



The need for
**FARM
FORESTRY**

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by **RAPHAEL ZON**
R. N. CUNNINGHAM

AGRICULTURAL EXTENSION DIVISION
UNIVERSITY OF MINNESOTA

The Need for Farm Forestry

RAPHAEL ZON AND R. N. CUNNINGHAM
LAKE STATES FOREST EXPERIMENT STATION

In talking about the forests of Minnesota, most persons refer to the commercial forests in the northern part of the state. It was these northern forests which made Minnesota, for a time, one of the great timber-producing states of the Union. It is the remnant of these virgin forests which now offers the greatest appeal to tourists and summer vacationists. It is also the vast stretches of cut-over and burned land in these northern woods which receive the greatest attention from foresters and agricultural economists.

Yet in many respects it is the less impressive and the more or less taken-for-granted patches of woodland on the thousands of Minnesota farms which are at present more significant from a social and economic standpoint and which offer the greater promise for the future. For these reasons the farm woods, an inseparable part of the farm, are bound to receive greater consideration along with the entire farm problem.

These farm woods, although they have been seriously mistreated, are accessible, naturally productive, and easily protected. The stands reproduce readily, and in some places the acreage of woodland is actually increasing. With exhaustion of commercial timber supplies, many factors favor the rejuvenation and development of these woodlands on farms.

FARM WOODS—A PART OF FARM ECONOMY

Wood as a Farm Crop

Considering the State of Minnesota as a whole, farm woods of all classes occupy 5,383,000 acres, or 11 per cent of the entire land area. This area constitutes 16 per cent of all farm land or 27 per cent of all forest land in Minnesota.

The cash income from forest products from these farm woods according to the Bureau of Agricultural Economics was \$1,787,000 in 1934. Although this income ranked far below that derived from grain crops, flaxseed, and potatoes, it was nevertheless a valuable contribution in a year of meager farm returns.

A more important contribution of the woodlands was in material for direct use on the farm. In 1934 the firewood, posts, barn timbers, and other farm-woods products cut for use were valued at more than \$5,000,000. In 1929, a year of better prices, the valuation given forest products cut for sale and use in Minnesota was \$10,757,000.

The Protective Value of Farm Woods

The value of farm woods cannot be measured fully in dollars and cents, however. In southeastern Minnesota much of the soil on steep land would quickly wash away without the protection of trees. Stands of timber on these erodable slopes provide effective insurance against the damaging of fertile lands below and serve to check the run-off and soil washing which lead to floods.

Farm Woods—A Social Asset

The value of groves and windbreaks in protecting crops and livestock and in making life more comfortable on the farm far outweighs their value as a crop, particularly in the prairie counties. In many places game, berries and nuts, maple sirup, and other by-products of the forest are important considerations, not to mention the opportunity which the forest offers for encouraging tourists and summer visitors.

Work in the Woods—An Important Source of Income

In 1934 nearly one-third of the farm operators, or 64,700 in all, were obliged to seek part-time employment outside the farm to support themselves and families. The exact number of those who found part-time employment in lumber camps, in small sawmills, or on pulpwood trucking jobs is not definitely known, but certainly it was large. A survey, for instance, of a group of farms in the vicinity of Northome, Minnesota, in 1936 indicates that almost two-thirds of the farmers are obtaining a part of their income from woods work. Less than one-fifth receive their entire income from the farm. Twelve per cent have no outside income except public relief, and 7 per cent find work on roads, in the mines, or in various service trades.

Thus, the woods which are scattered through the farming areas of Minnesota are an important item in the farm economy, since they not only furnish material for sale to industry and for use on the farm, but also offer an opportunity for part-time employment and yield various intangible returns as well.

FARM WOODS AND FOREST INDUSTRIES

With depletion of virgin timber reserves in northern Minnesota, and with the rise of agriculture, milling, mining, and other industrial pursuits, forest industries have lost some of their importance. Forestry now ranks far below agriculture and manufacturing in employment of workers, and forest industries produce but a small part of all products manufactured in the state.

