PLANTING FOREST TREES
IN
INDIANA

By

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THE DEPARTMENT OF CONSERVATION
DIVISION OF FORESTRY
Indianapolis
1935

INDIANAPOLIS:
WM. B. BURFORD PRINTING CO., CONTRACTOR FOR STATE PRINTING AND BINDING
1935

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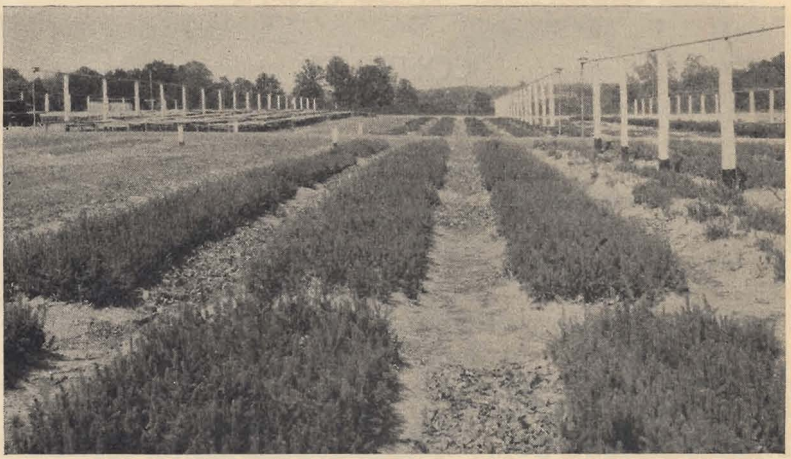


The State Forest Nursery of Indiana at Henryville. The young seedling must receive shade and water. After they are two or three years old they are transplanted once. They are ready for forest planting at the age of four years.

Millions of young forest seedlings and transplants are being grown in the state nurseries. They are distributed at the cost of production, from five to ten dollars a thousand. They must be planted strictly for reforestation. Ornamental trees for lawns, driveways and roadsides should be ordered from the private nurseryman.

WHY WE SHOULD PLANT FOREST TREES

WOODLOT REINFORCEMENT

Our fine hardwood forests have been culled over repeatedly for the most desirable species such as white and red oak, tulip, white ash, and black walnut. Many of our fine woods have deteriorated to a few derelict, overmature trees of the less desirable species. These inferior trees should be cut for lumber or fuel to liberate the natural reproduction of the more desirable species where such young growth is present.

No systematic effort has been made *to keep up the breed in our forests*, and maintain production of the high quality hardwoods for which Indiana is noted. If natural seedlings of the better kinds of trees are missing, due to fire, grazing, and an absence of seed trees, they should be planted artificially to secure a stand of the best trees for every forest.

Where seed trees of the more desirable species are present in woods which have been pastured, it is often possible to establish natural seedlings of these species by excluding livestock and by planting trees on the windward sides of the tract. These windbreak plantings on the west, northwest, and southwest sides will reduce evaporation and improve the soil conditions within the woods.

WASTE LAND

There are thousands of acres of farmed-out, eroded, hilly, or otherwise idle land in Indiana. The first step on such land was to remove the valuable virgin timber crop. The next step has been to exhaust soil fertility by poor farming and erosion. These areas yield little or no annual revenue and are abandoned to weeds and erosion. When the time comes to rebuild houses, barns and fences there is no ready source of revenue, such as a good forest, to afford the necessary replacement.

Certain southern Indiana counties have the majority of this land. It is an economic zero to the local community, state, and nation from the standpoint of producing revenue. As a rule it is no longer suitable for anything but conservation purposes. Where natural regeneration has failed to reforest these old fields, artificial forests must be established by planting. This is a forestry problem for the state and for the private individual who owns the land.

Many of our really valuable farms throughout Indiana have a few acres of land on which it is unprofitable to grow agricultural crops. It may be low land subject to overflow, rough and hilly

Fifteen year old white pine plantation on the Clark County State forest.

land, or fields which are too distant or too small to fence and cultivate.

The Department of Conservation believes that every farm should have a few acres of woods on it regardless of the value of the land for agriculture. Beyond this extent, valuable agricultural land should not be planted to forests.

WINDBREAKS

On many Indiana farms, the buildings are located in open, windswept situations where a tree windbreak would contribute much to comfort and appearance. Tree windbreaks would also be helpful in reducing soil movement on the muck lands that are farmed.

Windbreak planting is an important part of the state's farm forestry program, particularly in northern Indiana where it has wide application.

Windbreak planting is an important part of the program to rehabilitate grazed woods. Even after livestock is excluded, many of our grazed woods will not reproduce themselves successfully within a reasonable length of time unless wind protection is established through tree planting.

