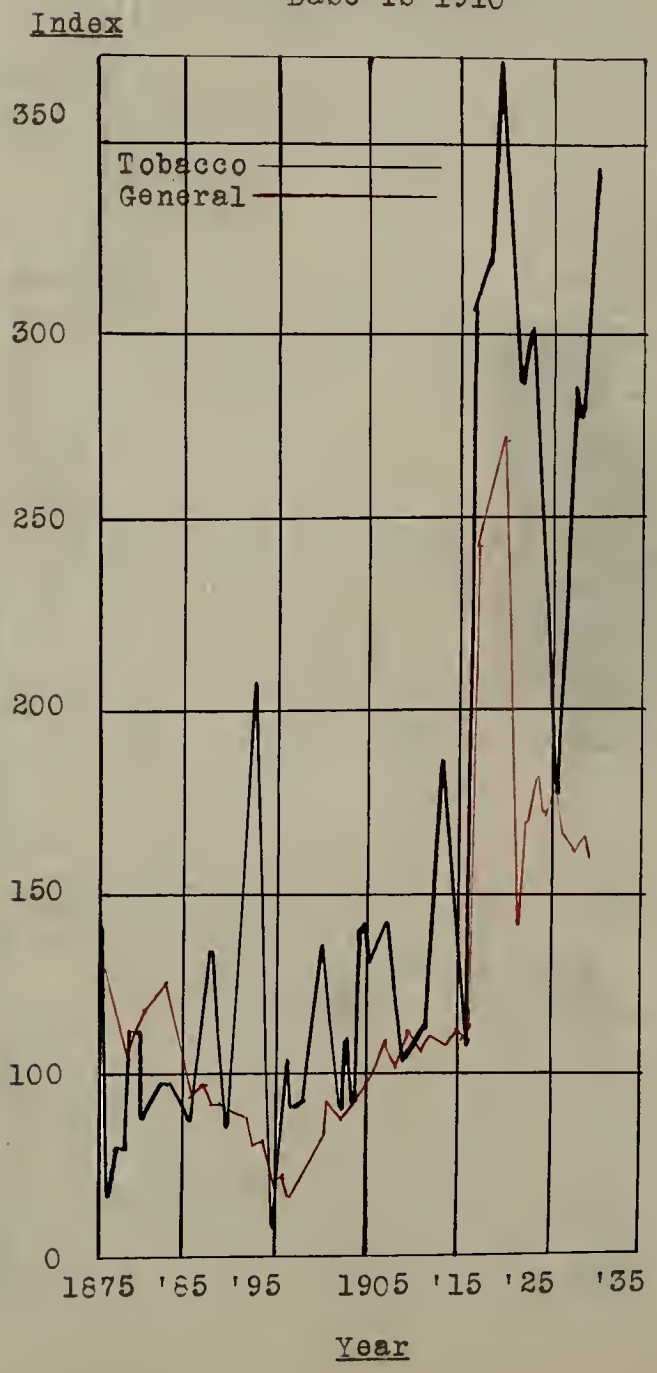
Onions became a specialized crop during this period. Only 86 acres were grown in 1875, but after that year the acreage enlarged rapidly. Figure 14 shows their

Chart Two

General Price And The Farm Price

Of Tobacco

Base is 1910



Text Figure 14

Distrinution Of The Onion Acreage In The Connecticut Valley

One dot equals five acres

cultivation has become concentrated in relatively few towns where rich alluvial soils are well suited to the production of onions. The influx of Polish farmers has also been an important influence since onion culture requires a large amount of hand labor in which the entire family can engage. During the last ten years competition from the States of Ohio, New York, and Indiana which also produce late onions, has caused the Valley farmers to shift a large part of their acreage from seed to early set onions. Even so the future of onion production in Massachusetts is not hopeful. Like the broom corn industry it may disappear in the face of competition from areas having greater comparative advantage.

The growing of garden crops for market became more important during this period. The changes in the acreages of these crops are shown in Figure 15 and in Tables 9 and 10. Vegetables such as cabbages, turnips, sweet corn, etc. have increased in acreage. At first they were grown mainly around the larger towns and cities, but as population increased and transportation by motor trucks became available, the industry spread over the Valley.