In spite of this shrinkage, forest industries are still vital to certain communities in the northern part of the state. The agricultural developments surrounding many communities depend quite largely for their markets, either directly or indirectly, upon forest industries. For example, the sawmills, pulp and paper mills, and other wood-using plants

at Cloquet are not only the sole support of a town of 6,500 people, but they also directly influence the social and economic life of the entire area within a 40- or 50-mile radius. Wood-using industries at International Falls similarly influence the entire development of Koochiching County. The paper mills at Grand Rapids, Brainerd, Sartell, and Little Falls stimulate employment and create markets for all sorts of farm products, including wood, and they contribute also to the maintenance of roads, schools, and other necessary local services. Smaller forest industries here and there are, in the aggregate, equally important to the local farm population. Scattered over the state, for example, are more than 1,000 small sawmills, each of which offers 2 weeks' to 3 months' employment to several men.

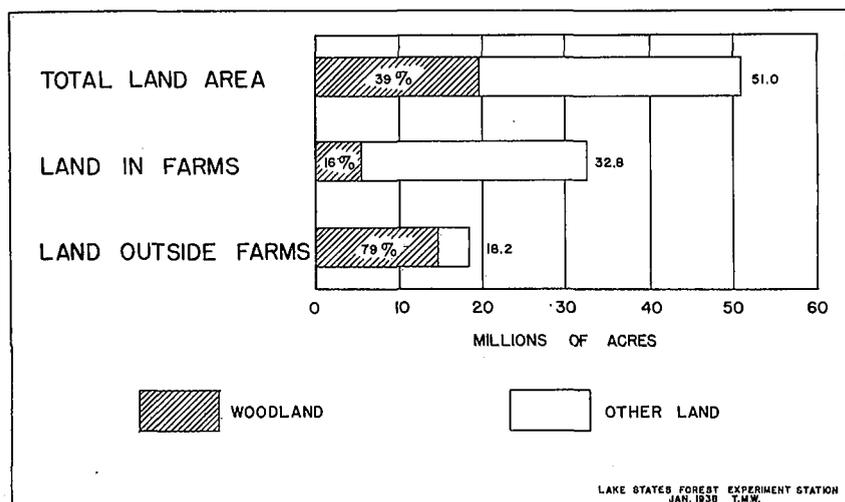


FIG. 1. PERCENTAGE OF LAND IN WOODS, MINNESOTA, 1935

Many operating companies, particularly in Grand Rapids, Cloquet, International Falls, and the Iron Range towns of northern Minnesota, are finding it more satisfactory and economical to pay farmers for logs and pulpwood delivered at their mills than to operate their own camps. A typical example is that of a paper mill in International Falls, which during the 1935-36 season purchased some 80,000 cords of pulpwood, or about half of its requirements, from 450 individual farmers and small contractors. Only five orders were for amounts of more than 2,000 cords.

In southern Minnesota the tie-up between industries and the farms has been less close. Here such industries as furniture and refrigerator factories, sash and door mills, and even box factories purchase their raw materials from the large lumber yards, which in turn obtain most of

their supplies from the Pacific Coast, the South, or other distant sources. The farm woods could provide a greater proportion of these supplies if it were not for the fact that the marketing of this local material is unorganized, and is therefore irregular. Nor is the quality of a uniform standard.