THE FOREST CROP

The forest crop is a long-time savings account. Every year the trees grow an interest on the original tree investment. Farm crops, grazing, and other agricultural activities have unprofitable years which sometimes occur in cycles of several years' duration. They

involve a high investment every year of labor and capital, while the forest grows with comparatively little care.

The forest income is comparatively small each year, but certain. Work in the woods can be done during the winter months when farm labor is more plentiful and otherwise might be idle. The annual revenue by growth accumulates until the day of tree maturity when it can be used as a gross sum to replace buildings and fences, or sold to replace other investments on the farm. Over long periods of time the average forest income ranks nearly as high as the average agricultural return, considering the investment involved. This fact is not apparent from year to year and too frequently is overlooked.

The ultimate goal in forest production is *to keep the woods fully stocked with high grade trees* and secure an annual or short periodic yield equivalent to the growth during such periods. The forest investment will not involve a long wait between financial returns. The forest then will resemble the bond investment on which the earning coupon is clipped each year. The earning coupon of the forest is the annual growth. Forest regulation, whereby the growth is harvested each year or periodically for revenue, is the ultimate goal in scientific forestry practice.

WHERE TO OBTAIN FOREST SEEDLINGS

The Indiana Department of Conservation maintains forest tree nurseries at the Clark County State Forest, Henryville, the Jackson County State Forest, Brownstown, and the Wells County State Forest, Bluffton. Visitors are always welcome.

At the present time all hardwood seedlings except black locust are sold for $5.00 per thousand. Locust seedlings are sold for $2.50 per thousand. Coniferous stock is sold for $10.00 per thousand. The trees are sold at a price not to exceed the cost of production. Orders are placed as they are received. All orders are accepted subject to having a sufficient supply available when the trees are actually dug. Orders should be placed early. Address all inquiries to the Division of Forestry, State Library Bldg., Indianapolis.

WHEN TO PLANT

The location of state nurseries in southern Indiana makes it possible to ship trees very early in the spring. As soon as the frost has left the ground is the proper time to plant forest trees.

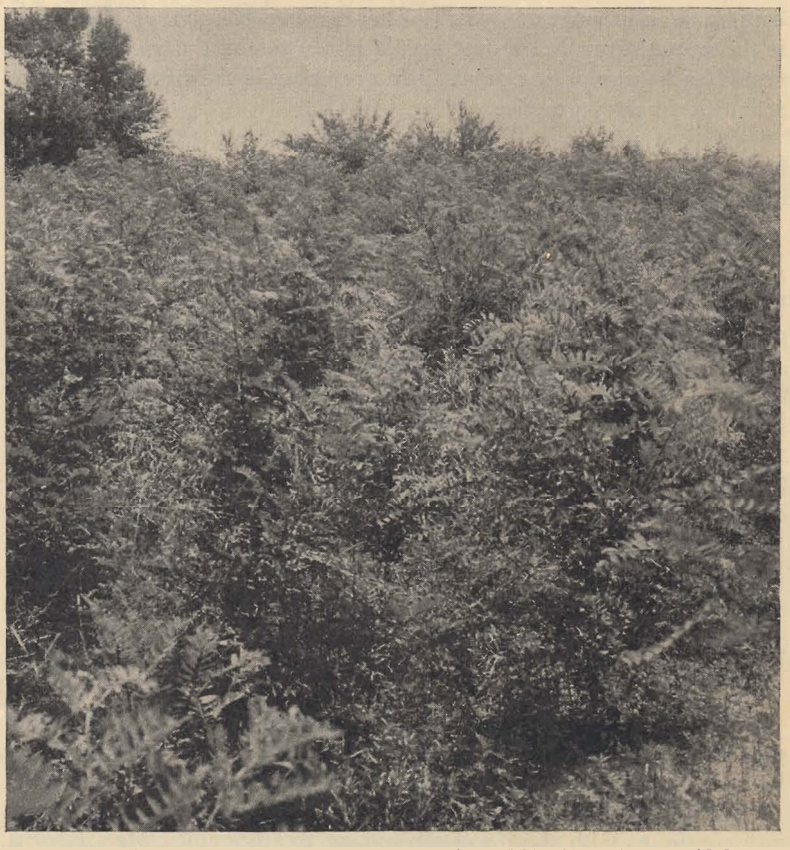
The planting season in Indiana begins any time after March 10 and continues with the uncertain spring weather until May 1, or a little later in the northern part of the state.

The earlier the trees can be planted, the better they will establish. They should not be planted except in their dormant winter condition before the buds have started to swell.