Orchard Land

No great change took place in the area of land used for growing fruit except that fruit growing tended to concentrate in those sections best adapted to orchards. Most of the fruit trees are planted in the central and

Market Gardening In the Connecticut Valley

One dot equals five acres

1875

1925

extreme southern portions of the Valley. Some pears and peaches are grown, but apples predominate. There were 2,637 acres of orchard in 1875. After that year and up to 1930 when there were 2,768 acres the extent of this type of land varied from 1,160 to 3,504 acres.

Hay Land

Hay land declined in area, but increased in proportion to all farm land. It dropped from 60,433 to 55,365 acres between 1875 and 1930.

Hay remained the most important of all crops in the area for two reasons: First, it was grown by many farmers because they could find no other plant to take its place. On some of the poorer farms grass is mowed yearly in preference to obtaining no return from the land. Second, the dairy industry requires large areas of hay land. The number of cattle has decreased (Table 18), but dairying is still very important. Figure 16 shows that very little change occurred in the distribution of cattle in the Valley between 1875 and 1930. Table 11 indicates the tendencies of milk production in the region. After 1900 less milk was produced because some of the distant markets such as Boston purchased their milk elsewhere. The "milk strike" of 1910 caused the loss of the Boston market.

Text Figure 16

Distribution Of Cattle In The Connecticut Valley

One dot equals twenty five cows

1875 1925

Table 11.

Milk Production in the Counties of

Franklin, Hampden, and Hampshire

Year	1890	1900	1910	1920	1930
Milk millions of gal.	19.1	27.0	16.9	13.3	17.6

From Federal Censuses.

Pasture Land

Pasture land declined from 177,314 acres in 1875 to 93,286 acres in 1930. Part of this decrease resulted from a shrinkage of all farm land, but the ratio of pasture to all farm area dropped from 49 to 34. The decrease in the number of livestock lessened the need for pasture. Some of the farmers cut their pastures to relatively small areas preferring to feed hay and green cut grasses to their livestock.

Wood Land

Wood land increased from 73,704 to 170,635 acres between 1875 and 1905. Most of this growth was on pasture land which was allowed to become overgrown with brush. After 1905 wood land on farms declined until it equaled only 68,350 acres in 1930. The decrease was due mainly to the shrinkage in land in farms. Much land, formerly in farms, was turned into non-agricultural forest lands. There were

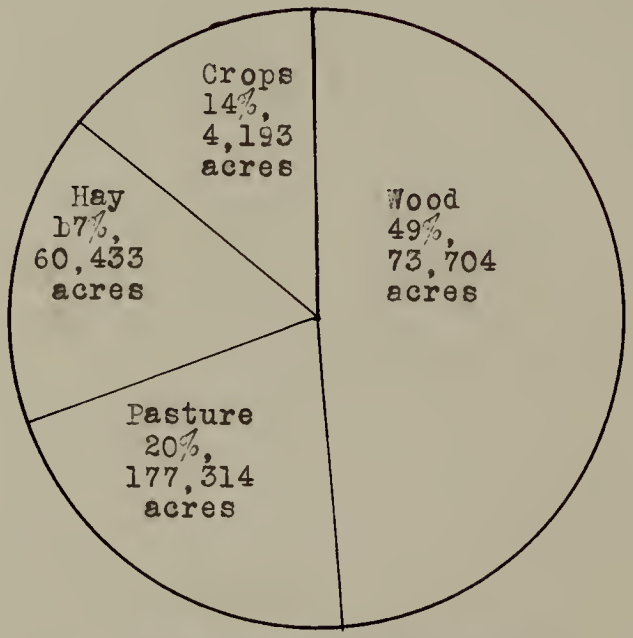
also 39,496 acres of partially wooded land in 1930 which were included in the pasture lands discussed above.