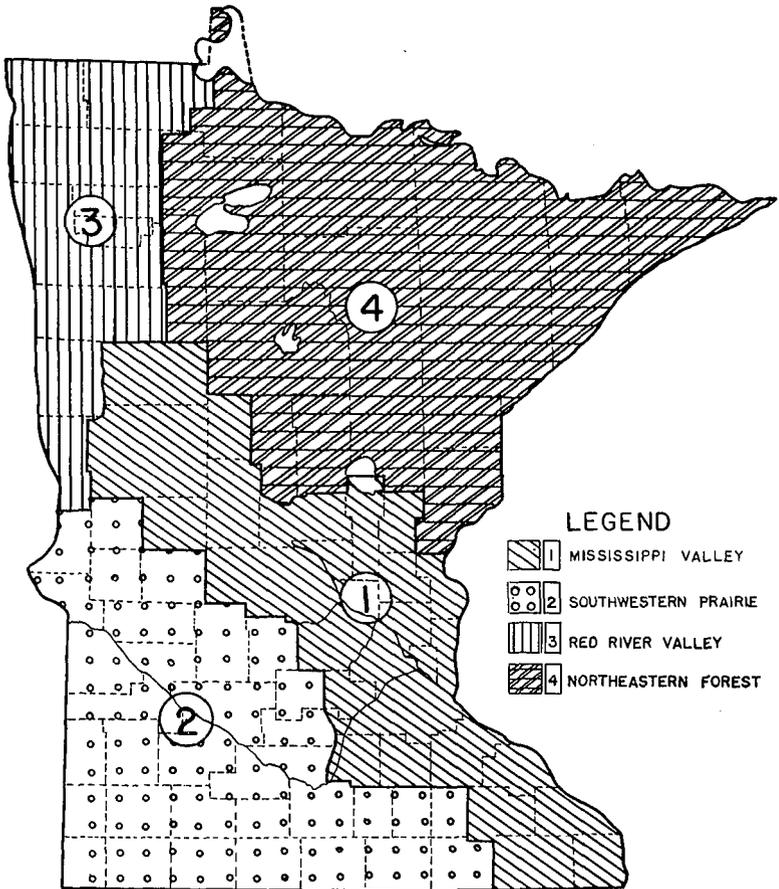


FIG. 2. FARM WOODLAND DISTRICTS OF MINNESOTA

PRINCIPAL FARM WOODLAND DISTRICTS OF MINNESOTA

Such is the general picture of farm woods in their relation to the economic life of Minnesota as a whole. The economic contribution of the woods and the possibilities for their development, however, are not the same over the entire state. There are four distinct areas in which farm woods hold positions of widely varying importance (Fig. 2).

1. The Mississippi Valley

South-central Minnesota originally supported fairly dense stands of hardwood. Throughout much of the area the oaks were predominant, but there were also several large areas of sugar maple, elm, and basswood (the "Big Woods"), and toward the north a considerable volume of white-pine saw timber was found by the original settlers. The bottomlands along the Mississippi and its tributaries supported mixtures of elm, cottonwood, soft maple, hackberry, and ash. Sandy moraines and outwash plains north of the Twin Cities were occupied by a scrubby growth of bur oak and jack oak.

Two-thirds or more of this area was originally wooded, but in the settlement and development of the region most of the well-drained, level areas have been cleared, so that only about one-fifth is now in woods. More than 80 per cent of all land is now included in farms, and there are about 78,000 individual farms in the area. The average farm contains 135 acres, of which 74 acres are in crops, 31 acres in woods, and the remainder in pasture, farmyard, and roads.

In 1929, more than half the farms reported cutting forest products of one kind or another, of which the average value was \$121 per farm. Firewood was the principal product, but 24 per cent of the farms yielded posts, 5 per cent yielded sawlogs, and a few contributed pulpwood, ties, and poles.

Years of cutting, burning, and pasturing have left most of these farm wood lots in southern Minnesota in a badly run-down condition. The best trees have been cut for logs, piling, and ties, while overmature, hollow, and defective trees have been left standing. Heavy pasturing has prevented normal restocking, and fire has favored the spread of such inferior tree species as ironwood, aspen, and paper birch, as well as various types of brush and weeds.

2. The Southwestern Prairie

Southwestern Minnesota is even more intensively farmed than the southeast: 95 per cent of the land is included in some 70,000 farms. The average farm has 186 acres, with 140 acres in crops and only 5 acres in woods.

The woods consist mainly of native cottonwood, elm, and green ash along stream bottoms or in small plantations around the farm buildings. A few remnants of early "timber claim" plantations still persist; six farms out of seven have some sort of tree plantation. Most of these, however, were very meager to begin with, and all have been injured and thinned out by recent drought.

One-third of the farms in this region cut forest products in 1929, the average value being \$66 per farm. Here, again, the principal product was fuel wood, the average yield from each of 23,059 farms being about

8 cords. Six per cent of the farms cut fence posts; 2 per cent, sawlogs; and a few, pulpwood, ties, and poles.

3. The Red River Valley

Lying in the transition zone between prairie and forest, the eastern edge of the Red River Valley contains a fairly large acreage of wild land not highly productive either for field or timber crops. As a whole, the district is agricultural, 78 per cent of the land area consisting of farms and only 10 per cent of farm woods. The average farm contains 268 acres, including 182 acres of crops and 33 acres of woods.

Along the Red River and some of its tributaries are narrow strips of typical bottomland hardwood timber: elm, green ash, and soft maple. Around most of the farms are sparse plantations of hardwoods, with occasional groves of spruce or pine. To the east is a wide expanse of low-lying, wet country, with patches of aspen and spruce circling the vast open marshes. Scrubby bur oak is found on some of the uplands.

