

1-1-1916

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Recommended Citation

Hodgson, E. R. (1916) "The Woodlot in Relation to Farm Management," *Ames Forester*: Vol. 4 , Article 12.
Available at: <https://lib.dr.iastate.edu/amesforester/vol4/iss1/12>

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The Woodlot in Relation to Farm Management

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When one thinks of forestry, lumbering, and kindred subjects there come to mind pictures of a wild and distant region, pioneer conditions and things done on a huge, rough scale. The idea of forests and their utilization seems inseparable from that of vast tracts of timber, remote from settlement and cultivation. Particularly does this seem true to dwellers of the prairie who are not usually familiar with timbered regions. In fact it is true to a large degree, for many extensive forest areas are wildernesses, rough and mountainous and most of the lumbering is done under pioneer conditions. In other places lumbering is the forerunner of cultivation as in the central hardwoods and southern pine belt where the topographic and climatic conditions are favorable.

While this is true, that many forests are in wild places and lumbering most frequently carried on remote from cultivation and settlement, yet there are also many thousands of small bodies of timber distributed among the farms in the cultivated districts which are in eastern sections called "woodlots." These tracts of timber are intimately connected with the farm and its management and are usually remnants of more extensive forest which has been gradually cleared away to make the farms. On the prairies they are, for the most part, planted.

These small tracts of timber are a part of the forest wealth of the country and their disposal and treatment is of both public and private concern. On account of their location and distribution the utilization of the woodlots is different from the use of large lumbering tracts, as a rule, and is closely related to the general system of management of the entire farm in their respective localities.

In the aggregate those small woodlot holdings are end

mous and have until recent years received insufficient consideration. Lately attention has been directed to their importance and value and a number of publications by the states and Federal Government have been published or are now in the course of preparation. Most of these publications deal with the marketing of the timber products as this is the feature in which the owners are most keenly interested at the present time. It is the feature whose realization is forced by the practical necessities of the present moment while the care and management of the woodlot as a permanent source of income and general advantage to the farm, is overlooked. The latter feature is of equal importance and is primary where the woodlot is to be maintained as a permanent part of the farm and not regarded as a stage in its improvement by clearing, and consequent extension of the cultivated area. To secure reliable practicable information on all sides of the subject its study has been followed in a number of directions.

The phase under discussion in this paper has been designated woodlot economics, and seeks directly to correlate the practical economic management of the woodlot with that of the farm to which it belongs and indirectly to the general community. It was inaugurated at the beginning of the field season in 1915 by the Forest Service and the Office of Farm Management of the Department of Agriculture as a co-operative project. So far the study has been confined to the general eastern half of the country, extending as far west as the prairie states. As stated before this work deals mainly with the economics of the woodlot and is a carefully planned attempt to secure definite figures and basic facts on woodlot and farm management conditions from the field and on a number of selected representative localities and to correlate and compare the information obtained.

The method of doing the work was developed from a number of conferences between the two offices directly concerned in which the lack of essential data of this character was shown, the points needed and means of securing them gradually worked out. Some forty or fifty questions designed to bring out information along specific lines were framed up and placed on a set of cards for use in the field. Answers to the

same questions will be obtained from 50 to 75 farmers in each selected locality and the results tabulated.

While it is perhaps not necessary here to give each question, they cover the following points: size and value of farm, distance to market, description of soils and topography of farm and woodland, different kinds, size and age, density of stocking, and an estimate of its value, also an estimate of the value of the woodlot for windbreak and shade purposes. Questions are asked on the pasture value of the woodlot, how many mature animals it will support through the pasture season and the proportion this amount is of those pastured on the entire farm. Another point to complete the survey of the woodlot value is the amount of land in it which can be cleared and make good farm land.

A classification of land on the farm is made as to acreage and value: plowland, permanent meadow, permanent meadow not in pasture, woodland pastured, woodland not pastured, and waste land.

In addition to the indirect advantages and values enumerated, a careful canvass is made of the average quantity and value of the woodlot products used and sold annually, such as firewood, fenceposts, poles, railroad ties, lumber, maple sugar products, etc.

