CENTRAL HARDWOOD NOTES

Individual Tree Control

Controlling individual unwanted trees in forest stands is a readily accepted method for improving the value of future harvests. The practice is especially important in mixed hardwood forests where species differ considerably in value and within species individual trees differ in quality. Individual stem control is a mechanical or chemical weeding operation that eliminates undesired trees competing for site resources. Both methods have advantages and disadvantages. The risk of bodily injury is an inherent safety problem with mechanical methods. Injury to desirable plants is a potential problem with chemical methods. However, since herbicides used in control are placed directly on the tree, the potential for plant injury results from "backflash" rather than foliage contact. Backflash is herbicide uptake by untreated trees adjacent to the herbicide-treated trees. This uptake may occur through root grafts, herbicide exuding from roots, or herbicide spillage.

Girdling

An ax or saw is used to cut through the bark and into the wood around the entire stem of the tree. When done with an ax, this strip is generally four inches wide and encircles the stem. The bark in this band is removed from the tree (fig. 1). When a chain saw is used (fig. 2), usually two rings, 2 to 4 inches apart, are cut around the tree (fig. 3). This double "chain saw girdle" is more effective in reducing the likelihood of the cambium growing over (bridging) a single narrow saw kerf of a single girdle.

Advantages

No special equipment necessary when done with an ax.

Disadvantages

Tendency for the tree to bridge a narrow girdle.
Ingrown bark must be cut or interrupted.
Sprouts will occur below the girdle.
Girdling with an ax is laborious.
Chain saw and ax use are hazardous.

Frilling

Frilling is a variation of girdling. With an ax, hatchet, or similar tool, a series of downward cuts are made around the tree (fig. 4). However, the bark and wood are left as a flap into which a herbicide is added to improve effectiveness (fig. 5). Since the cut is very narrow, the addition of herbicides helps prevent the tree from growing over the girdle. It is not uncommon to make the girdle with a chain saw and add the herbicide with a squirt bottle or hand sprayer (fig. 6). Suggested herbicides include glyphosate (Roundup)[1], 2,4-D amine, 2,4-D + picloram (Tordon RTU), triclopyr (Garlon 3A), and dicamba (Banvel).

[1] Use of trade names does not constitute endorsement of the products by the USDA Forest Service.

Advantages

Faster, more effective control than girdling alone
No specialized equipment required.
Can be done throughout the year.

Disadvantages

Frilling with an ax is laborious.
Chain saw and ax use are hazardous.

Spaced Cuts/Tree Injection

Spaced cuts are made around the stem with an ax, hatchet, or tree injector and small amounts of herbicide are added to the cuts. This is similar to frilling except the cuts do not overlap, so labor and herbicide usage are reduced. The cuts, about 1 to 2 inches wide, are spaced around the tree about 1 inch apart, edge to edge. A small amount of herbicide, 1 to 2 milliliters, is added to each cut (fig. 7). Specialized equipment is available, but its expense is probably not warranted for small ownerships (figs. 8 and 9). Suggested herbicides include glyphosate (Roundup), 2,4-D amine, 2,4-D + picloram (Tordon RTU), triclopyr (Garlon 3A), and dicamba (Banvel). The 2,4-D amine is more effective in the growing season than when the trees are dormant.

Advantages

Faster, more complete control than girdling.
Less labor and herbicide than frilling.

Disadvantages

Erratically spaced cuts result in incomplete control.
Injection during periods of rapid sap flow may reduce effectiveness.
Ax use is hazardous.

Cut Stump

Cutting down the undesired trees has immediate visual and release effects. Whether done with ax or saw, there is a very high probability that the stump will sprout if the cut surface of the stump is not treated with a herbicide soon after cutting. Stump sprouts can be important competition if allowed to develop too close to crop trees. The herbicide should be applied immediately after cutting to the cambial area of the stump, where the bark and wood meet. It is not necessary to treat the entire stump (fig. 10). The herbicides effective in frilling are also effective when applied to fresh cut stumps, i.e., glyphosate (Roundup), 2,4-D amine, 2,4-D + picloram (Tordon RTU), triclopyr (Garlon 3A), and dicamba (Banvel).

Advantages

Immediate visual and release effects.

Disadvantages

High costs relative to benefits.
Chain saw and ax use are hazardous.

Low Volume Basal Spray

Spraying the lower portion of tree stems with herbicides has been a long established practice on rights-of-way. In the past, treatments used low concentrations of herbicide and high volumes of carrier per acre, usually 50 to 80 gallons of diesel oil. More recently it has been found that increasing the concentration of herbicide makes it possible to control woody plants while using only one-tenth the amount of carrier (5 gallons of carrier per acre) if a hand sprayer with a very small diameter spray tip is used (fig. 11). The herbicide mixture contains 20 to 30 percent herbicide in an oil carrier and is applied to the entire lower 12 to 18 inches of the stem in sufficient quantity to wet the surface but not to the point of runoff. Suggested herbicides include triclopyr (Garlon 4), triclopyr plus picloram (Crossbow or Access), and 2,4-D plus dichlorprop Weedone CB).

Advantages

Effective year round.

An effective method for treating small stems.

Disadvantages

Working with oil carrier may be undesirable.

Tends to be less effective on stems larger than 4 inches diameter.