Twenty-eight per cent of the farmers reported cutting fuel wood in 1929. Five per cent of them cut posts, and 1 per cent harvested trees of sawlog size. Because of the inaccessibility of these forests to pulp mills, there are few possibilities for utilizing the small spruce and aspen for pulp. The average value of products cut in 1929 was \$106 per farm reporting.

4. Northeastern Minnesota

While in the southern and western parts of Minnesota farming is the dominant land use and woods are but an adjunct to the farm, in the north the majority of land is still in forest use, and in most localities farming is but an adjunct to woods work. Not quite 20 per cent of the land area is in farms, and less than 7 per cent is cropped. The average farm contains 108 acres of land, with 34 acres in crop and 56 acres in woods.

In concentrated farming districts such as those around Brainerd, Park Rapids, and Pine City, farming is like that in southern Minnesota as regards the relation of forest crops to other farm crops. There is only slightly greater dependence upon forest products and outside employment. In the more remote districts, however, it is common to find settlers almost wholly dependent upon the sale of pulpwood and ties, or upon work outside the farm, as a source of income.

More than half of the farmers in the district reported the cutting of some form of timber in 1929. The value of timber taken from the average farm was \$207. In addition to cutting fuel and fence posts, as in the other parts of the state, farmers in this district cut 52 million feet of sawlogs and 138,000 cords of pulpwood.

Unfortunately, most woodlands within farms in northern Minnesota have been cut over within the last 30 years and have been swept by one

or more forest fires, many of which have been set intentionally for land-clearing purposes. Thus the characteristic cover is a poor stand of young popple, too small to yield products of much value.

VALUE OF FARM WOODS NOT REALIZED

In many ways the farm woods of Minnesota enjoy advantages over the commercial forests of the state in the production of timber. In general, they are in a part of the state which is favored by better soil and

climate. They contain mostly hardwood species, and natural reproduction by sprouts or by seed can usually be depended upon. They are close to the owner's home, and are thus easy to supervise and protect. They are also close to transportation routes, and are hence more accessible to markets. Forty per cent of the farms in Minnesota are located on good gravel or paved roads, and in the southern districts 45 per cent are so located. In spite of these natural advantages, however, the full potential value of the farm woods is not thoroughly realized.

The failure of the farmer to capitalize on these advantages is chiefly due to his neglect of his woodlot. Most of the farm woods have been overcut and depleted of the better kinds



FIG. 3. A TYPICAL MINNESOTA FARM WOOD LOT

Scattered open stands of large decadent trees usually of inferior species. Firewood is the only product.

of trees. Natural reproduction is prevented by overgrazing and by frequent fires. Then, too, the farmer often does not know the quantity and the quality of the timber he actually has and is therefore more often than not a victim of unscrupulous timber buyers. He does not know the markets or the standard requirements for different forest products and hence gets only a fraction of the revenue he should receive. If he treated any of his other crops with the same amount of neglect, his yields would be disappointingly small. Yet, in spite of all the abuse to which he subjects his wood lot, nature unaided prevents it from becoming utterly unproductive.

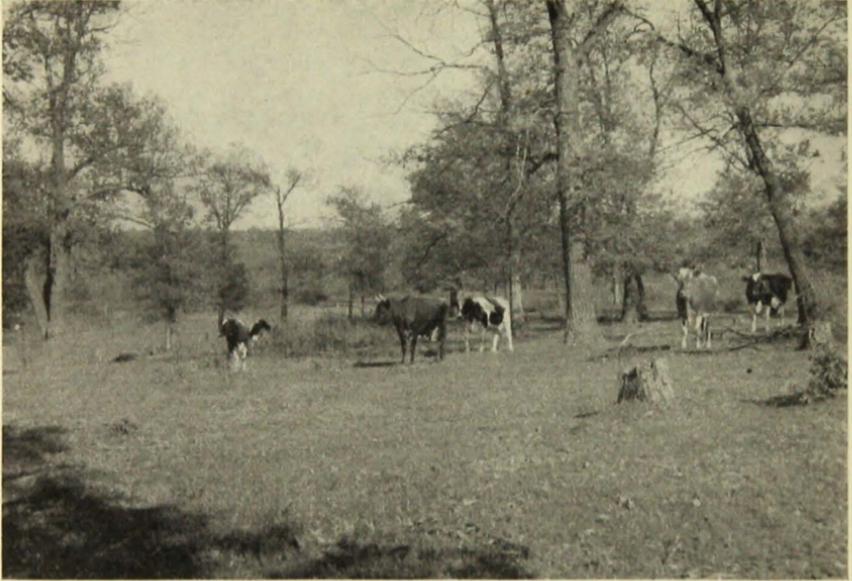


FIG. 4. A TYPICAL MINNESOTA FARM WOOD LOT

Cattle, horses, or sheep roam at will, and fires are frequent in the farm woods.

