Future Forestry in Iowa

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Unlike most of the states, Iowa has a relatively small area of non-agricultural land, in fact, about ninety per cent of the State is adapted to the production of annual crops. For this reason, if for no other, state or national forests will not be of large extent. The areas which might best be used for timber production are in relatively small units and far separated, making their administration under national or state supervision more difficult than in those states where considerable areas in one locality are suitable only for tree growth.

The fact that Iowa is more highly favored than her sister states in having the highest percentage of soils of agricultural value, should tend to stimulate better forestry on her timber areas rather than to create a spirit of indifference toward them. In some localities of the State we are led to believe that the very prosperity of the land holder has created an attitude of indifference toward the less productive areas. Numerous examples may be found where the lands which are turned with the plow are handled in such a manner as to squeeze the last cent from the soil, while adjoining areas, suitable for timber production only, and capable of producing substantial returns, are entirely disregarded. In brief, many land owners are carrying at a loss areas which might be made productive if given a little attention.

Iowa’s forestry problems are quite different from those of the mountainous states. It is probable that provision may be made in the future for both state and county forests of relatively small area, but these features, although of great value, are not of the first importance. The State is concerned more in the connection which forestry has to the individual land owner. Every farmer in Iowa should be concerned in the windbreak, shelterbelt, or woodlot.

There is another phase of forestry which has as its purpose the better utilization of forest products which involves the using
of cheaper or inferior woods for various purposes after treatment with preservatives. Good forestry may be practiced just as effectively through conservative use as through scientific production of forest products.

MEASURES STIMULATING FORESTRY

Iowa has probably taken advantage of the legislative acts encouraging tree planting as much as any other state. It is estimated that the State now has about 210,100 acres in planted timber, a large portion of which was set out in the early days. The early plantings consisted mostly in the short-lived trees—willow, cottonwood and soft maple. These woodlots have given good returns not only from the wood produced but by the protection afforded the home buildings, orchards, annual crops and feed lots.

A later attempt to encourage timber planting came in 1907 when a tax exemption bill was passed. This act, in substance, provided for the taxation of woodlots of not less than two acres on an assessed valuation of one dollar per acre, provided the land was stocked with a certain number of trees of specified species and provided further that all live stock was excluded from the woodlot.

The State Horticultural Society has been a factor in stimulating activities in forestry, especially those phases relating to the farm. Later, the Iowa Park and Forestry Association (now the Iowa Forestry and Conservation Association) in conjunction with the Horticultural Society has been a means of disseminating information regarding the planting and care of woodlots. Some work, also, has been done by the educational institutions of the State in meeting the forestry problems.

THE WINDBREAK IN IOWA

We sometimes wonder if the early settlers in Iowa planted the rows of cottonwoods, willows and maples merely because they had nothing better to do. Observations will show that these pioneers had a definite object in view—that of protecting their crops, buildings and stock against the drying winds of summer and the cold winds of winter. We find numerous instances of a later generation cutting down the windbreaks for the avowed reason that they sap or shade the soil too much and
A dense windbreak of arborvitae and Norway spruce. The area has never been pastured and the trees have not been damaged by the intrusion of live stock.

Ames forestry students setting out a commercial plantation of coniferous trees on sandy waste land adjoining the Mississippi River. The bluff lands in the distance should also be used more efficiently for the production of forest trees.
consequently decrease the producing capacity of the soil. Invariably the man who cuts down the windbreak sees only the decreased crop production in the immediate vicinity of the row of trees—and has never gone to the trouble to measure the increased production which is affected, often to a distance of forty rods to the leeward of the windbreak. His assumption that he is being injured rather than benefitted by the windbreak is generally erroneous.

Observations by the government, states and educational institutions have shown without question that windbreaks of the right tree species, when properly placed, are effective in conserving soil moisture during the growing season, by checking the velocity of the wind near the ground surface. Actual crop measurements have demonstrated that the saving in soil moisture is directly translatable into increased crop production and thus into cash.

The windbreak for crop protection is one phase of forestry in which the farmer should be most interested. With the rapid increase in land values, crop production should be greatly increased not only through better seed selection and improved methods of cultivation, but also through the efficient use of the windbreak. Instead of a decrease in the number of windbreaks in the future, Iowa’s farms will show a decided increase in this protective feature, which will be in keeping with the spirit of a more conservative use of the soils of the State.

