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Forest Plantation Management

By

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Tree Plantings in Ohio

Nearly 200,000,000 trees have been planted in Ohio for reforestation purposes since the first distribution of seedlings from the Ohio Agricultural Experiment Station in 1904. Until 1922 less than 1,500,000 of these trees had been distributed from the nursery at Wooster; however, with the establishment of three state nurseries, production has increased to about 15,000,000 trees annually.

Early plantings were of those species chiefly concerned with durable post timbers, such as catalpa, black locust, osage orange and mulberry. Today, a large percentage of Ohio's plantings are conifers. Leading species are red, white, Scotch, shortleaf and pitch pine. Hardwood or deciduous species which are now popular are black locust, walnut, white and red oaks, white ash, tuliptree (poplar) and sugar maple.



UNTREATED RED PINE -- Plantations such as this should be pruned and thinned to yield high quality wood products.

Reforestation in the state has increased rapidly during the past 10 years.

It is now becoming more apparent that older plantings need pruning and thinning, as well as protection. They have reached the "age" of practical management. Just as farm crops benefit from various types of cultural practices, so will tree crops.

With increased investments and planting costs, landowners cannot afford not to follow through with cultural practices. Tree crops need to be weeded, pruned and thinned occasionally to yield high-grade lumber. Thinnings can be converted into posts, poles, pulpwood, fuelwood, Christmas trees, greens and boughs.

Weeding

Many tree plantings have been made in unused, brush-dotted old fields. In other plantings, volunteer woody plants, among them worthless "weeds" or vines, have later entered the plantation.

Left to grow unhindered, this competing vegetation will eventually overtop, deform or exterminate too many good trees. Often young pines have their tips ruined by whipping against an adjacent branch of scrub oak or hawthorn.

To keep your planted trees growing thriftily, cut back, girdle or poison the unwanted, overtopping natural growth. If your planta-



WEEDING -- Cross section of a plantation in need of weeding. Many of the planted trees (with darkened crowns) are overtopped by undesirable natural growth. Remove the overtopping, noxious "weeds" or "wolf trees" (indicated by X's).

tion is an older, neglected one, it no doubt needs prompt release from such shade. You can delay this aid to the shade-enduring sugar maple, spruce or white pine longer than to the light-demanding black walnut, pitch pine or larch.

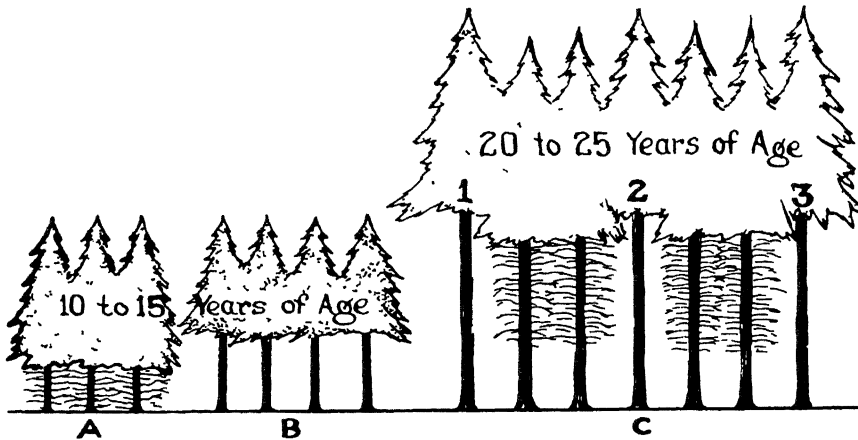
Pruning

If you want your plantation to yield high grade lumber, free from knots, you must prune your trees. Without artificial pruning, none of the best grades of lumber can be grown in a reasonable time. It will pay you to prune, because logs suitable for quality sawn lumber or veneer have 2 to 3 times the value of those from unpruned stands.

When to Prune

The time to start pruning is while your trees are young, when their trunks and limbs are still small. Pruning at this time will help you to keep the cost low and to grow the most clear wood. You can treat trees 2 to 3 inches in diameter most profitably. By the time butt logs of early-pruned trees attain a 12-inch diameter, two-thirds or more of their volume consists of clear knot-free wood.

Early pruning requires you to cut off live limbs. This is not injurious to the tree, if you remove no more than a third to a half of its green crown.



STEPS IN PRUNING AN AVERAGE PLANTATION -- (A) Unpruned, with dead limbs persisting to the ground. (B) After low-pruning. The trees are pruned to seven feet above ground. (C) High-pruning to 17 feet, only on selected crop trees (1, 2 and 3).

