

*Grass in the Ten Regions*

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# The Northeastern States



## GRASSLAND IS WELL SUITED

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**G**RASSLAND agriculture is well suited to the Northeastern States. The nearness of markets for fluid milk and other dairy and poultry products has stimulated the production of these items. The rough and rolling topography of much of the land is not well adapted to growing grain and other feeds, and there is an increasing dependence on forage as a source of feed. The soils of the region need grass to improve them, and the climate favors its growth.

The climate is humid and temperate. The average annual precipitation is about 40 inches almost everywhere, although mountains may increase the rainfall in some localities and reduce that reaching the more level lands beyond. Much more important for the production of good forage is the fact that the greatest part of the yearly average comes in June, July, and August, when the requirements of the plants for water are greatest. Slightly less rainfall occurs in the spring and fall and the least during the winter. Unfortunately the summer precipitation of 12 to 14 inches often falls in heavy showers, so that much is lost through runoff, especially from inter-tilled crops.

Moreover, while the average precipitation indicates favorable conditions for growth during the summer,

the variations throughout any one year often result in periods of drought. When these occur in midsummer, coinciding with periods of higher temperatures and greater evaporation rates, the production of forage may be seriously reduced.

Moderate temperatures prevail throughout the region, and seldom limit the growth of the common grasses and legumes. The variation in the average maximum temperatures (about 90° F. in northern Maine to 100° in Delaware and Maryland) is rather small; that in average minimum temperatures is rather large (minus 30° in northern Maine to plus 5° in Maryland and Delaware). Average July temperatures range from 75° in the southern part to 65° in the northern. Temperature alone does not prevent the use of a particular species in the region, although some plants (such as Kentucky bluegrass and timothy) grow much better in the central and northern parts, while other plants (such as orchardgrass) do better in the central and southern parts.

The length of the growing season varies considerably because of latitude, elevation, and proximity to large bodies of water. On upland farms in northern New England the frost-free period ranges from 100 to 125 days; in southern New England it is about 150 days;



near the seacoast it is 160 to 180 days. In central New York, Pennsylvania, and West Virginia the growing season ranges from 140 to 160 days. Along the coast of Delaware and Maryland a period of more than 200 successive frost-free days is not uncommon.

In general, the sunshine is adequate for excellent growth of grasses. During the summer 55 to 65 percent of the total possible sunshine is available. The average number of hours of sunshine daily during June, July, and August is between 8 and 9. The relative noonday humidity for July ranges from 50 to 60 percent, except along the seacoast, where it is 70 to 75 percent.

The topography is characterized generally by long ridges of low mountains and hills that extend in a northeasterly direction. Between the ridges are valleys of varying width; they comprise most of the good farm land, but the land is generally rolling and subject to erosion where cultivated crops are raised.

Most of the soils in the Northeast were developed under a natural forest cover in a humid temperate climate. They have been classified as Podzol, Brown Podzolic, and Gray-Brown Podzolic soils. The northern part, including most of New York and sections of northern Pennsylvania and New Jersey, was glaciated. In the southwestern part the soils were generally derived from sandstones and acid shales, with smaller amounts of limestone and calcareous shales as parent materials. In the south-central area the soils were derived from igneous rock, limestone, and shale. Along the coast, south of the glaciated region, the soils were derived largely from sand and silt.

After the forests were removed, the land was relatively high in fertility and abundant crop yields were obtained. Through years of cultivation, however, much of the original organic matter was destroyed, and large amounts of plant nutrients were removed. Serious erosion and leaching followed; the productive capacity of the soil was still further reduced, so that now many of the once-fertile hillsides and even some of the more level areas have been abandoned and have reverted to less desirable grasses, weeds, and brush.

During the past two decades there has been a growing realization of what has occurred. More lime and fertilizer are used on cultivated land to maintain the supply of plant foods. The soil organic matter is being increased through the use of more fertilizer for grasses and legumes and the adoption of rotations in which the sod crop supplies nutritious hay, silage, or pasture for three or more years. Similarly, abandoned fields are being reclaimed. Thus, through grassland farming, plant nutrients are replaced, losses from erosion and leaching are minimized, organic matter of the soil is maintained, and productivity of farm land is increased.

Still, productivity and farming opportunities vary greatly, even within small areas. Over the years, the interplay of several forces and of changing methods of farming—industrialization, a heavy concentration of urban and nonfarm populations with relatively high incomes, good nearby markets that favor the production of bulky and perishable items such as milk for fluid use, the development of part-time farming, and the influence of competition from other parts of the United States—have caused many adjustments.