THE PLANTED WOODLOT AND SHELTERBELT

The larger part of the acreage in planted timber in Iowa is in the form of small groves varying in extent from one-half an acre to three acres. In nearly all cases the woodlot and shelterbelt are combined. The groves, almost without exception, have been placed in such a manner as to give good protection in the winter against the cold, northerly winds. In this way the farmstead has been made more habitable both for man and beast. The early shelterbelts were rightly planted to fast growing trees in most cases for the purpose of securing quick protection. Some, however, looking farther into the future either planted longer lived species or at least supplemented the short lived plantings with longer lived trees. The idea of having the shelterbelt serve also for the production of fence posts, poles, fire
wood, etc., was of secondary importance to the farmer. Some of these original groves, after thirty to forty years' growth, have been harvested and have surprised the owners in the money returns produced. The yield in lumber, fuel and posts was incidental inasmuch as the woodlot had served its purpose for protection. Cottonwood windbreaks and woodlots have given especially good returns when sawed into lumber. Numerous instances are on record of farmers building a large part of their farm buildings from timber planted by their own hands.

Another feature of the woodlot and shelterbelt which cannot justly be disregarded is its aesthetic value. The farmers of Iowa today are modernizing their homes and making them more attractive. The independent farmer of the present time will not be required to live as the pioneers did, amid none of the conveniences of modern life, but will have a home which at least approaches in convenience those of the towns and cities. If one addition more than another adds attractiveness to the prairie farmstead—it is the timber which surrounds the home grounds. The aesthetic value is not imaginary—it is a real value. A prospective purchaser of a farm generally is willing to pay an increased price for the aesthetic value afforded by the presence of a good grove of trees adjoining the home buildings.

Every farm owner in the treeless sections of Iowa should be interested in the woodlot and shelterbelt. The planting, with a little foresight, may be made to serve the several purposes of shelter, production of forest products and adding attractiveness to the farm. It will not only be a problem of planting the shelterbelt but also a question of giving the planted area good care. Most of the present planted groves in Iowa have grown in spite of the owners' negligence or lack of proper instructions. It is a mystery how many of the groves survived the trampling, browsing and breakage caused by stock. The portion of the woodlot which is to be used for protection against winds and for production of timber should not be pastured.

A problem also which confronts many farmers at the present time is that of how to rejuvenate the old shelterbelt which was made up entirely of quick-growing, short-lived species. Many farmers desire to make the shelterbelt and woodlot a permanent feature on the farm without going through the tedious process of growing an entirely new grove after the old decadent trees have
been cut. This is one of the many problems which must be worked out:

**THE NATIVE WOODLOT**

The agricultural interests of the State have overshadowed other interests to such an extent that we sometimes overlook the value represented in a stand of native timber. In nearly all parts of the State the original forest has given way to agriculture, yet, in many parts, especially on the rough areas adjoining the larger water courses, a remnant of the former forest remains. In northeastern, eastern and southern Iowa areas of timber of considerable extent are now to be found. These areas have been invariably culled over and in many cases the stand is mostly second growth timber. The oaks and other valuable timbers have been cut heavily for railroad ties, fence posts and lumber. In the cutting no thought has been given to the permanence of the stand or resulting species. The cutting policy in these native woodlands, which we may designate as "woodlots," has been dictated by immediate needs only. As a result, the poorer, less desirable trees, which are the last to be cut, are occupying the soil.

It is an easy matter to dictate that good trees should be left to restock the land after cutting—but how will this be done in the face of the fact that there is little or no market for the poorer species—which, as a result, are not cut? As fast as the commercial species are removed they are replaced largely by some of their undesirable neighbors. Except in restricted localities, little progress has been made in developing markets for any but a small portion of the woodlot products. In the State there is a pressing need not only to show the owner of timberland how his timber should be cut in order to secure the best silvicultural results, but also to show him how his timber, good and poor, should be handled on the market to produce a revenue consistent with the investment represented.

It is true that the owner of native woodland uses the area for other purposes—and for timber production merely because he does not go to the trouble to clear the land. In the majority of cases the timberland is pastured—a procedure which is disastrous if the stand is to be reproduced. Grazing animals injure the young trees not only by browsing the twigs and by breakage,
but also by exposing the roots and packing the soil. On very rough lands the damage to the forest by grazing is more marked—due to the greater possibility of soil erosion. Numerous instances of extreme damage are witnessed on steep slopes which have been denuded of timber and then heavily pastured. After the resulting gullying process is well under way the land is fit neither for grazing nor for timber production.