Trees can be supplied for fall planting but this is not recommended because fall-planted trees are more susceptible to winter killing and frost heaving.

PREPARATION OF THE PLANTING SITE

Woodlot reinforcement and open field plantings seldom require advance preparation of the planting site. Areas of heavy sod should be plowed under the previous fall. If the entire area is not plowed, strips a few furrows wide can be turned under where the rows of trees are to be planted. In rough country, the furrows should follow the contours around the hill.



Black locust planting for the control of soil erosion. This plantation provided complete cover and checked erosion in three years.

On extremely wet ground a back furrow can be thrown up where the rows are to come, and the trees can be placed on the slight elevation. Where the trees are planted on old fields of weeds or stubble it is desirable to plow the area and cultivate the trees during youth in order to keep the weeds and sod from crowding them out.

If the trees are planted in a brush thicket it will be necessary to keep the brush cut back until the trees are established. Seedlings planted in a woods should only be placed in the open places where direct sunlight is available, otherwise they will grow slowly and may be killed outright by the shade and by root competition.

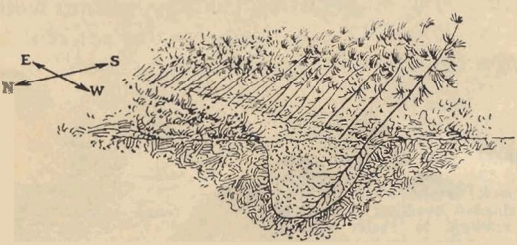
Site preparation is recommended for windbreak plantings around farm buildings, except on light sandy soils which blow and on heavy soils in hill country which erode readily. Plow the site and disc it before planting. Fall plowing is to be preferred.

CARE OF THE TREES UPON ARRIVAL

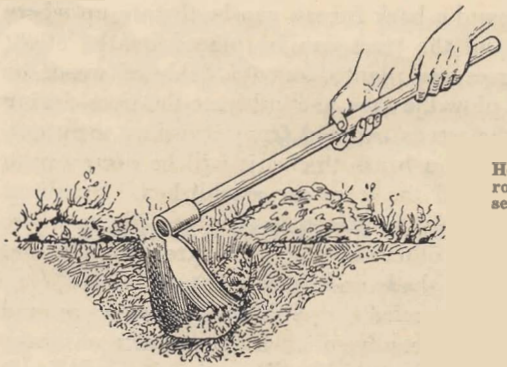
Notice will be sent to each purchaser a few days before the trees are packed and again when they are actually shipped. They should be planted immediately upon arrival. If they are planted direct from the shipping box, care should be taken to keep the roots covered with the wet moss in the box. If the packing begins to dry out perceptibly, water should be sprinkled over it. The tops of the trees should be kept as dry as possible, for they will mold if kept too warm and damp.

If the trees cannot be planted at once, they should be removed from the box, the bundles cut, and the trees "heeled in." This means placing the roots of the trees in a trench and firmly tamping moist, fresh earth about the roots of each tree. If the bundles are not cut and the roots packed in the trench, air will penetrate the bundles and the seedlings in the center of each bundle will dry out and die.

Left: A bundle of pines as taken from the packing box upon arrival from the nursery.

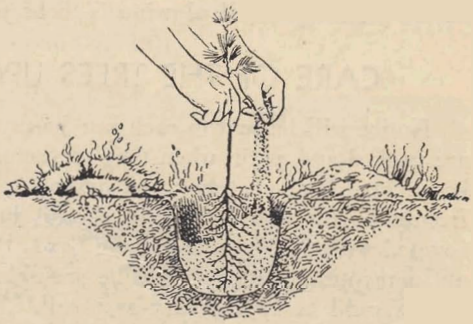


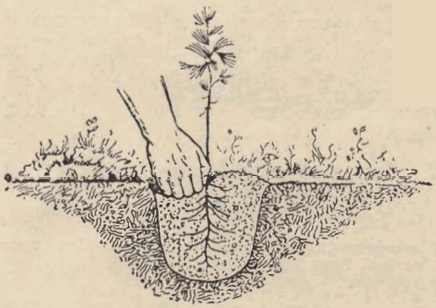
Above: The bundle opened and heeled in a trench with the moist earth firmly packed about the roots of each tree. Dig the trench east and west and slope the tree tops toward the south, to prevent the sun from scalding the tender stems.



Hole dug with ample space for roots. Surface sod or leaves separated from mineral earth at the edge of the hole.

The mineral earth should be crumbled evenly about the roots of the seedling. Do not cramp the roots.





Pack the mineral earth down firmly before spreading the sod or leaf mulch over the ground surface.

