



Suggestions for
IMPROVING FARM WOODLOTS
By Girdling and
Poisoning Weed Trees

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Suggestions for **IMPROVING FARM WOODLOTS**

By Girdling and Poisoning Weed Trees

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FARM WOODLOTS, if kept productive, will increase in value and furnish a good source of revenue to the owners. The most serious obstacle to wide application of good forestry practices has been the reduction in quality by cutting most of the good trees and leaving the poor ones. If a woodlot has been neglected and abused, it will cost money to restore it to good condition. After improvement practices are started, good trees will add valuable wood on their trunks every year until they are harvested. When the trees are harvested, the owner will receive a good return on the small investment he has made in stand improvement work.

A large percentage of the forest land in Alabama can and should grow pines. They grow rapidly and there is a market for small pines that are cut during thinning operations. In bottomland woodlots, valuable hardwoods can be grown and managed on these sites. Hardwoods to be of value must be grown to a fair size, not less than 16 inches in diameter at breast height, and must have a clear first log without defects.

ALLOW ONLY GOOD TREES TO GROW *in* WOODLOTS

To be highly productive, a woodlot must contain fast growing trees of high quality. They can be very small, young trees, but always should be those that are increasing in value from year to year. Pines and only the best hardwoods must be favored. All poor, defective, and slow growing trees must be eliminated to permit good trees to take over the growing space. This fact is particularly true with regard to scrubby hardwoods that can be considered as nothing but weed trees. Many experiments in forest management conducted by the Agricultural Experiment Station of the Alabama Polytechnic Institute substantiate this fact. The net income from a properly managed woodlot is 2 to 5 times more than from one that is neglected.

SELL MERCHANTABLE TREES *of* LOW VALUE

In any neglected forest stand, there are always some trees that, despite their low value, can be sold. They are

Cover

Young pines need growing space. The two oaks that have been girdled will die, making room for the more desirable pines.

trees of medium to large size, of slow growth rate, partly decayed, crooked, and very limby. Frequently, they can be sold for a low stumpage price. It is a good practice for the owner of a woodlot to get these trees out of the woods at any price. This is particularly true when the poor trees are crowding good, young trees that can grow into valuable ones in a short period of time. The aim is to have the woodlot fully stocked with good trees that can be harvested at a good stumpage price when they are ready to cut.

ELIMINATE DEFECTIVE, UNMERCHANTABLE TREES

In practically all unmanaged woodlots, there are many undesirable trees that cannot be sold. Such trees can be eliminated only at some expense to the owner. This is necessary, however, in order to develop a highly productive forest stand. Experiments aimed at effective ways of doing this have been carried on for a number of years by this Station. Results show that, to rid stands of undesirable species, it will cost \$2 to \$6 per acre. The value of annual growth increase on remaining trees will equal or exceed removal cost.

Fertility of forest soils determines the amount of growth per acre per year. For this reason, unmerchantable trees in stands on better sites should be eliminated first.

SPROUTING *is a* PROBLEM

If undesirable, unmerchantable trees are to be eliminated, their capacity to sprout must be taken into consideration. It is not enough to merely deaden or kill those trees that are known to sprout profusely. Provision must be made to prevent or at least to reduce the amount of sprouting if good trees are to take over the growing space. Research results show that the amount of sprouting varies with species, site conditions, stand density, tree vigor, and particularly with the age and size of the tree.

Since age of a standing tree is not easy to determine, size can be used as a guide. Except for red maple, red and black gums, experimental results indicate that stumps of trees with diameters of 12 or more inches at breast height produce few sprouts.