Summary for the Period 1875 - 1930

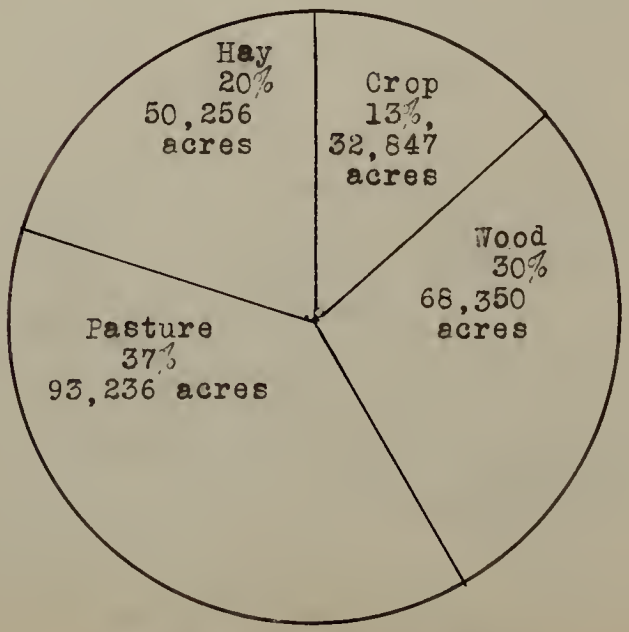
Figure 17 indicates the changes which took place in the types of farm land between 1875 and 1930. The fact that the proportionate area of crop land has not increased greatly is significant, and suggests that only the most desirable soils are now used for tillage. That an area as old as the Connecticut Valley has so large a portion of the land in forest, pasture, and meadow intimates that much land is gradually losing its agricultural significance. When soil is abandoned, it generally goes from tilled crops, to hay, to pasture, to wood land; and it appears that a great deal of the area in the river towns is going through or has completed this process.

If the trends originating in this period continue, it is likely that in the future the main source of farm income will be from tillage crops. Only the most productive soils will be used and on them will be grown specialized crops such as tobacco, market garden crops, and perhaps onions. Land which continues to be farmed in the poorer sections will probably be utilized either for fruit growing or for dairying.

Text Figure 17
Utilization Of Farm Land In The Connecticut Valley



363,281 acres in 1875



247,507 acres in 1930

From Massachusetts Census for 1875; others from FEDERAL CENSUS

VIII.

CONCLUSIONS

1. The changes which have occurred in the economic conditions underlying the agriculture of the Connecticut Valley, since 1640, have been of such a nature that they caused land to be utilized more intensively. Agriculture was first self supporting. Next the livestock industry developed and later diversified usages of land. Later grain production and livestock, both extensive types of farming, retreated. As they disappeared large pasture areas were abandoned and crop production tended to concentrate on the smaller areas of the most favorable soils. Crop production then became progressively more specialized and scientific, resulting in a more intensive utilization of land.

2. The factors which caused the changes in the use of land were:

    A. Competition of other agricultural areas, as was the case with the livestock, grain, and broom corn industries.

    B. The growth of markets, or consumer demand, which was responsible either directly or indirectly for the initiation of every new type of agriculture.

    C. Improvements in transportation facilities both

inside and outside of the Valley. These improvements gave the farmers better access to markets, and often enabled competitors to drive products of the river towns out of the markets.

D. Growth of population, which has resulted in many non-agricultural uses of land. The influx of Polish farmers has had an important effect on farm technique and has brought about a more intensive cultivation through the increased use of hand labor.

E. The natural characteristics of the Valley have given the farmers comparative advantages in certain respects. Superior soils and a mild climate have made possible the production of specialized crops.

3. The long-time trend has been toward an increase in the relative proportions of crop and hay land. Charts 3 and 4 show that up to the third quarter of the nineteenth century this growth took the form of a direct increase in acreage. After that the proportion increased in spite of shrinkage in area because other types of farm land were disappearing even faster. The same charts show that extensively utilized farm land such as wood land and pasture have decreased rapidly since 1885. This decline will probably continue as crop specialization coupled with rising land values makes wood land and pasture unprofitable.