Do your pruning in two operations, spaced a few years apart. When your trees are 10 to 15 years of age, first remove their limbs to a 7-foot height. When 20 to 25 years old, they should be tall enough to be pruned higher—to about 17 feet or one log length above the ground.

Do not high-prune every tree, for many trees ought to be taken out to assure a properly thinned stand later. Select 200 of your best trees per acre, spaced about 15 feet apart. Then confine your high pruning to these so-called "crop trees."

Tools

Do not use an axe. Even an experienced axeman leaves objectionable stubs, splinters and bark wounds. You will find a 14-inch curved, orchard-type pruning saw with a pistol grip handle the easiest, safest and most efficient cutting tool to use.

You can do the high pruning with a pole-saw, or you may prefer to work with the hand saw from a light 12-foot ladder. A V-shaped bracket wrapped with burlap and fitted to the ladder top will protect the tree bark and make your work safer.

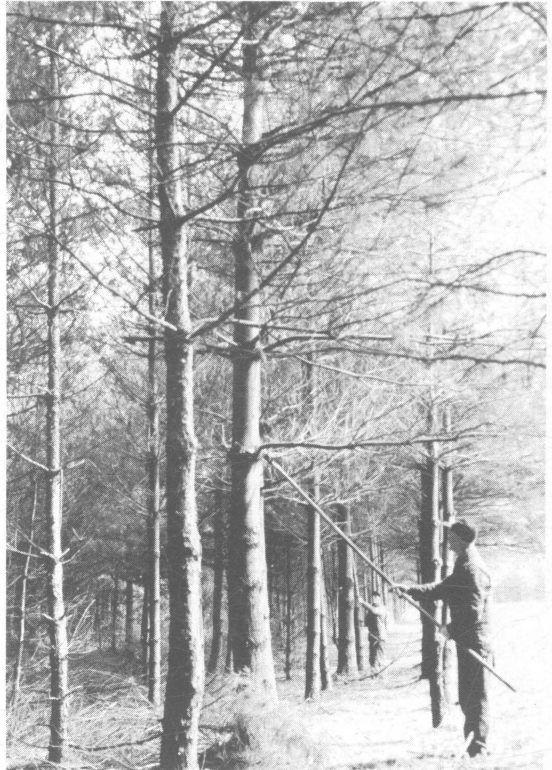
How to Prune

Cut off the limbs close to the tree trunk, without injuring the bark. Stubs will not be grown over for many years, during which time wood-rotting fungi can enter. Make an undercut on heavy limbs to prevent them from splitting the trunk as they fall.

Some hardwood kinds of trees require extra attention. Black walnut, for instance, develops a spreading crown. Catalpa is inclined to fork. Treat a forked tree, or one with several main shoots, by choosing its best stem for a leader and removing the others. Water sprouts on oak or maple trunks will degrade the wood and should be removed. Cut off, too, any large root crown suckers.

Do not prune live limbs from trees on the margins of your plantation, for those trees shield the stand from the detrimental effects of wind and sun. During severe storms this border screen protects the other trees from windthrow.

POLE-SAW PRUNING --
By the use of a pruning saw attached to a 12 or 14-foot pole, the limbs can be removed to 17 feet above the ground.



WOOD USES FOR THE FOREST TREE SPEC

Species of Tree	PRODUCTS FROM FINAL CROP											
	Lumber	Poles	Piling	Anth. Mine Timbers	Cross Ties	Slack Cooprage	Tight Cooprage	Shingles	Lath	Boxes Baskets & Crates	Furniture Veneer	Chipped, Hugged or Defiberized Wood
White Pine	*	X				*	X	*	*	*	X	*
Red Pine	*	X	X	*	X	X			*	X	X	*
Pitch Pine	*	X	X	*	*	X			*	X		*
Scotch Pine	X			*	X	X			X	*		*
Banks Pine	X			*	X	X			X	X		*
Shortleaf Pine	*	*	X	X	*	*	X	X	*	*	X	*
European Larch	X	*	X	X	*	X			X	X		
Japanese Larch	X	*	X	X	*	X			X	X		
Norway Spruce	*	X			X	X		X	*	*	X	*
White Spruce	X	X			X	X		X	*	*	X	*
Red Spruce	X	X			X	X		*	*	*	X	*
Hemlock	*	X		*	*	X		*	*	X	X	*
Douglasfir	*	*	*	*	*	*	*		*	*	*	X
Balsam Fir	X					X				X		*
Red Cedar	*	*	*		X	X		*		*		
Black Walnut	*			X	*					X	*	
White Oak	*	*	*	*	*	*	*		X	*	*	X
Red Oak	*	X	*	*	*	*	X		X	X	*	X
Tulip Polpar	*	X				*		X	X	*	*	*
Black Locust	X	*	*	X	*							
Sugar Maple	*		X	*	X	*	X		X	X	*	X
White Ash	*	X	X	X	X	*	X			*	X	X

*—Species of outstanding merit for a particular use.