It is interesting to note that the Iowa woodlot owners have not generally taken advantage of the tax exemption act which provides for practically the elimination of taxes on woodlands which are listed with the proper officials of the State. The law sets no limit on the acreage which may be listed, provided, as before indicated, certain requirements are met. It is evident that the majority of woodlot owners prefer the grazing privilege to tax exemption even though the former is destructive from a silvicultural standpoint. No state in the Union has a more lenient system of taxing forest property—yet comparatively few timber owners are receiving the benefits offered by this act.

The greatest difficulty with the native Iowa woodlot is that it is not handled on a business basis. So long as one is in possession of forest property he is no more justified in ignoring fundamentals relating to forest management than in disregarding accepted principles in crop production on crop production on his agricultural lands. The woodlot in the State should be a source of revenue—not only from its stored-up capital or mature timber, but also by producing the maximum annual increment of the most profitable species.

COMMERCIAL TIMBERLANDS

Iowa's woodlands are now supplying the raw product for a number of manufacturing establishments which apparently are permanent in character. These establishments are crating and box board mills, excelsior mills, basket manufacturing plants, small lumber mills, and gun stock and tool handle factories. Most of these establishments are acquiring timberland of such character and extent as to insure the permanence of their industry. Some of these operations are now controlling thousands of acres of timberland. Little progress, however, has been made in the scientific management of these areas for the specific purposes desired—rather, the operators, after an indiscriminate
A cut-over stand of timber on one of the Mississippi River islands, near Harpers Ferry, Iowa. The timber was used for the production of excelsior and for box boards.

A view on one of the larger islands in the Mississippi River near Lansing, Iowa. Although some portions of these islands are too swampy for good timber production, a large percentage of the areas will support a good growth of several of the fast growing species of trees. The bluffs in the distance could be made to produce good returns from timber production if planted and given protection.
cutting of timber, are holding the land for new growth of any
species of trees which nature sees fit to provide—even though
these may not bring the greatest profits to the industry.

It is probable that four classes of land will eventually be
utilized for the commercial production of timber for supplying
specific industries. These lands are (1) Native timberland in the
rougher portions of the State; (2) Exposed bluff lands or steep
slopes adjoining the larger water courses; (3) Sandy stretches
and poor soils; (4) Islands and lowlands in and adjoining the
large rivers of the State.

It will be noted that all of the above four classes of land, as
a rule, are found along the water channels.

The present native timberlands, notwithstanding the fact that
the most valuable trees have been removed, will furnish a large
amount of material for specialized industries. During the past
years it has been too easy to bring in the raw material or manu-
factured products from other regions more abundantly supplied
with timber, consequently there has been little inducement for
development of wood manufacturing industries in Iowa. It is
quite probable that the next decade will see a better utilization
of Iowa's timber resources—a condition which will be brought
about by the gradual decrease in production in those regions
which have been exploiting their timberlands and also by the
steadily increasing demand for a better utilization of all classes
of land in the State.

The second class of land which may eventually be used for the
commercial production of timber is the bluff lands or steeper
slopes which are either wooded or bare at the present time, and
which are best suited for timber production because of the un-
stability of the soil when used for other purposes. This class of
land, in many instances, might fall under the first class men-
tioned. It is true, however, that long stretches of bluffs are
to be found which have been entirely denuded of timber or
have not been forested in modern times, due to fire or other
causes. That such lands as these can be made to produce timber
of high quality, after being artificially stocked, is hardly ques-
tioned. In northeastern Iowa where large areas of this char-
acter are to be found, the white pine is native and would prob-
ably thrive on such lands if given adequate protection from fire
and stock after planting. The white pine in other portions of
its range probably ranks first among coniferous trees for artificial forest production, mainly because of its relative rapidity of growth and the many uses to which the lumber from this tree is put. The white pine is only one of many trees among the evergreens and hardwoods which could be used successfully on this type of land.

A third class of land which might be profitably used for commercial forest purposes is the sandy stretches and other soils of poor quality which are not suited to the production of agricultural crops. These lands in Iowa are of relatively small extent. Experimental plantings are demonstrating that numerous coniferous trees will thrive on these poor soils.