Chart Three

Utilization Of Farm Land In The Counties Of Franklin, Hampden, And, Hampshire

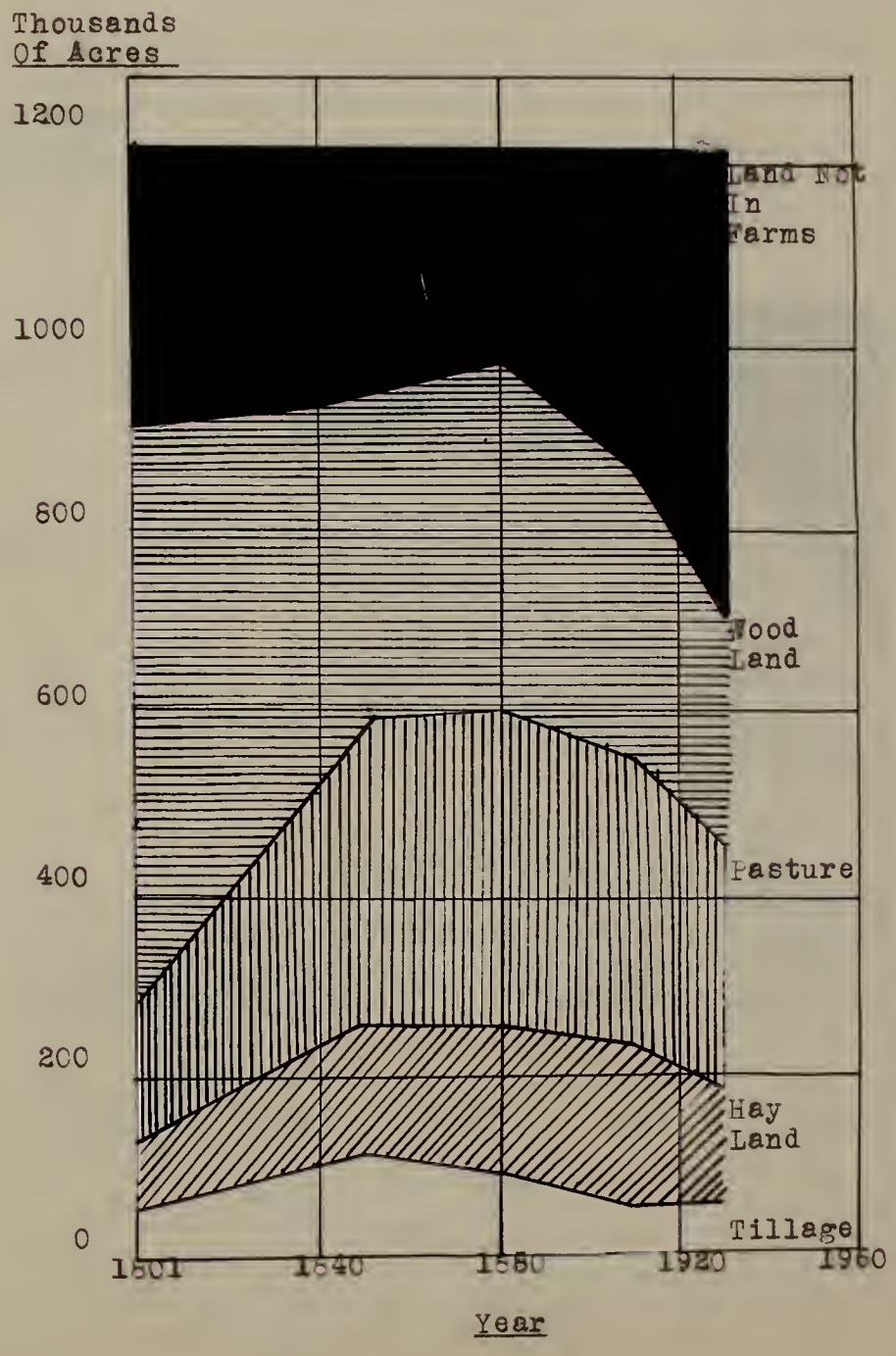
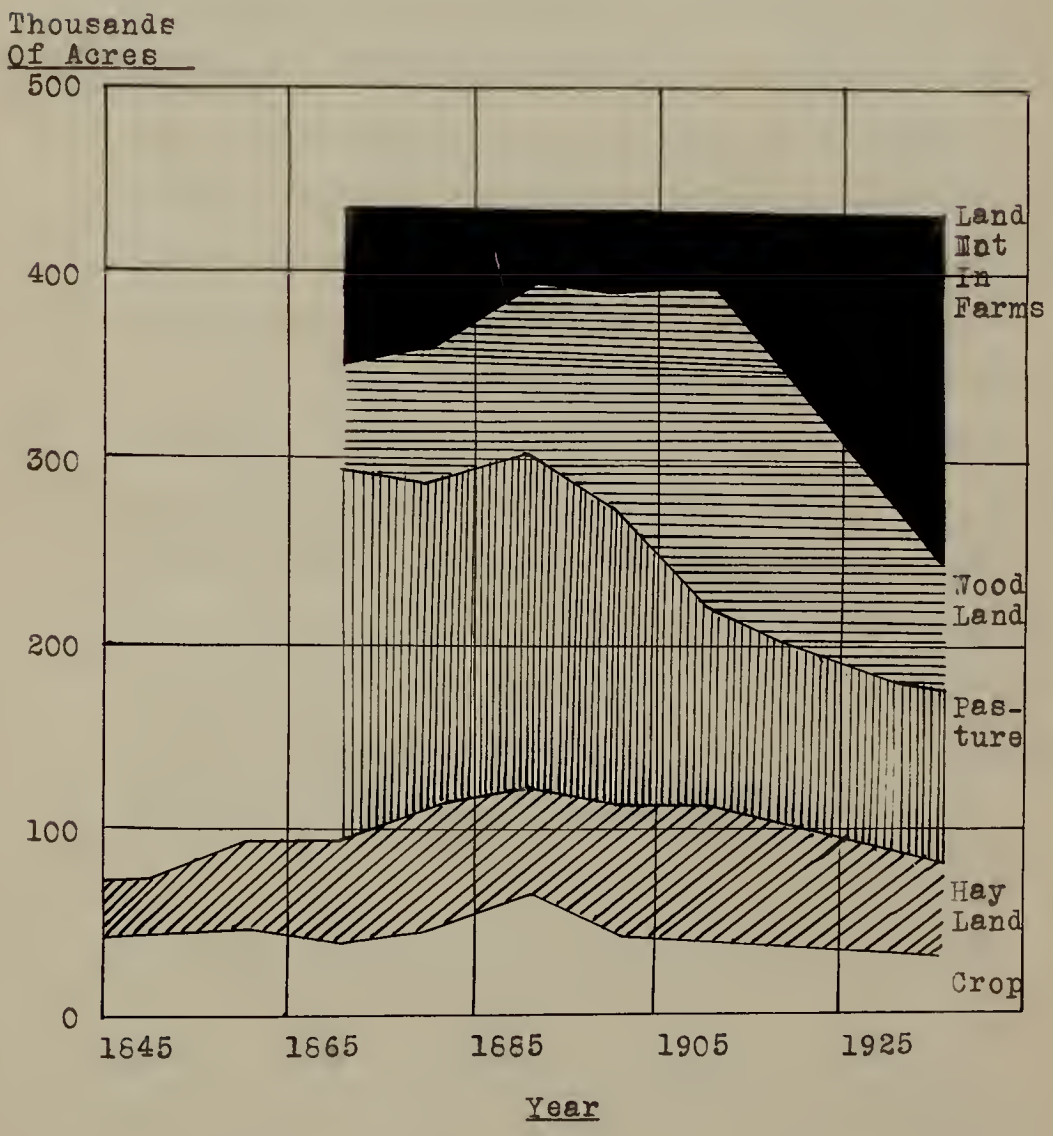