X—Species usable, but

SPECIES ORDINARILY PLANTED IN OHIO

					PRODUCTS FROM THINNINGS												
Chipped, Hogged or Defiberized Wood	Pulpwood	Fence Posts	Bitum. Mine Props	Excelsior.	Charcoal	Chemical Wood	Fuelwood	Small Dimension Stock	Bean & Hop Poles	Tree & Grape Stakes	Rustic Construction				Christmas Decorations		
											Cabins	Arbors & Trellises	Fencing	Furniture	Xmas Trees	Boughs	Cones
*	X			*	X		X	*			X				X	X	*
*	X	X	*	X	X		X	X			X				X	X	*
*	X	X	*	X	X		X	X			X						*
*	*	X	*	X	X		X	X			X				X		X
*	*	X	*	X	X		X	X			X						X
*	X	X	X	X	X		X	X			X						X
	X	*	X	X			X		X			X	X	X			X
	X	*	X	X			X		X			X	X	X			X
*	*	X		X	X			X			*	X	X	X	*	*	*
*	*	X		X	X			X			*	X	X	X	*	*	X
*	*			X	X			X			*	X	X	X	X	X	X
*	*		*	X	X		X	X	X		X	X			X	X	X
X	X	*	*	X	X			X			X	X			*	*	X
*	*			X	X			X			X				*	*	X
	X	*						*	X	*		*	*	*	X		
	X	X	X					*									
X	X	*	*		*	X	*	*	*		X	X	X	X			
X	X	X	*		*	*	*	*	*		X	X	X	X			
*	*	X		*	X		X	*	X								
		*	X		X		*	*	X			*	*				
X	X		*		*	*	*	*	*					X			
X	X	X	X		*	*	*	*	*				X	X			

le, but of second rate quality.

Cost of Pruning

A question often asked is, "What does it cost to prune an acre of pines?" Perhaps the best way to estimate the cost is in terms of man-hours required to do the work. By working steadily, you could do the low pruning on an acre of pines in about 12 hours. On the high pruning (7 to 17 feet above ground) you will ordinarily treat 100 linear feet of trunk, or 10 trees, per hour.

Assuming that you have selected 200 crop trees per acre and plan to confine the high pruning to them, you should cover the acre in 20 hours with a pole-saw. So it takes you 12 plus 20, or 32 man-hours, to complete the job.

Therefore, unless you, the owner, do this work yourself, pruning can require a sizable outlay of cash. Still, since pruning will more than double the value of your future sawlogs, it is a profitable undertaking.



LOW-PRUNING -- A hand pruning saw was used to trim these white and red pines to about eight feet above ground.

Thinning

Thinning a stand of trees is identical in principle to thinning other crops; for example fruits or vegetables which you cull to promote the best growth of a select portion, rather than to be satisfied with a dwarfed development of the whole. Unless you reduce the density of your plantation by carefully-timed thinnings, it is apt to stagnate from overcrowding.

When to Thin

Generally, it is not practical to start thinning until the value of the trees you cut will at least repay the cost of removal. The age at which you can profitably undertake this depends on your local labor rate and market.

In sections of Ohio where good markets for small products exist, early thinning is feasible and advisable. Ordinarily, a first thinning pays for itself at from 20 to 25 years after the trees are planted.

During the dormant season is the best time of year to thin. In warm weather blue-stain or wood-boring insects often damage rough wood products cut and piled in the woods.