GIRDLING LARGE DEFECTIVE TREES

Large worthless trees take up large areas of growing space. They always should be eliminated as soon as possible on all types of forest land. The most economical way of killing large trees is by girdling. Girdling is done at any convenient height with a sharp, light-weight ax. A series of lower and upper overlapping hacks are made until the tree has been completely ringed. The cuts should be made well into the wood so that a chip falls out when the upper hack is made (Figure 1). When trees are fire scarred and deep bark seams have formed, the ingrown bark must be chipped out until all live tissue is completely girdled. This method of girdling can be done at any time of the year. For girdling oaks and hickories during the spring and summer months, light hacks just deep enough to penetrate the bark are recommended. The



FIG 1. Defective, slow growing, hardwood is girdled to give growing space to pines.

hacks should be vertically spaced about 6 inches apart, and the bark removed between the two rings of hacks. Degree of kill or sprouting is affected very little by the season during which it is done.

POISON UNDESIRABLE TREES of MEDIUM and SMALL SIZE

Undesirable trees of medium and small size must be eliminated when they compete with or overtop good trees, even if these good trees are very small. Practically all such work will consist of liberating pines of all sizes down to small seedlings. Good hardwoods, if present, are also favored. Undesirable and defective hardwoods under 4 inches in diameter almost always sprout when cut. Those trees between 4 and 12 inches in diameter and gums even over 12 inches put out such a large number of sprouts that merely killing them is not sufficient. They should be poisoned to reduce sprouting. Sprouts grow rapidly and overtop small pines, so very little is accomplished by way of improving the forest stand if sprouts are not also killed.

CHEMICALS USED for KILLING TREES

Until recently, satisfactory poisons for killing trees were not available. Arsenic and some other chemicals were dangerous to use and were not effective in preventing sprouting. The outstanding characteristics of recently developed organic poisons used for killing trees are their non-poisonous effects to people, wildlife, and livestock. Their action is selective in that they kill certain trees or plants quite readily and may not affect others. Their action is also erratic in that they kill certain trees and prevent sprouting quite readily at one time, yet may appear much less effective at another time. Experimentally, they have been applied in various dosages, at different seasons, and by various methods to the most common undesir-

able hardwood species. Many ways of using them give fair results. A few satisfactory methods are described here.

HOW TO USE AMMATE in CHOPPED CUPS

For trees 4 to 12 inches in diameter and gums over 12 inches, ammate crystals placed in chopped cups is one of the satisfactory ways of killing them and preventing most of the sprouting. Ammate, in yellow crystal form, is purchased for 18 to 35 cents per pound, depending on quantity in which it is bought. It must be stored dry at all times or it will deteriorate. Ammate is very corrosive to metal. All metal exposed to ammate must be thoroughly washed and rinsed with lime water after each use. Somewhat over 200 trees can be poisoned per man-day of labor. Cost of poisoning depends on the number of trees treated per acre and the wage scale paid for labor. Usually it is from \$3 to \$6 per acre.

Ammate in crystal form must be applied at the root collar. Notches or cups spaced not over 6 inches apart around the base of the tree are chopped with an ax. One heaping tablespoonful of ammate crystals (about one ounce) is placed in each V-shaped notch immediately after the notches are cut (Figure 2). The best time to use am-



FIG. 2. Medium-sized undesirable hardwood is poisoned by placing ammate crystals in chopped cups at the root collar.

mate is from January through August. It affects trees immediately. Some trees may start to die within a few days, whereas others may gradually die over a period of 2 years. Some trees sprout after treatment, only to have the sprouts die later. Experimental results show an effective kill in low-grade hardwoods of about 90 per cent, while sprouting is reduced to 20 per cent or less.

HOW TO USE AMMATE *for* KILLING HICKORIES

Ammate crystals applied experimentally in cups to hickories proved to be ineffective. To get satisfactory results with hickories, it is necessary to chop frills at the root collar. The frills, or single hack girdles, are overlapping, deep ax cuts encircling the tree. Ammate crystals are applied in the frill over the complete circumference of the tree. The amount required is about a heaping tablespoonful for every 6 inches of frill.