Another type of land which ranks next to the first class mentioned in possibilities for forest production, consists in those areas along the water courses of the State which are inundated at certain seasons of the year and which, for this reason, are of little value for agricultural crop production. The exact extent of lands of this kind in Iowa is not known, but it is quite certain that the acreage would total possibly hundreds of thousands of acres. This class of land would include the larger islands of a permanent character found in the large rivers bordering the State. It is known that the river bordering one county of the State has, in islands alone, fifteen to seventeen thousand acres, which are valuable only for timber production and pasture. Much of this land is now timbered with somewhat inferior species, due to the culling over of the land for the best trees. In the aggregate, the possibilities of forest production on lands of this character are enormous. The lands in their present condition are, in certain cases, producing good returns with no care and absolutely no protection against stock and fire. Iowa fortunately possesses trees of rapid growth which reach their optimum development on low land of this kind. Notable among these is the common cottonwood, a tree of extreme rapidity in growth and one which will be given more and more consideration as time goes on. Investigations in the State by the Experiment Station have shown that a production of from thirty to fifty thousand board feet per acre can be produced in cottonwood plantations on a rotation of thirty to forty years. Already industries have sprung up which are using only timber from land of this character, not only as a passing source of income but with the idea
of operating permanently, which naturally necessitates at least a crude system of management for these woodlands. An excelsior mill at Guttenberg on the Mississippi River, is utilizing cottonwood, aspen, basswood, willow and butternut for excelsior production. A crating mill on the River near the northeast corner of the State is utilizing absolutely every species available and is sawing every stick of timber, including branch wood down to a limit of three inches in diameter. Fifteen hundred acres of island lands are providing a permanent supply of timber for this mill. A large basket manufacturing company in eastern Iowa has been using, exclusively, timber from lands subject to inundation, and has made provision for a permanent supply.

In the development of commercial timber holdings there is a need for scientific management which means better management and consequently better returns. The next few years should see progress in this direction. The State should take the lead in giving assistance either directly to the companies concerned by demonstrations, technical advice, or possibly by example or experiments conducted on State lands.

STATE, COUNTY AND MUNICIPAL FORESTS

The principal forest activities of many of the states are in connection with the administration of the state and national forest lands. In Iowa, lands which might be set aside for these purposes would be difficult to administer, since the areas must necessarily be more or less widely separated. In addition, practically all the land within the State boundaries is privately owned and forest land could only be set aside after purchase or donation. From the standpoint of timber production only—there is little excuse for either national or state forests in Iowa. Other considerations, however, may be given emphasis which would make state forests not only possible but desirable. The value of the forest as a regulator of stream flow and as a means of preventing erosion in localities with a rough topography, is quite generally admitted. Since the mis-treatment of certain forest areas in the State might jeopardize the rights of others by increasing erosion, filling stream channels and in other ways, it might be desirable to have state control over the management of certain of these lands, or at least to have state supervision over the cutting of the timber.
Many of the European countries have realized more than we have the aesthetic and recreative value of the forest. If, in addition to the production of timber, the State should develop forests of her own for protecting the streams and beauty of the hills, and, in addition, for furnishing recreation for the people of the regions, then we would quite generally agree that the state forest has a place in Iowa. The state forest idea might work hand in hand with other conservation interests. Such areas might serve as game refuges for the protection of wild birds and animals and at the same time be just as valuable for timber production and possibly more so for recreation.

County and municipal forests might serve the people even more than such areas set aside by the State, since the forest would be close at hand and within easy reach of all. Counties which have large streams running through them generally have an abundance of woodland admirably adapted for this purpose. Towns and cities in almost any region could secure areas varying in size from one hundred to a thousand acres or more, which could be held as woodland parks. We could hardly expect such forests to produce sufficient income to do away with the local taxes as is the case in certain municipal forests in Germany, but they would serve as a source of revenue and at the same time furnish more valuable returns as a recreation ground for the people.

It is probable that there will be a considerable amount of activity in the State, relating to the establishment of municipal, county and possibly state forests. In many localities a nucleus for such might be made by donation, as has already been done in at least one country.

OBSTACLES TO GOOD FORESTRY IN IOWA

Although the present tax law for forest property in this State is not the most scientific, it is much better than the laws in those states which make no special provision for the forests. If the present tax law relating to the woodlots were to remain as it is today, it would mean practically an exemption from taxes for this class of property. It cannot be said that the present tax law in Iowa is standing in the way of forestry as an investment. Probably grazing is one of the most serious matters affecting the reproduction and proper maintenance of the woodlots. There
2,000 cords of basswood, cottonwood, aspen, willow and butternut timber in the yard of the excelsior mill located at Guttenberg, Iowa.