In a line of inquiry to develop the advantage of the woodlot in furnishing labor to the farm at slack times, information is requested as to the number of days work obtained annually in harvesting and marketing woodlot products for man and team, the season at which the work is done, the kinds of winter work available on the farm and whether they serve to keep the farm force occupied through the winter.

Information in regard to the amount and character of the annual expense in keeping up the woodlot is asked. This includes usually taxes, fences, supervision, etc.

Three questions are asked which are designed to bring out the permanency of the woodlot; the number of acres of woodlot actually needed to supply the needs of the farm for woodlot products, whether the present woodland is preferred left in woods or cleared and used for other purposes, as for pasture if not suitable for cultivation, and how many acres now clear



Chestnut and mixed hardwood woodlot. Well protected. Litchfield County, Conn. By courtesy U. S. Forest Service.



Beech woodlot, not properly protected or handled. Henry County, Indiana. By courtesy U. S. Forest Service.

on the farm and in pasture or crops which the owner believes should be in woods. The foregoing questions comprise practically all the information requested.

Of the sixteen areas selected for field work, seven were completed the past field season. They are as follows: northeastern Connecticut, northern Vermont, southeastern Pennsylvania, central Indiana, central Piedmont region in North Carolina, the coastal plain at the junction of the fall line in northern South Carolina, and central Tennessee. The nine areas which remain are distributed as follows: northern Alabama, northern Louisiana, southern Missouri, southern Indiana, northern Indiana, northern Wisconsin, southern Minnesota, eastern Iowa, and southeastern Nebraska.

These areas are confined to a county and are carefully selected for soil, topography, timber conditions, type of farming, and general economic conditions. The Connecticut locality, Windham County, is in the heart of a manufacturing district whose power is largely furnished by waterfalls along the stream courses. The population of the county is 48,361 and markets are good, both local and distant. According to the census 37.6 per cent of the area is wooded and the present survey of a portion shows the percentage of wooded area as 35.3. For the entire State of Connecticut the percentage of farm homes to total homes is 10.6 per cent and is decreasing slightly; 31.2 per cent of the owned farm homes in the county are encumbered, and 13.4 per cent of the farm homes are rented. The land is generally rough and stony with many granite ledges. The usual northern hardwoods are found, of which chestnut forms a large proportion. White pine occurs in the northern part. Fuel wood, lumber, ties, fenceposts, and poles are the principal products. Dairying is one of the important farm industries and pasture is in demand near the towns.

The Vermont locality, Franklin County, is much the same general type as the Connecticut, with the exception that there is very little manufacturing. Dairying is one of the principal industries and maple sugar making furnishes work in the early spring. In the part of the county where the information was collected the farm land is about the average for the

county as it is located between the best farming part and the hilly timbered part. The population of the county is 29,866 and decreased 1.1 per cent during the decade from 1900 to 1910. The census gives 21.1 per cent of the county wooded and the present survey gives 25.4 per cent. The percentage of farm homes to total homes for the entire State is 36.6 and 47.4 of the farm homes of the county are encumbered. 24.9 per cent of the farm homes are rented. Much of the land is ledgy but on the whole is much better than the locality in Connecticut.

The northern half of Chester County, which is the locality chosen in southeastern Pennsylvania, is in a highly developed farming region where progressive methods are followed and the population frugal and industrious. It is a dairy and grain raising region with hay and cattle growing to some extent. Since the county is near Philadelphia and well cultivated, the population is large, 109,213. For the entire State the per cent of farm homes to total homes is 13.1 and has decreased slightly since 1890. The per cent of farm homes encumbered in the county is 55.7 and 29.1 per cent of the farm homes are rented. The per cent of wooded area is given by the census as 12.2 and by this survey as 17. The greater part of the land in the valleys is tillable but the ridges are usually timbered and not capable of cultivation. The forest is hardwood with large home consumption and ready sale in most of the locality.