One of the chief obstacles to private management of forest lands in general has always been the long period of waiting between the time when the seedlings appear and the time when the trees are large enough to cut. However, when farm woods are well managed, such long waiting is unnecessary. In fact, it should be possible for the farmer to cut each year an amount of wood equal to the year's growth.

Having 40 acres of good hardwood timber, and harvesting only the mature and overripe trees in a selective cutting each year, a farmer should be able to cut 6,000 feet of saw timber worth possibly \$10 per thousand feet, in addition to enough fuel to heat his buildings and enough posts to keep his fences in good repair. In order to obtain such yields, it would be necessary not only to cut properly, but also to exclude livestock and protect the woods from fire. As a preliminary step, it would also be necessary to cut out the old, deformed, and worthless trees which at present clutter up most of the woodland areas and occupy space which should be used by young thrifty trees. While the income from such cutting might not exceed that received at present, it could be obtained year after year without destroying or depleting the wood lot. Under usual methods of handling, the wood lots are steadily deteriorating and will soon become totally unproductive.



FIG. 5. A TYPICAL MINNESOTA FARM WOOD LOT

Gullies and other evidences of erosion are common in wood lots in southeastern Minnesota. Grazing, fires, and erosion are responsible for a complete absence of young growth.

THE NEED FOR PUBLIC AID

A resource as important as the farm woodlands of Minnesota certainly deserves greater attention than it has heretofore received from extension workers, federal and state conservation agencies, and research departments. This is true because a successful program of development will enhance the welfare of a large section of the state's population. Such a program calls for no large investments in land and equipment, but can, on the contrary, be put into effect simply and quickly without serious drain upon public treasuries.

Extension Work

For many years agriculture in Minnesota has been supported by an intensive program of extension and education. The Agricultural Experiment Station, the well-trained and specialized extension staff of the University, and the agricultural agents in each county all strive to bring to farmers the results of experimental work and to demonstrate the benefits to be derived. These agencies have made notable progress in improving dairy herds, introducing better varieties of grain, and bringing all farming methods to a high average standard, not only by means of

demonstrations, but also by educational work through boys' and girls' clubs and various adult organizations.

Some progress has been made in farm forestry by similar means. However, in spite of the efforts of the extension and research workers who have been attempting to build a sound basis for farm forestry, it must be said that farm-forestry extension and education have been seriously neglected. Foresters have been overlooking that large mass of citizens—the farmers—who already are forest managers and who, with guidance, may become the backbone of constructive forestry in Minnesota.

There is great need for forestry specialists at least in the important farmwoods districts of the 87 counties. Those counties where woods products rank well up with other farm crops should have county agents well coached in forestry matters—or, better yet, should have an assistant agent who could devote full time to forest education and demonstration.

Cooperative Marketing

Minnesota as a state is among the leaders in the cooperative marketing of cream, butter, cheese, and other dairy products and in cooperative ventures of other kinds. Farmers have had a long and instructive experience in cooperative endeavor, and realize full well the important



FIG. 6. A PRODUCTIVE FARM WOOD LOT IN MINNESOTA

Thrifty well-formed trees of all sizes and ages, good natural reproduction, and a heavy accumulation of leaf litter. Such a stand can produce good returns indefinitely.



FIG. 7. MARKETING WOOD-LOT PRODUCTS

Pulpwood from farm wood lots in northern Minnesota is trucked as far as 60 miles.

savings which united effort can bring to them in the form of better prices and lower costs. In 1929, 95,639 farmers, or 47 per cent of the state total, marketed at least some of their products cooperatively. These products had a value of \$106,000,000. Why, then, should not cooperation come to the aid of the disorganized system of marketing which now obtains with forest products?