Crating material sawed from inferior species of timber grown on the Mississippi River islands. The mill itself is located on an island.
is a popular disregard of the destructive influence of grazing animals in woodlots where the regeneration of the species is desirable. There is little more excuse for placing stock in an area of timber which is being regenerated by natural seeding or by sprouts after cutting, than to place animals in a newly set out plantation of trees, or in a newly planted field of corn. The effect in each case would be much the same—most of the young plants would be killed or permanently injured. The owner of either planted or native woodlots should at least protect these areas entirely against stock while the young trees are getting a start. Many shelterbelts have been ruined for their purpose, by being pastured early in their formation.

The fire damage to forest property in Iowa is much less than in many other states. In few cases is the standing timber actually destroyed, but constantly recurring fires—although they be only ground fires—damage the forest in many ways. Perhaps the greatest damage comes through the complete destruction of all reproduction. In addition, the ground litter is destroyed, which not only takes away the natural fertilizer but reduces the moisture holding capacity of the soil. It also subjects the soil to erosion and excessive damage when pastured.

Near a certain town in eastern Iowa the citizens prohibited the cutting of timber on the bluff lands which extended on two sides of the town. The object was to maintain these areas in their natural beauty, as it was a matter of common interest. As a matter of facts, fires ran through the areas annually, and, although not actually consuming the old timber, the fires left every tree badly scarred or "cat-faced" at the ground, and naturally not a vestige of reproduction remained. This illustrates one of the inconsistencies which may be met with. The people in this particular locality were much concerned about saving the wooded hills in their locality, but no one was at all concerned when fires were running through the area, which would in time ruin the forest much more completely than if every tree were to be cut down. The difficulty, as is the case with grazing, comes not so much through an intentional disregard of these matters, but because the people are not generally informed.

Another factor is working against forestry as related to the farm is tenancy. The tenant who can not look ahead even four or five years in the production of annual crops and conserve the
soil fertility, can hardly be expected to provide for shelterbelts, windbreaks or woodlots which produce their returns in protection and products largely in the future.

The man who owns his quarter or half section is the man who is interested in providing these extras which not only add to the value of the property and increase profits, but also make the farm more habitable. In the native woodland, which may not be in direct connection with the farm buildings, there would be the same tendency toward degeneration through tenancy. Either the tenant would make use of the products of the woodlot for his own ends, at the expense of the woodlot, or he would damage it by over grazing. In case the natural woodland is to thrive under tenancy it will only be under strict regulations from the owner.

WHAT IS NEEDED

Iowa's needs in forestry matters are largely educational. The State should provide for these needs either through the educational institutions, the experiment station or by a commission. In any event, funds should be made available for carrying on experimental or demonstration work which would assist the farmers and timber owners in solving their problems. This work might well be placed under the supervision of the Director of the State Experiment Station, since a number of lines of forestry experimental work have already been taken up by this organization and the results are being published for distribution.

The following lines of work are needed:

1. Providing for the examination of woodland tracts, after application has been made, for the purpose of proposing methods of scientific management.
2. Providing for making planting plans to assist land owners in reforestation or afforestation work.
3. Providing for suitable planting stock or trees for commercial plantations, which may be purchased at a reasonable cost. This might be accomplished in one of two ways, either by inducing the commercial nurseryman to provide for furnishing small trees in large quantities at a fair price, or by having the trees grown by the State and furnished at cost to planters who have made application in advance. A number of the states have secured good results by the latter method.
4. The dissemination of information throughout the State, relating to the value of trees for protection against winds, erosion, excessive run off, etc., also for showing the value of shelterbelts or windbreaks in protecting farm crops, orchards, stock and the home buildings.

5. The publishing of reliable data relating to the destructive influence of stock or fire, especially in young stands of timber or those in which natural reproduction is being secured.

6. Providing for the establishment of demonstration plantations of considerable extent on areas which have value for commercial forest plantations.

7. Continuing investigations of trees suitable for commercial plantings—to show most productive rotation, returns which may be expected, etc.

8. Providing for investigations relating to the better marketing of forest products from the smaller woodlots.

9. Providing for a better utilization of forest products through preservative treatment of posts, poles, railroad ties and other products, and by eliminating waste in manufacture.

10. Instituting investigations for providing better legislation relating to the control of timber areas which affect the State or communities as a whole.