Chart Four

Utilisation Of Farm Land In The Connecticut Valley



4. The comparative scarcity of really good farm land in New England coupled with an active demand for certain products has made specialized and intensive crop production profitable.

The tendency for certain sections of the Valley to be used for particular types of farming will probably continue. Unless forced out by competition, tobacco and onions probably will continue to be grown in certain towns. Dairying and market gardening likewise will tend toward those sections of the Valley where they can be carried on most profitably.

It is likely that the decline in farm area will continue. More land will be used for residence and part-time farming, and the poorer soils will be abandoned to forest growths. Land remaining under cultivation will be utilized for intensive and specialized production. Since the region is well situated with respect to urban markets, it is probable that market gardening will become increasingly important.

APPENDIX

Table 12.

Utilization of Farm Land in The Connecticut Valley

By Acres

Year	Tillage	Hay land	Pasture land	Wood land	Or-chard	All farm land
1845	44,719	40,000	---	---	---	---
1855	49,238	45,134	---	---	---	---
1865	39,488	56,486	203,818	54,233	---	354,025
1875	49,193	60,433	177,314	73,704	2,637	362,281
1885	65,762	60,109	164,319	102,635	2,019	394,844
1895	47,520	65,954	157,830	113,493	1,160	385,597
1905	40,214	73,916	101,036	170,635	3,504	392,809
1925	35,597	55,365	97,493	82,874	2,768	274,097
1930	32,847	50,256	93,236	68,350	2,867	247,507

From Massachusetts Censuses through 1905; others from Federal Censuses.

Table 13.