Madison County in central Indiana is the locality chosen to represent the best farming part of the State. It is a flat, fairly fertile region originally solid forest with much wet ground. The census shows now 11 per cent of the area wooded and the present survey shows practically the same 10.9 per cent. The population of the county is 65,224. For the entire state the percentage of farm homes to total homes is 32 per cent and has decreased from 44 per cent in 1890. In the county 35.5 per cent of the farm homes are encumbered. 36.1 per cent of the farm homes are rented. The timber is all hardwood and belongs to the general oak-hickory formation, with many species of hardwoods associated, as beech, ash, and maple. While the markets are good as a rule for imple-



By courtesy U. S. Forest Service.
Sugar maple grove, Orange County, Vermont.



Photo by W. R. Mattoon.
Badly eroding, clear cut, steep slope. Protective work with brush not entirely successful. East Tennessee.

ment and handle stock, there is practically no market for fuel wood and little use for it on the farms as coal and gas are generally used. This county is in a gas region and had a boom about 20 or 25 years ago and considerable local natural gas is still used for fuel on the farms. A pipe line from West Virginia supplies the towns with gas and some of the farms. Where gas is not available coal is used, which leaves little room for wood fuel, cutting off the opportunity to dispose of waste wood in the woodlot. Another important point is the character and high price of the land on which the woodlot is situated which greatly increases the carrying charge for taxes and makes it necessary for the woodlot to compete with cultivated land in returns. The tendency here is to clear out all the land for cultivation in order to secure the greater returns yielded by annual crops.

The locality which is chosen for the Piedmont Region on the Atlantic coast is Randolph County in central North Carolina. It is in rather a remote region of rolling and hilly land fairly typical of a certain section of the Piedmont. The census gives 60.7 per cent of the area as wooded and the present survey 58 per cent. The population of the county is 29,491 and is increasing slightly. The percentage of farm homes in the entire State is 55.5 per cent and has decreased but slightly in the last census decade. The percentage of farm homes encumbered is 19.3 per cent for the county, and 21 per cent of the farm homes are rented. There is very little stock raised in the county except that needed for home use. The wild pastures are not of great value and most of them are not fenced. As there is a stock law in force the unfenced pastures can not be utilized. Agriculture in general is in somewhat primitive state. The home consumption of fuel wood is large, as most of the farms as well as many of the town residences have fireplaces. A market exists for fuel wood, implement and vehicle material, but in many cases the hauling distance is too great.

Marlboro County in northern South Carolina at the edge of the "Fall line" is the locality selected for the Coastal Plain. It is in the cotton belt and with very fertile land for the most part. The county was once covered with longleaf and loblolly pines, with hardwoods in the wetter parts. Cot-

ton growing is the chief industry although some corn and other crops are grown. Most of the holdings are large plantations and worked by tenants. The population is 31,189, showing an increase in the last census decade of 12.8 per cent. The census gives 32.3 per cent of the area wooded while the present survey shows 42.2 per cent. The percentage of farm homes to total homes is 53.4 per cent, and 17.6 per cent of the farm homes are encumbered. 81.5 per cent of the farm homes are rented. The markets are not particularly good except for lumber but there is a large use of fuel wood on the plantations. Most of this land will be cleared up in time except the swamps which are difficult to drain.

Rutherford County in central Tennessee represents the southern extension of the central hardwood forest. Red cedar is also a well developed type and figures prominently in the use made of the woodlots. The locality is in the limestone district and the soil is fairly fertile, except where the bed rock is near the surface, where occurs what is known as "glade" land. Phosphate deposits occur in the extreme western edge of the county. The surface is mostly rolling with some of the land quite hilly around the edges of the county. There is some cotton raised in parts of the county but the most general industry is the production of grain, hay and live stock. Some dairying is done and is likely to increase. The population of the county is 33,199. For the entire State the per cent of farm homes is 51.1 per cent; 12.1 per cent of the farm homes are encumbered and 42.3 per cent of the total are rented. The wood market is fairly good and large quantities of red cedar posts and poles and hardwood material are used. There is a strong tendency to clear off the land for cultivation and pasture, for the latter purpose even when of the most rough and stony character.