Distribute sod or leaf cover around the stem of the seedling and pack firmly with the toe. The planted seedling should be firm enough to resist several pounds pull.

Keep the roots moist at all cost. The tops or foliage of the trees should be kept dry. These factors and the one of early planting in the spring are two important ones by which the success of your planting will be determined. Careful planting in the field is of equal importance.

The same principles apply to the handling of cuttings. They should not be permitted to dry out.

Care should be exercised in the handling of planting stock so that buds are not injured or knocked off. It is especially important to guard terminal buds against injury.

PLANTING THE TREES

Trees require a certain amount of light and must have moist, mineral soil about their roots. If either of these factors are too unfavorable, the trees grow slowly and may even perish. The trees should be planted a little deeper than they were grown in the nursery. Sod and litter should not be placed in contact with the roots. Moist mineral top-soil should be placed in the hole about the roots of the trees. The lumps of earth should be pulverized with the hand as the hole is filled.

If sod or litter is present, it should be scattered upon the ground at the base of the tree after it has been planted, in order to form a mulch. Unless the existing ground cover such as high weeds or heavy sod is too unfavorable, it is unnecessary to plow it before planting.

Two methods of tree planting are common. Each planter may take a bucket in which the roots of the trees have been placed in wet mud, sand, or moist litter and using a shovel, mattock or grub hoe, work back and forth across the area digging holes and planting trees as he goes. Another method is to form two-men crews. One man goes ahead digging holes while the second one follows to plant trees in the holes already dug. Each tree should be firmly tamped with the toe after it has been planted.

In planting willow cuttings on muck soil, it is important that the cuttings be pushed into the ground until only two or three inches appear above ground level. Be sure to plant the cuttings with the buds pointing upward.

SPACING

The most common spacing for general reforestation work is 6′ x 6′. The trees may be planted 4′ x 4′ or 8′ x 8′ according to the species used and the funds available for the work. The closer spacings favor earlier canopy cover for the ground, and taller, cleaner boles. All of these are desirable. Only a certain number of the original trees will reach maturity even with the wider spacings.

Pine planting for the control of blowing sand in northwestern Indiana.

Planting of black locust and mixed pines on stripped-over coal lands in southwestern Indiana.

Christmas trees should be planted 4′ x 4′ or 5′ x 5′ apart. Where large trees are desired, the spacing may be increased to 6′ x 6′. The wider spacings favor the desired conical form.

Windbreak trees around farm buildings are usually planted 10′ x 10′, or 10′ x 12′ in staggered rows, three to five rows deep. This is considered a minimum spacing for farm windbreaks. Plant the windbreak on the west and north sides of the farm buildings.

Willow cuttings are spaced two feet apart in planting single row windbreaks on muck soil. Arbor vitae transplants are spaced four feet apart in single row windbreaks on muck.

CARE OF THE TREES AFTER PLANTING

Plantations must be protected against fire and grazing animals, and so far as possible from insect and disease enemies.

If the trees are planted close to a railroad or to fields which may burn over, extreme vigilance should be exercised in the dry spring, summer, and fall seasons. It would be well to maintain plowed or burned safety strips between plantations and existing hazards. In large plantations fire lanes should be established, dividing the area into blocks. These lanes should be kept clean. If fire does start, it may be checked from these strips or lanes and confined to a small part of the plantation. Small, slow-burning fires may be beaten out with a wet sack or broom. Back-fire must be set from the lanes against the oncoming flames when conditions are more serious.

Livestock will browse on young trees and tramp on them, either destroying them completely or injuring their form. Plantings must be protected against grazing animals.

Windbreak plantings for the protection of farm buildings and windbreaks on muck soil should be cultivated. So should Christmas tree plantings. Failed places in all plantings should be refilled the second year.

If any injurious insect or fungous disease appears, the infected material should be removed and burned. Notify the Division of Forestry or Division of Entomology and send samples of the injury for examination.

THE KIND OF TREES TO PLANT

There are two main groups of forest trees, the conifers or evergreens, and the broadleaved hardwoods. The coniferous trees recommended for planting are the pines, spruces, and arbor vitae. The hardwoods are the oaks, maples, tulip, walnut, cottonwood, basswood, black locust, and Osage orange. Green and golden willows are used for windbreaks on muck soils.

Although tree species vary in their soil and moisture requirements, the hardwood group can be classed as trees suitable only for planting on soils of good agricultural fertility. The conifers will thrive equally as well on good soils but they also have the ability to thrive on poor soils, which are below agricultural fertility.