Utilization of Farm Land in the Counties of Franklin, Hampden, and Hampshire

Year	Tillage	Hay land	Pasture land	Wood land	Orchard	All farm land
1801	59,080	78,152	156,120	626,295	---	920,647
1845	117,488	146,393	207,241	468,947	---	940,099
1875	87,790	163,207	352,454	373,156	6,642	983,449
1905	53,354	176,236	319,370	303,466	8,832	864,109
1925	58,912	135,008	314,581	223,193	---	731,694
1930	67,272	105,775	261,067	210,718	11,278	656,110

From Massachusetts Censuses through 1905; others are from Federal Censuses.

Table 14.

Grain Acreages in the Counties of

Franklin, Hampden, and Hampshire

Year	Corn	Rye	Wheat	Oats	Buck-wheat	Bar-ley	Total
1801	10,716	14,507	1,645	2,748	---	52	29,668
1845	23,924	24,897	875	8,303	---	746	58,745
1875	13,754	13,572	499	3,795	1,302	220	33,142
1905	24,634	872	3,708	---	---	---	29,214
1910	19,211	1,718	23	1,179	516	88	22,735
1925	10,711	277	28	1,138	73	9	12,236
1930	13,278	189	38	550	37	---	14,132

From Massachusetts Censuses through 1905; others from Federal Censuses.

Table 15.

Grain Acreages in The Connecticut Valley

Year	Corn	Rye	Wheat	Oats	Buck-Wheat	Bar-ley	Total
1845	12,234	16,334	1,108	6,226	1,718	45	37,685
1855	17,383	17,689	643	4,788	278	57	40,838
1865	12,769	10,519	648	4,202	1,144	28	29,220
1875	10,269	11,797	410	2,024	988	---	25,488
1885	19,684	11,183	290	3,334	1,770	25	36,286
1895	20,148	4,510	---	823	---	---	25,481
1905	18,088	3,399	---	598	---	---	22,085
1925	9,986			1,014+			11,000

+ Estimated total for all grains except corn.

All figures are from the Massachusetts Censuses except those for 1925 which are from the Federal Census.

Table 16.

Acreages of Important Crops in the Connecticut Valley.

Year	Tob.	Potatoes	Turnips	Broom corn	Onions	Others	All
1845	155	2,766	2	1,673	1/10	1,250	7,034
1855	391	4,070	213	2,982	25	719	8,400
1865	4,884	4,262	492	499	25	106	10,268
1875	3,346	4,145	305	---	86	15,823	23,705
1885	2,255	5,343	169	---	287	21,422	29,476
1895	2,801	7,823	45	---	1,663	9,705	22,039
1905	4,143	4,821	310	---	3,994	4,865	18,128
1925	9,707	2,359	---	---	2,433	9,764	25,597

From Massachusetts Censuses through 1905; others are from Federal Census.

Table 17.

The Numbers of Livestock in Franklin, Hampden, and Hampshire Counties.

Type of animal	1900	1910	1920	1930
Cattle	66,722	64,296	53,940	52,341
Sheep	23,703	13,727	6,227	5,110
Horses	17,000	15,661	13,086	7,697
Total	107,425	93,684	73,252	65,148

From Federal Censuses.

Table 18.

Numbers of Livestock in the Connecticut Valley.

Year	Cattle	Sheep	Steer	Horses	Total
1837	---	39,107	---	---	39,107
1845	26,775	35,493	---	6,075	68,343
1855	17,460	12,059	9,205	7,411	46,135
1865	17,362	18,067	7,814	9,145	52,388
1875	18,137	6,894	3,987	6,555	35,673
1885	23,832	4,077	2,953	7,381	38,243
1895	27,612	3,291	289	9,094	40,286
1905	26,936	2,448	111	8,637	38,132
1925	18,000	---	---	---	18,000

All figures are from the Massachusetts Censuses except those for 1925 which are from the Federal Census.

Table 19.

Per Acre Value of Farm Land in the Connecticut Valley.

Year	Value, dollars
1875	45
1885	32
1895	30
1905	33
1930	61

From Massachusetts Censuses except for 1930 which is from the Federal Census.

Table 20.

Population in the Connecticut Valley

Year	Number
1765	11,272
1790	25,080
1800	29,171
1810	31,696
1820	37,091
1830	43,764
1840	48,898
1855	72,292
1865	88,164
1875	124,679
1885	150,638
1895	193,841
1910	284,805
1920	366,503
1930	407,050

From Massachusetts Censuses for 1855 through 1895; others from Federal Censuses, except 1765 which was reported when the commonwealth was a colony.

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