HOW TO USE OTHER ORGANIC POISONS *in* FRILLS

There are other organic poisons that will kill trees and also prevent or limit sprouting. They are sold as colorless liquids and are designated as low-volatile esters of 2,4-D or 2,4,5-T. The first of these chemicals usually sells for about \$5 or \$6 a gallon, and the second for about \$12 a gallon. It appears that 2,4-D is fairly effective on some trees, and that 2,4,5-T is considerably more reliable and effective on most of the common undesirable hardwood species. To get satisfactory results and to limit the cost of treatment, half-and-half mixtures of the two chemicals can be used. They can be bought already mixed. If diluted with water, they do not dissolve but form an emulsion that needs to be stirred or shaken frequently. They are soluble in oil; if diluted with diesel fuel oil or kerosene, they remain in solution and do not require stirring.

An oil solution costs more per gallon than a water emulsion, but it is more effective for killing trees and preventing sprouting. When any of these chemicals are diluted, an inexpensive chemical dye is added in small amounts. This colored solution prevents applying treatment twice to the same tree or missing others. The organic poisons described are not corrosive to metal containers.

For poisoning trees, either chemical is diluted by mixing one pint of concentrate to 6 gallons of water or oil. Diluted chemicals are applied by pouring the prepared solution into frills at any convenient height up the tree trunk. Deep ax cuts encircling the trees are made by two- or three-man crews followed by another man who pours the chemical into the hacks. Diluted poison can be carried in a back-pack container and applied through a flexible hose with a shut-off valve and spout reduced to give a small stream of liquid. An oil can fitted with a short piece of small rubber hose can also be used to apply the solution to the frills (Figure 3). The best results from this method are obtained when treatment is applied between February and July. As much as 100 per cent kill of trees has been obtained, and sprouting has been nearly eliminated. The cost varies with the number of trees treated per acre and



FIG. 3. Medium-sized undesirable hardwood is poisoned by pouring 2,4,5-T into a frill chopped at a convenient height.

the wage scale. Usually it ranges from \$2 to \$4 per acre. The labor requirements are about the same as for applying ammate crystals in cups, but the cost of poison per tree is less.

POISON STUMPS *of* SMALL TREES TO CURB SPROUTING

Small inferior trees between 1 and 4 inches in diameter that compete with pines or desirable hardwoods can be cut with an ax. V-notch stumps are left, and ammate crystals are placed in the notches. The amount varies with the size of stump. Crystals are applied in the ratio of 1 heaping tablespoonful to 2 inches of stump diameter. This method is the least expensive way to reduce sprouting. Only about a third of the stumps treated with ammate will sprout. Sprouting can be limited to about 10 per cent if the oil solution of 2,4,5-T instead of ammate is used to thoroughly wet the stumps (Figure 4).



FIG. 4. Small hardwood is chopped down and 2,4,5-T is poured on the stump to prevent sprouting.

This treatment will cost about 50 per cent more than the application of ammate.

PLANT WHERE DESIRABLE TREES ARE NOT AVAILABLE

Where defective and undesirable trees have taken over forest land completely, it may be necessary to plant pines after the worthless trees have been poisoned. This situation may exist only in spots, and spot planting would be an excellent follow-up of poisoning work. The cost of establishing a well-stocked stand will be increased by the amount of necessary planting.

SUMMARY

Neglected woodlots need improvement work to restore their productivity. Defective hardwoods should be eliminated when they compete for growing space with good trees. Merchantable trees of low value can be sold for a low stumpage price. Large undesirable trees can be girdled; as a rule they do not sprout. Medium-sized trees can be poisoned with ammate in chopped cups, or in frills for hickories. They can be killed effectively also by using esters of 2,4-D and 2,4,5-T in frills. Small trees can be cut and ammate or other chemicals applied to stumps to prevent sprouting. This work can be done at a reasonable cost and it is an economically sound practice. Thus, woodlots of low productivity can be converted into stands of good trees that increase in value as they grow. When these trees are harvested, either in intermediate thinnings or when they reach maturity, they will pay good dividends to the owner.