It is difficult to describe every soil in the state in terms which the average person can interpret. Each group of trees named will be discussed in terms which it is hoped will be easily understood. Planting advice will be furnished gladly by the Divison of Forestry upon request. Each prospectve tree planter is urged to confer with the Division of Forestry before making a choice of species.

THE HARDWOODS

The hardwood trees recommended for forest planting in Indiana are the oaks, tulip, black walnut, sugar maple, cottonwood, basswood, black locust and Osage orange.

Artificial plantings of ash do not seem to thrive. The tree is attacked by a scale which retards the growth and frequently kills it.

On account of the locust borer, black locust plantings have been a failure in so many cases that it is a very doubtful tree to plant in Indiana for posts or timber. Locust is an excellent nurse crop for rebuilding eroded or worn out soil to the point where bluegrass pasture or native hardwood species will grow again.

GOOD SOIL

By good soil is meant one which will grow a good corn crop now, or would do so if the area were cleared of existing forest growth.

The hardwoods named will grow on any Indiana soil which grew the beech, sugar maple, ash, walnut, and tulip in various com-

A Norway spruce windbreak for the protection of farm buildings.

binations as a virgin forest. If it is a case of reinforcing an area which now has this type of forest on it, the hardwoods named will make satisfactory growth. If the area to be planted has been cleared of the original growth and has not been farmed out, it will grow many of the native Indiana hardwood trees.

TIMBER—For timber plant the oaks, walnut, tulip, sugar maple, basswood, and cottonwood. The walnut and tulip grow more rapidly than the white oak, red oak, and sugar maple. The cottonwood should be used on low wet sites, especially those which are subjected to stream overflow. Under such conditions these trees form our fastest growing forest type in Indiana. Cuttings of the cottonwood are generally used.

Do not plant black walnut *except on very fertile land.* This is an exceedingly valuable tree to plant. It should be planted with an 8′ x 8′ spacing if seedlings are used, and 4′ x 4′ if the nuts are planted. The reason for planting the nuts twice as close as the seedlings is that usually only half the nuts produce trees. It is advisable to use seedlings in woods where the squirrels may dig up the nuts, particularly in grazed woods where squirrel food is scarce. It is recommended that this tree be planted on good bottomland sites which once produced walnut and in the open areas of woodland where walnut formerly grew. The stratified nuts should be planted instead of the one-year seedlings wherever possible.

POSTS—For fence posts plant Osage orange on good soils, and use a close spacing to promote straight growth. Black locust may be planted for posts on good, well-drained soils where its freedom from serious borer damage has been demonstrated.

WINDBREAKS FOR MUCK SOILS—The green and golden willows provide wind protection on muck soils in three to five years. Cuttings are used to establish these species and the cuttings are spaced two feet apart in the rows. The spacing of the rows or belts is variable, depending on the local conditions of topography and natural cover.

POOR SOIL

By poor soil is meant one which has either lost its native fertility by poor farming or erosion, or is too sandy or too sour and compact to grow a good crop of corn.

Black locust can be used on practically any soil in Indiana as a nurse crop. It is a member of the legume family which add nitrogen to the soil. Its destruction by the locust borer for timber will not impair its soil building quality. It will check erosion and improve the soil for the associate tree, which should be planted with

A red pine windbreak planted to protect an apple orchard.

it for timber. One should keep in mind the possibility of the locust borer when using this species.

GROWING YOUR OWN HARDWOOD SEEDLINGS

The acorns and nuts of the heavy-seeded hardwoods named—oak, hickory, and walnut—may be planted instead of purchasing seedlings. Gather the seeds in the fall when mature and cover them about an inch or so deep in layers outdoors in a box or bed of sand or fine soil. They will germinate as soon as warm weather comes in the spring[1] and must be planted (prior to germination) in the field as soon as the frost has left the ground. The seeds should be kept moist at all times. The above named species have long tap roots which make transplanting difficult. For this reason planting the seed in early spring[1] direct to the field after they have been stratified over winter has some advantages.

The seeds of such trees as maple and tulip are small and more difficult to grow to suitable sizes for planting. These species should be purchased from the state nurseries.

THE CONIFERS

The coniferous trees recommended for forest planting in Indiana are white pine, red or Norway pine, pitch pine, shortleaf pine, jack pine, Virginia pine, Scotch pine, Norway spruce and arbor vitae.

Although white pine, jack and Virginia pine are the only species named which occur native in Indiana, they all grow vigorously in the state. On poor fields they are the only species which will make satisfactory forest growth. They make fine windbreaks, bird havens, Christmas trees, and attractive forests.

[1] The acorns of the white oak group germinate in the fall and should be planted then.

GOOD SOIL

All of the coniferous trees listed will grow on soils of average and better fertility. It is advisable then to select for planting those which will grow the fastest and make the most valuable products.