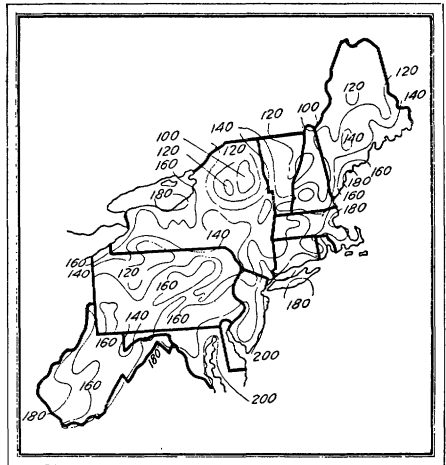
Today northeastern agriculture includes about 640,000 farms, with more than 2.5 million persons on them. It includes approximately 60 million acres of land, 22 million acres of cropland, 4 million dairy cows, 70 million chickens, and smaller numbers of other livestock. The total value of sales in

1944 was about 1.7 billion dollars, 37 percent of it derived from dairying, 21 percent from poultry, 32 percent from all cultivated crops, and 10 percent from other sources.

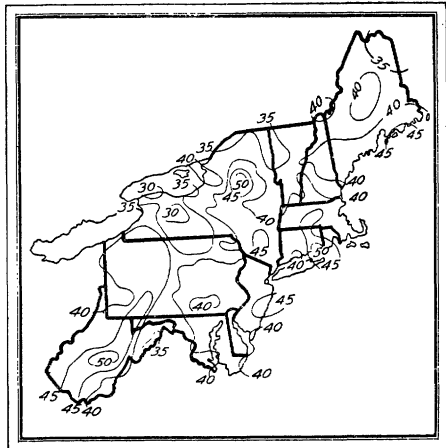
Such statistics are impressive, but farming here can be understood better by looking beyond the total to the farm units and the separate farm situations that make up the whole. From one standpoint most northeastern farms are family farms, carried on primarily by the operator and his family. From another standpoint dairy farms are more numerous than any other type in the Northeast, and some of these, particularly in northern New England and northern New York, are specialized dairy farms. Others (such as those commonly found in western New York and southeastern Pennsylvania) are more diversified. Dairying is an important enterprise in every Northeastern State, and in some sections (such as most of Vermont, northern and central New York, and northern Pennsylvania) it dominates farming.

Grassland is behind this dairy enterprise and basic to it. In terms of acres, grass is the leading farm crop of the Northeast. During the past decade an average of about 10 million acres, roughly one-half the total area of cropland, has been used for hay. Further, the Northeast has some 15 million acres of pasture, most of it grassland. Woodland occupies about 22 million acres of farm land. Corn, the crop second to hay in acreage, has averaged around 3 million acres in recent years.

Aside from dairying, northeastern farmers are occupied largely with poultry, cash crops, and nonfarm work. Poultry is scattered throughout the region, with about half of the chickens in flocks of fewer than 400 birds. Even in New England, where poultry farming is more specialized than in other sections of the Northeast, roughly 40 percent of the birds are in flocks of fewer than 400, and about 10 percent are in flocks of fewer than 50. Many of the small flocks are on part-time farms or units that are classified as



Average length, in days, of the frost-free growing periods in the Northeastern States.



The average annual precipitation, in inches.

farms but are really little more than rural homes with gardens.

Cash crops, on the other hand, tend to be concentrated in certain areas where soils and topography are favorable. Much of the cash-crop production is highly specialized—potatoes in northern Maine, for example, or fruit along the Lake Ontario border of New York, truck crops in parts of New Jersey, Maryland, and Delaware, apples in the West Virginia panhandle, and tobacco in southern Maryland. Equally important in some areas, however, is the cash-crop production on dairy

and general farms, such as found in western New York and the Piedmont areas of Pennsylvania and Maryland.

A considerable amount of nonfarm work is characteristic of farming in the Northeast, particularly in New England near manufacturing centers. The industrial development of the region makes it possible for many people to live in the country and yet depend primarily on nonfarm work for their cash income. Often they do enough farming so that their units classify as farms and thus become a part of the over-all farm statistics. For the region as a whole, 20 percent of the work done by farmers in 1939 was of the nonfarm type. For some sections the percentage was higher, amounting to more than 30 percent in the less productive farming areas.

Northeastern agriculture was not always like the picture we have sketched. In 1900 the number of farms in the region and the number of acres in farms were considerably larger than at present. Types of farming have also been changing. In general, the shifts have been away from beef cattle, sheep, and grain production toward dairying, poultry, fruits, and vegetables. As elsewhere, farming here has become more commercialized, more specialized, and more highly mechanized. In addition, the average farm is becoming larger, and production is concentrating on the better land. These changes have been in response to technological developments in farming and competition from other regions. There is nothing in sight to indicate that changes of this type are at an end.