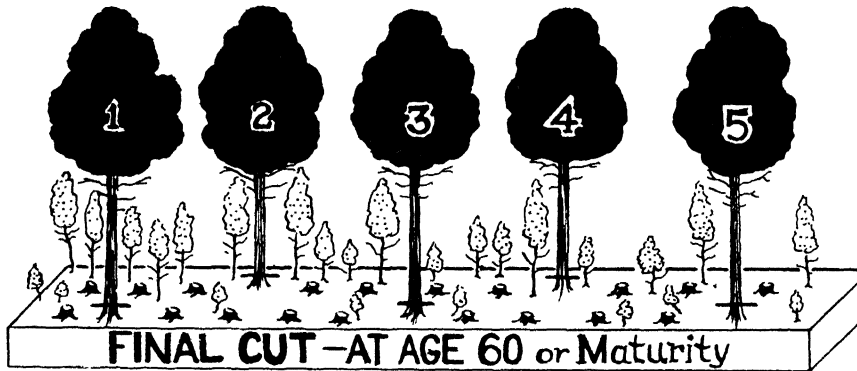
How to Thin

Thin following the high pruning, but coordinate the two operations. Mark for thinning the trees whose crowns interfere most with the development of your chosen crop trees--those you have high-pruned. You should free your crop trees from serious competition; not all at once, but over a period of years and after several thinnings.

At each successive thinning, give the crowns and roots of your crop trees more growing space. When their crowns have filled the openings made by a previous thinning, it is time to thin again.

By starting early and doing light and frequent thinning, you permit your crop trees to adjust themselves gradually to their changed environment. Conversely, severe thinning invites wind-fall and damage from snowbreak or sunscald.

Row-thinning offers you another practical approach. The removal of every third row of trees facilitates your cultural operations; these opened lanes afford you quick access to all parts of the plantation.



Steps in Thinning for the Average Plantation

PLANTATION THINNING — At each thinning, cut the trees with darkened crowns, so the crop trees (1, 2, 3, 4 and 5) may grow rapidly into timber. As the stand is thinned, reproduction comes in but grows slowly until given full sunlight.

ROW-THINNING -- In large plantations, by cutting every third row of trees you can more easily remove the wood products from thinnings.



Protection

A plantation of trees is subject to injury by fire, wind, snow and ice, drought, insects and diseases. Domestic livestock can be very injurious to it. Although every kind of tree has natural enemies and harbors pests of some sort during its life cycle, few of them ever become serious. Occasionally one requires special treatment, if the expense is not prohibitive.

Cultural operations offer the best defense against many major tree enemies. Epidemics of insects or diseases seldom occur in plantations which are kept in vigorous growing conditions. Fire risk, too, is reduced to a minimum in such managed stands.

Grazing

You cannot practice pasturage and timber culture together on the same area, except to the material disadvantage of each. Your cattle derive little nutritive value from the woody plants or from the sparse, shaded grasses that may exist in your plantation. But they do damage your trees by their repeated browsing of all twigs and foliage within reach; trampling down seedlings; gnawing, peeling and barking roots; and by compacting the soil. As a result the canopy opens, exposing the soil to the action of sun and wind; grass and weeds enter, and your plantation gradually deteriorates. So keep the cattle out!

Fire

Grass fires are a potential threat to your planted trees. One fire of short duration can undo the labor, care and expenditures of many years. It kills young trees, destroys or injures older trees, retards growth, increases damage by insects and diseases, consumes leaf litter and humus, and lowers the productive capacity of the soil.

Complete destruction results if the flames, backed by a wind, reach the crowns of dense conifers and spread from tree to tree. The first 10 to 15 years—while live foliage extends to the ground—are the most hazardous period, especially if your plantation adjoins areas of high fire risk. Be careful with fire—it pays!



TREATED PLANTATION -- This pruned and thinned white pine plantation will increase in value and growth. Products are being worked into posts and small poles.

Benefits

In addition to the satisfaction you derive from owning a well-kept farm plantation, your trees will provide you with a home-grown supply of wood for fuel, for fencing and farm upkeep and, perhaps, a surplus for sale. By doing your own woods work at slack times in the winter when your labor might otherwise be idle, you can keep the net cost of your planted woodlands quite low.

The woodlands also afford you and your neighbors water conservation, erosion control and wildlife cover. Another satisfaction, enjoyed by most owners of tree plantations, is the peace and calm and the play of shadow and sunlight found in woodlands.

You yourself may not harvest the final crop, but the beauty of the tree growth and your interest in tending your own woods will become a matter of personal pride, an investment for your children or an improvement of your property and its market value.

In short, your forest tree plantation—when properly cared for—is an asset to your farm. It makes more of your waste land pay its way.

Other Information You May Want

The Agricultural Extension Service has many other bulletins and leaflets on various phases of farm and home management. You may secure copies of these by contacting your county Agricultural Extension office.