TIMBER—White pine is the most valuable one for lumber and is probably the fastest growing species. The wood is light, soft, workable, but not very durable unless kept covered with paint or preservative. It is to be preferred on the better class of poor soils. This species will withstand a limited amount of shade.

Red (misnamed Norway) pine is next in preference to white pine. It has about the same utility characteristics but it will grow on poorer soils than white pine. It will not thrive under shade.

Norway spruce is grown for timber and for pulp, and also is planted for Christmas trees. It grows rather slowly for the first few years after being planted, especially if planted too deeply. The planting of this tree should be restricted to moist, cool sites in Indiana. It will withstand more shade than the other conifers.

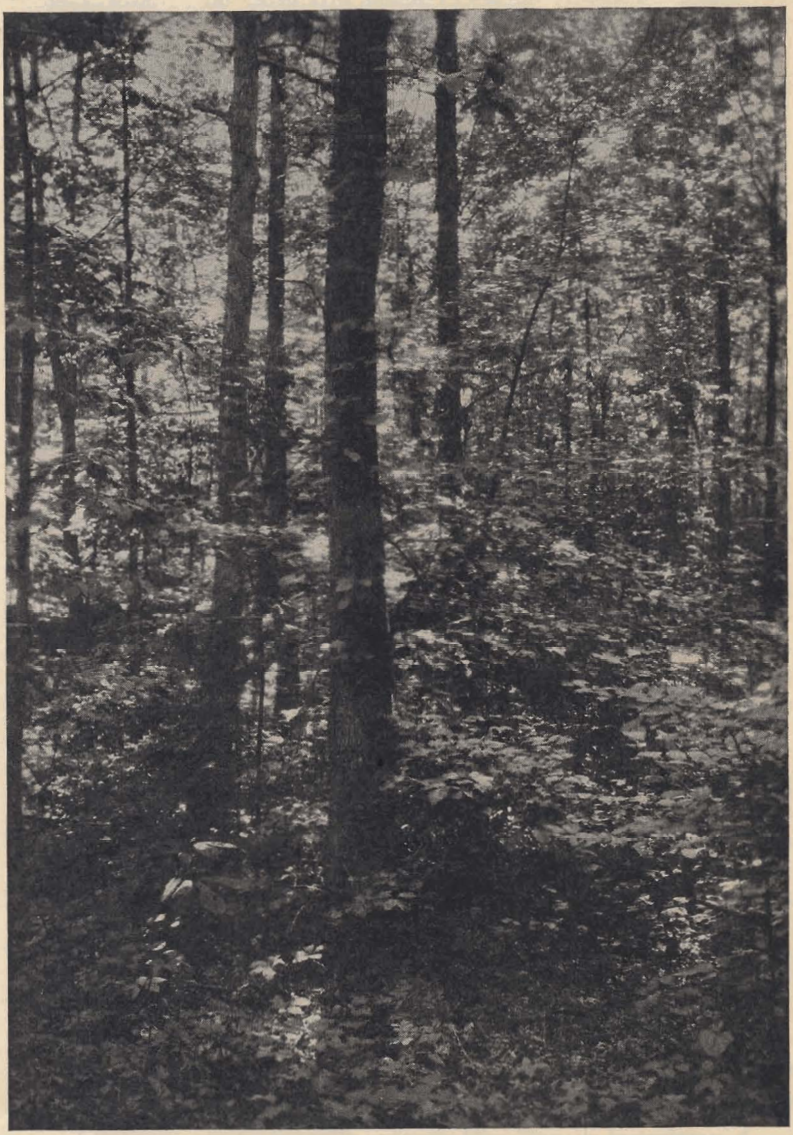
WINDBREAKS TO PROTECT FARM BUILDINGS—A mixture of the pines such as white, Austrian, Scotch, jack and red pines should be used on the poorer soils. These trees, together with Norway spruce and arbor vitae may be used on the better soils. Cultivation is recommended for several years. The spruce in particular requires cultivation and care.

WINDBREAKS FOR MUCK SOILS[1]—The arbor vitae is the best of the coniferous trees for planting on muck soils. It does not grow as rapidly as the green and golden willows, but provides a denser screen and does not require the pruning which the willows do after the first four or five years. All windbreak plantings on muck require cultivation.

CHRISTMAS TREES—The scarcity of native evergreens in Indiana and the fact that thousands of them are imported each holiday season make feasible the commercial growing of Christmas trees. Norway spruce is the best species to use. It should only be planted for this purpose on well-drained soils of average or better than average fertility. The Norway spruce prefers cool, moist sites.