Grass is a major item in northeastern farming, as the tremendous acreage of grass reported by the census would indicate. Acreage alone, however, does not tell the whole story.

Grass is not an end in itself, but rather a basis for livestock production; the progressive dairy farmer of the region is coming to realize that his success or failure depends to a considerable extent on how well he manages his grassland. Hay and pasture provide

most of the roughage for his dairy animals and, if his is an average set-up, this forage represents perhaps 50 percent of the total feed nutrients used by the herd. If he handles his grassland so that he gets good yields of high-quality hay and grazing, the resulting income will be better than if he has a limited supply of inferior forage.

The production of nutritious forage as feed for livestock is increasing as its place in the farm program is becoming more fully recognized. A decade ago pastures and hay lands were generally considered separate entities. With a more liberal application of fertilizers, however, the quantity and the nutritive value of forage have been increased; the growing of larger grasses and legumes under improved management treatments for use as hay, silage, or pasture has made the distinctions between pastures and hay lands less evident.

At one extreme, land which is too rough, hilly, wet, or otherwise not adapted for the use of farm machinery is used for permanent pasture and from this all herbage is harvested by grazing animals.

At the other extreme, good cropland is used primarily for cultivated crops and is less often grazed. An increasing amount of land of intermediate fertility and topography is being seeded to grasses and legumes for use as intensively managed semipermanent or rotation pastures. Silage or hay may be harvested from these fields in June; later in the summer, when the production of permanent pastures is limited, the fields may be grazed.

Obviously, no single program of forage management will fit all, or even most, of the northeastern farms. Opportunities will vary according to physical conditions, such as soil and climate. They will also vary according to type of farm, markets available, the personality of the operator, and other factors that affect the problems on the individual farm. A dairy cash-crop farm in southeastern Pennsylvania is in quite a different situation and has

different opportunities from a specialized dairy farm in northern Vermont. Likewise, a farm with a large acreage of permanent pasture presents a problem different from that of a farm primarily dependent on cropland pasture. Under some circumstances it may be

good business to make heavy purchases of concentrates; in others, it may pay to make the most use of forage. Forage management, to be effective, must be related to management of the farm business as a whole and be part of it.

## PERMANENT PASTURES

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THE GREATEST acreage of grazing lands in the Northeast is in permanent pasture.

When the land was first cleared, even the soil on fairly steep slopes produced good crop yields, but after those lands had been tilled for some years, their fertility was reduced by losses from cultivation, erosion, leaching, and crop removal. Furthermore, the lands often were not adapted to modern equipment. It was no longer economical to crop them, and such fields were permitted to go to grass.

Thus pastures have been relegated to the more extensive and less productive areas of the farm where plowing is difficult and erosion hazards are greatly increased by tillage. The belief is general, therefore, that land which cannot be plowed easily or land from which the fertility has been removed by a continuous cropping system will make good pasture more or less by itself. It is true that cleared land which is grazed will revert to grass, but farmers have not fully realized how low is the quality and how limited is the amount of the herbage produced by such fields.

Environment determines the kinds of plants that grow on any land. The factors of environment are many, but several that affect pasture plants are moisture, temperature, soil fertility, and grazing management. All, reacting together, determine the species that will persist on any area. In an all-season grazing-management system, soil fertility becomes a leading factor in determining the predominant plants.

In this region, on land of low fertility, povertygrass prevails. It occurs on the poor hillside pastures from West Virginia to Vermont; it indicates a need for phosphate, usually lime, and sometimes potash. In the southern part of the region, broomsedge also indicates a condition of low fertility. On pastures of slightly higher fertility sweet vernalgrass and bentgrass occur in the cooler and more moist areas; Canada bluegrass is found in the drier and warmer parts. As the fertility level is raised still further, either from naturally more fertile soils or by the application of lime, phosphate, and manure, Kentucky bluegrass and white clover predominate.

This cycle of the occurrence of various grass plants in a pasture can proceed in either direction. Good pastures of Kentucky bluegrass and white clover may revert to povertygrass if plant nutrients are continually removed and none returned; a povertygrass pasture may be changed into a productive Kentucky bluegrass-white clover pasture if the necessary plant nutrients are added. Thus, change always is a factor for good or ill.

All stages in the improvement or degradation of these various types of permanent pastures may be observed in almost any part of the region. Pastures on droughty soils or steep slopes may not be economical to improve. Such areas probably should be reforested. There are also many acres of potentially productive pasture land on which Kentucky bluegrass and white