The unsatisfactory return which the farmer gets from the sale of his timber is one of the factors causing him to turn stock into the woods and preventing him from thinking seriously of forest management. In southern Minnesota, the lack of facilities for pooling, grading, and storing lumber, logs, and other timber results in waste of potential values and prevents a desirable contact between wood-lot owners and local industries. Local portable mills cutting the ordinary run of logs which comes to them must be satisfied with a return of \$12 to \$20 per thousand feet for material which, if properly sawed, graded, sorted, and seasoned, and sold in sizable lots, might bring twice as much. Oak lumber poorly sawed and poorly seasoned sells for \$15 to \$18 per thousand, while imported oak flooring and lumber sell in nearby towns for four to five times as much.

The manager of a cooperative enterprise, having determined the amount and quality of products in the wood lots and knowing the existing markets and shipping costs, would be in a position to advise the farmers what to cut and where to dispose of it. This manager would arrange for the grading and pooling of all products, so as to get the advantage of bulk shipments. He would be able to seek outlets for such

inferior products as would come from the short-boled oak and the defective birch, aspen, and other trees which are so prevalent and for which there is no satisfactory market. Successful cooperative marketing of forest products would thus lead to better management of the farm woods, for it would encourage cleaning out the decadent stands now taking up space on many farms and would promote reproduction of better species.

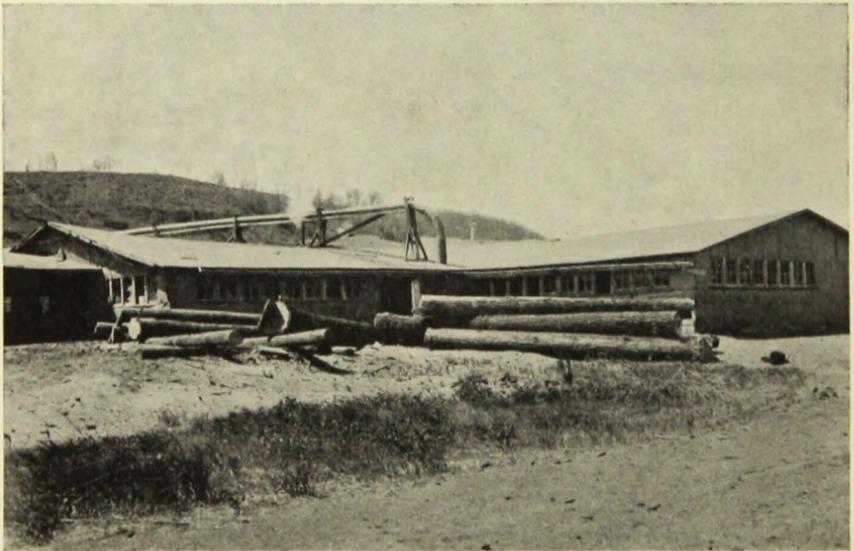


FIG. 8. SAWING THE FARMERS' LOGS

A well-managed sawmill like this, although having a relatively small output (4-6 M. board feet daily) is well equipped for wood-lot products. A small dry kiln is operated in connection with this mill.

Such a marketing system need not be confined to wood products alone. It should deal as well with maple sirup and sugar, Christmas trees, and any other forest products available from the woods of the members of the cooperative group.

Aid in Farm Reorganization

Some obstacles to proper forest management, of course, can be removed only by fundamental changes in the farming situation.

In the Red River Valley, only a little more than one-third of the farms are operated by full owners. Even in the State of Minnesota as a whole, less than half of the farms are operated by their owners. Naturally, renters will not take the same interest in developing a permanently valuable timber lot that an owner would. This is one reason why an improvement in the farm-tenancy situation is badly needed.

In southeastern Minnesota, some of the farm units are too small to sustain a properly sized dairy herd unless stock is allowed to run into wooded areas. Possibly out of efforts to improve the farm-tenancy situation a means will be found for encouraging farm operators to round out the farm into a more efficient unit and to permit fencing off the woods.

In northern Minnesota, some plan may be worked out for selling or leasing tracts of tax-delinquent land to nearby farmers who are in a position to protect and develop them for timber production.

Research and Demonstration

The Farm Forestry Act and the Plains Shelterbelt Project sponsored by the Federal Government promise to arouse fresh interest in farm-forestry activities in Minnesota. With the help of federal funds it is proposed to establish demonstration wood lots and farmstead plantings throughout the state. Trees for planting will be furnished to farmers at nominal cost, and assistance will be given in laying out and establishing the plantations. In existing wood lots, experiments will be conducted in proper cutting methods, removal of weed trees, marketing of products, and other activities. Careful records will be kept of operations, so that the results of experiments will be available to other farmers who are interested.