A spacing of 4′ x 4′ will require about 2,700 trees to the acre. A 5′ x 5′ spacing will require about 1,700 trees to the acre. They should be marketable in eight to ten years. A rotation of ten years can be assumed and if twenty acres are devoted to this crop,

[1] On many farms it has been the practice to cultivate the young evergreen trees in garden rows for a year or two before setting them out on the windbreak site. This practice has given good results.



A dense stand of second growth forest because the area has been protected from fire and grazing. It is much better to protect our native forests from fire and grazing by tax classification than to be compelled to replace them by artificial planting.

a two-acre plat could be planted each year. After the tenth year an annual harvest could be made of two acres of trees. The trees should not be planted in sod. Cultivation for the first three or four years will benefit the trees and reduce losses.

POOR SOIL

In speaking of poor soil for conifers, the poorest sand or clay type of soil in Indiana outside the overflow lands is considered. None of our soils seem to be too poor to be outside this classification of land suitable for pines.

TIMBER—The red pine has been described with the good soil species. It seems to grow satisfactorily even on the poorest soils of the state. The wood of this species is rather soft, workable, and suitable for general construction work where hardness is not essen-

PURPOSE

Species	Spacing	Trees Per Acre	[1]Cost of Trees	[2]Planting	[3]Total Cost Per Acre
WOODLOT REINFORCEMENT					
Hardwoods—					
Black Walnut Seedlings	8′x8′	680	$6.05	$3.37	$9.42
Black Walnut Nuts	4′x4′	2,722	5.00	6.00	11.00
Tulip Poplar	6′x6′	1,210	6.05	6.00	12.05
Red Oak	6′x6′	1,210	6.05	6.00	12.05
Sugar Maple	6′x6′	1,210	6.05	6.00	12.05
Basswood Linden	6′x6′	1,210	6.05	6.00	12.05
Conifers—					
White Pine	6′x6′	1,210	12.10	6.00	18.10
Red Pine	6′x6′	1,210	12.10	6.00	18.10
IDLE LAND—GOOD SOIL CONDITIONS					
Hardwoods—					
Black Walnut Seedlings	8′x8′	680	$3.40	$3.37	$6.77
Black Walnut Nuts	4′x4′	2,722	5.00	6.00	11.00
Tulip Poplar	6′x6′	1,210	6.05	6.00	12.05
Red Oak	6′x6′	1,210	6.05	6.00	12.05
Sugar Maple	6′x6′	1,210	6.05	6.00	12.05
Basswood	6′x6′	1,210	6.05	6.00	12.05
Osage Orange for Posts	4′x4′	2,722	13.60	13.60	27.20
Cottonwood	8′x8′	680	3.40	3.37	6.77
Conifers—					
White Pine	6′x6′	1,210	12.10	6.00	18.10
Red Pine		1,210	12.10	6.00	18.10

Species	Spacing	Trees Per Acre	[1]Cost of Trees	[2]Planting	[3]Total Cost Per Acre
IDLE LAND—POOR SOIL CONDITIONS					
Hardwoods—					
Black Locust	6′x6′	1,210	$3.00	$6.00	$9.00
Conifers—					
White Pine	6′x6′	1,210	12.10	6.00	18.10
Red Pine	6′x6′	1,210	12.10	6.00	18.10
Jack Pine	6′x6′	1,210	12.10	6.00	18.10
Scotch Pine	6′x6′	1,210	12.10	6.00	18.10
Pitch Pine	6′x6′	1,210	12.10	6.00	18.10
Shortleaf Pine	6′x6′	1,210	12.10	6.00	18.10
Virginia Pine	6′x6′	1,210	12.10	6.00	18.10
WINDBREAKS—FOR FARM BUILDINGS					
White Pine	All				
Red Pine	10′x10′	450	$5.90	$6.00	$11.90
Scotch Pine	or				
Jack Pine	10′x12′	375	4.90	6.00	10.90
Austrian Pine	in Stag-				
Norway Spruce	gered				
Arbor Vitae	Rows				
WINDBREAKS—FOR MUCK SOILS					
Golden Willow	2′	.....	$5.00M	.....	.....
Green Willow	2′	.....	5.00M	.....	.....
Arbor Vitae	4′	.....	10.00M	.....	.....
CHRISTMAS TREES					
Norway Spruce	4′x4′	2,722	$27.22	$13.60	$40.82
Norway Spruce	5′x5′	1,742	17.42	8.64	26.04

[1] Based on a price of $5.00 per thousand for hardwoods and $10.00 for conifers.
[2] Based on two men planting 1,210 trees a day for $6.00.
[3] This does not include a small transportation charge from the nursery.