Of the localities remaining, from which data has not been obtained, the one in northern Alabama represents the hill section along the Tennessee in Morgan County, with a certain type of soil and methods of farming. Ouachita County in northern Louisiana represents the western extension of the southern pine belt with associated swamp hardwoods. A county in southern Missouri is chosen to represent the general



Photo by W. R. Mattoon.
Farm buildings and woodlot of a progressive farmer, East Tennessee.



Photo by W. R. Mattoon.
Six hundred cords of chestnut acid wood in the yard of extracting plant, Carter County, Tennessee.



Photo by W. R. Mattoon.
Hauling red and white oak logs to railroad, Jonesboro, Washington County, Tenn.

Ozark region of Missouri and Arkansas. There are two counties selected for Indiana, one in the southern hill portion and the other in the northern part. These counties are in addition to the one already canvassed for the central belt and all three represent belts which extend outside the State. One locality is chosen in northern Wisconsin to represent the timber and farming conditions of both northern Minnesota and Wisconsin and one for the southern part of Minnesota. The two remaining localities represent conditions in the prairie region and will be selected in eastern Iowa and southeastern Nebraska.

One of the main objects of the study is to show the capitalized value of the woodlot land based on net returns from the products and an interest rate of 5 per cent compared with the actual sale value of woodland. In arriving at this value the gross value of all woodlot products, used on the farm and sold, is found and from this amount is deducted the cost of maintaining the woodlot and the labor cost of getting out and marketing the products. For the Connecticut locality the estimated value of woodlot land average \$8.13 per acre and the capitalized value of \$10.80, leaving a balance of \$2.67 per acre in favor of the woodlot business. This is due to the fact that the land is rough and ledgy with low farming values. In the central belt of Indiana the farming values are high with level fertile land easily cultivated which makes the showing decidedly against the woodlot on a strict financial basis. Here the average estimated value of woodlot land per acre is \$128.31, and the economic value \$26.20, leaving a balance against the woodlot of \$102.11. In other words, land which will sell for \$128 per acre is used for woodlot purposes giving returns on a \$26 per acre valuation only. The character of the land and its suitability for farming determines largely the value of the woodlot business. In Chester County, southeastern Pennsylvania, there is good farmland but the woodland is usually on the rougher parts. Here the values are more nearly equal as the estimated value per acre is \$18.16 and the economic value \$28.40, leaving a balance in favor of the woodlot of \$10.24. In central North Carolina the economic value is low—\$5.80 per acre—and the balance

against woodlot is \$6.40. This is mainly due to lack of market and low value of fuel wood.

If the direct returns included all the values and advantages of a woodlot on a farm, the showing would be good for the timbered districts where the land is not agricultural in character. But there are other advantages to the farm as a whole, such as shade for stock, protection from storms, pasture value, prevention of erosion on steep slopes and utilization of inferior land of little or no value for other purposes.

Where the woodlot is perhaps related most closely to the welfare of the farm in its intelligent and systematic management is in furnishing work for men and teams through the slack period, usually the winter. Even where the returns are only sufficient to pay the expenses or part of the expenses of the labor in getting out the material it raises the total income of the farm as the expenses of carrying necessary work stock, and help through the winter are eliminated or reduced.

The convenience of a ready supply of wood material at wholesale cost for repairs on the farm is no small item, particularly in the rush season.

The following are important points relating to the management of the farm and woodlot:

1. Region where located, whether generally timbered or untimbered.
2. Agricultural value of the land—its fertility and ease of cultivation.
3. Whether there are home needs for woodlot products and a steady market value for the surplus.
4. Value of direct returns including wood products used at home and sold.
5. Protection value, i. e., windbreak, shade and erosion.
6. Grazing value.
7. As a means of fully utilizing inferior land on the farm.
8. As a means of furnishing labor for idle help and work stock through the winter or other slack period.

The Des Moines Sawmill Co., Iowa, it is reported, manufactures more gunstocks than any other factory in the world.