The pitch, shortleaf, jack, Virginia, and Scotch pine will grow on the poorest soils. The wood is fairly hard, strong, and inclined to be resinous. It is suitable for such uses as cheap flooring, sheathing, railroad ties, and general construction work.

WINDBREAKS TO PROTECT FARM BUILDINGS[1]—The pines are the most satisfactory trees for windbreaks on the poorer soils. White, Austrian, red, jack, and Scotch pines may be used.

PRODUCTION OF STATE FOREST NURSERY

	TREES PLANTED			TREES SOLD			
Year	Hardwoods	Evergreens	Total	Hardwoods	Evergreens	Total	Amount
1920.....	8,000	14,000	22,000				
1921.....	4,080	52,427	56,507	(Nursery	established in 1922)		
1922.....	7,216	4,225	11,441	13,000	.....	13,000	$55.15
1923.....	32,406	15,083	47,487	29,295	159	39,454	142.59
1924.....	3,294	10,750	14,044	54,206	2,000	56,206	180.89
1925.....	21,891	49	21,940	81,346	3,370	84,716	494.99
1926.....	18,075	60,449	78,524	85,500	51,700	137,200	956.75
1927.....	1,100	97,396	98,496	125,190	142,265	267,455	1,522.68
1928.....	7,950	67,092	75,042	180,860	289,360	470,220	3,947.85
1929.....	1,500	85,200	86,700	129,025	443,203	572,228	5,233.26
1930.....	69,600	104,425	174,025	196,050	361,000	557,050	4,218.00
1931.....	628,325	106,238	734,563	924,865	374,642	1,299,507	5,982.07
1932.....	430,501	300,442	730,943	752,287	614,799	1,367,086	8,444.03
1933.....	238,760	360,275	599,035	640,825	747,635	1,388,460	13,774.28
1934.....	123,080	891,350	1,014,430	1,644,460	926,780	2,571,240	13,320.84
1935.....	373,400	544,399	917,799	*3,075,761	937,544	4,013,305	**11,780.40
Totals....	1,969,178	2,713,800	4,682,976	7,932,670	4,894,457	12,827,127	$53,301.62

* This includes 1,835,000 trees given to soil erosion control work of ECW.
** This figure is correct to June 8, 1935.

MIXED PLANTINGS

Although pure plantings require less initial trouble in the actual planting work, it is generally advisable to mix two or more species. In doing this there is less chance of securing the wrong combination of species and site. In a mixed planting the more promising species can be selected to form the final crop and the less favorable ones removed as a thinning.

In selecting the correct combination of species the intolerant (light-demanding) species of rapid height growth should be associated with the more tolerant (shade-enduring) species of slower growth. In this way the intolerant trees can keep their thin crowns above the tolerant ones growing below the upper crown level.

The tolerant species, such as sugar maple, white oak and Norway spruce, have thick crowns which permit little vegetation to grow beneath them. As they approach maturity under the overstory of intolerant species they will shade the side branches from them, leaving the long, clean boles of dominant trees.

Mixed plantings are safer in the event of insect or fungous attack, and are decidedly more ornamental.

GAME FOOD PLANTINGS

In areas where there is a scarcity of natural food for wild life, the Department encourages the planting of the following trees and shrubs in addition to the species described in preceding sections of this bulletin: the mulberries, Juneberry or service berry, persimmon, hackberry, wild plum, wild apples, red and black haws, the cherries, dogwoods, black or sour gum, the chokeberries, pawpaw, elder and hazelnuts. The arrangement of these materials in the outer margin of the planting would also contribute to the appearance of the woods as an element in the landscape, particularly along roadsides.

TAX CLASSIFICATION FOR FOREST LANDS

In 1921 the General Assembly of Indiana passed an act to encourage timber production and to protect watershed by classifying certain lands as forest lands, and prescribing a method of appraising lands thus classified for purposes of taxation.

Under the provisions of this law, both native forest lands and forest plantations of three acres or more will be placed on the tax duplicate at an appraised value of one dollar an acre if the owner will agree to protect the forest from grazing. The law imposes no yield taxes, cutting rules, or other restrictions upon the owner.

Before the forest can be so classified, it must be inspected by the state forester or his designated representative. This service is rendered free of charge and offers an opportunity for the forest owner and one of the state's foresters to discuss the best manner of handling the forest. At the time of inspection the details of the forest tax law are explained. No obligation to classify is involved until the proper blanks have been legally completed.

Time and travel are expensive. The forest owner must realize that classified land cannot be pastured and should be sincerely interested before asking for an inspection. Over fifteen hundred classified forests have been established since the passage of this act.