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Figure 1 .-A band approximately 4 inches wide is removed when girdling is done with an ax. (Harvey Holt)

Figure 2.-Chain saw girdling must be done carefully. Chain saw chaps are recommended. (Harvey Holt)

Figure 3.-When girdling is done with a chain saw and no herbicide is added to the cut, a double girdle should be made. (Harvey Holt)

Figure 4.-Frilling leaves bark and wood flaps encircling the tree. (Harvey Holt)

Figure 5.-Small amounts of a water soluble herbicide should be added to the frill. (Harvey Holt)

Figure 6.-Single girdles with a chain saw are treated with a water soluble herbicide to assure better control of undesired stems. (Harvey Holt)

Figure 7.-Applying herbicide in spaced cuts with a hatchet and squirt bottle is the least laborious method of controlling unwanted trees. Keep the spacing between cuts less than 2 inches. (Harvey Holt)

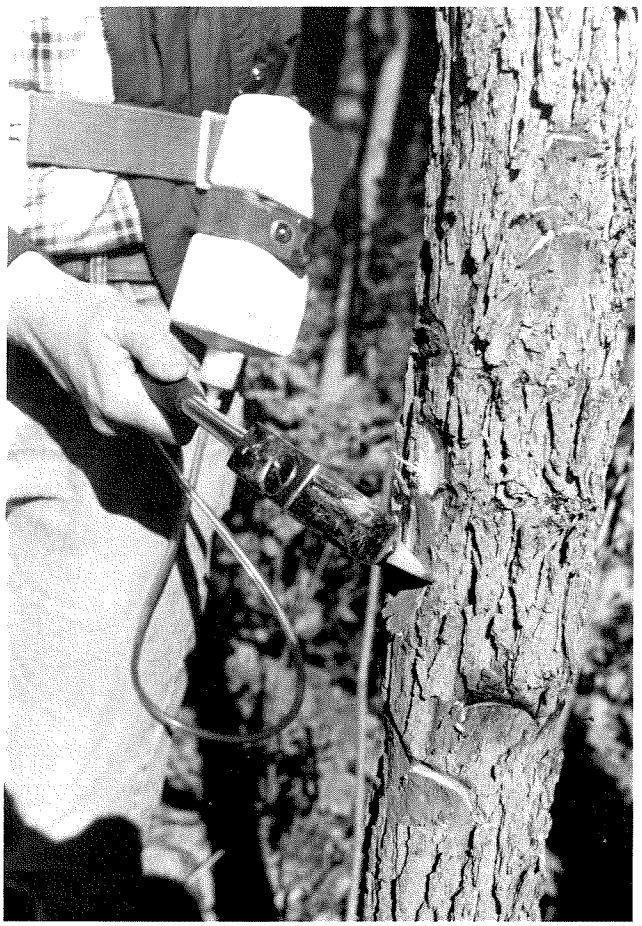

Figure 8.-The Hypo-Hatchet Injector automatically injects small amounts of herbicide into the tree when it strikes the tree. The reservoir is worn by the worker and is attached to the hatchet by a flexible hose. (Harvey Holt)

Figure S.-Tubular injectors are jabbed into the base of the tree at a 1 -inch spacing around the tree. This equipment has a long history of use in forestry. (Harvey Holt)

Figure lO.-The outer portion of the stump where the bark and wood meet is the most critical part of the stump to be treated to reduce sprouting. (Harvey Holt)

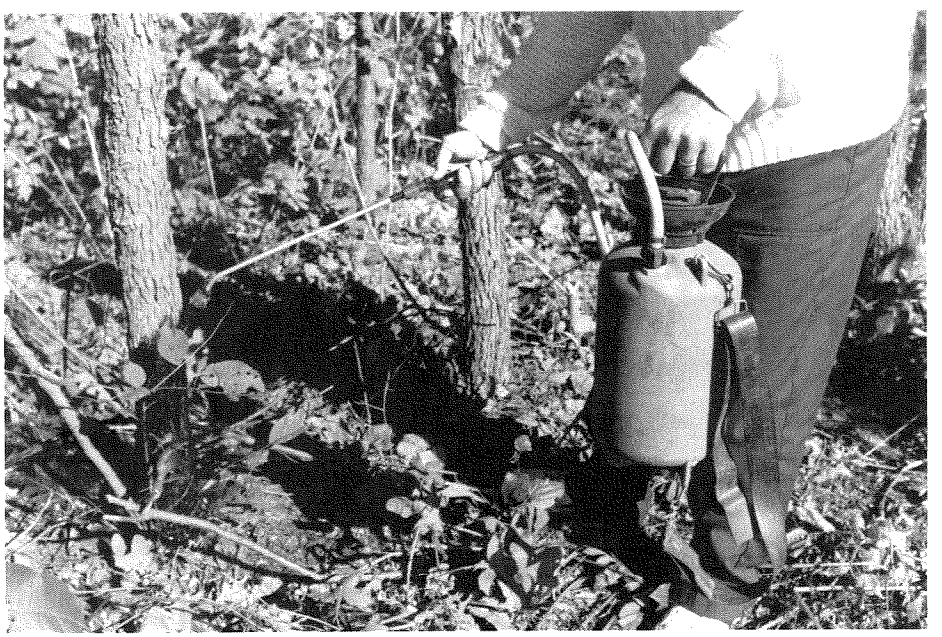

Figure i 1 .-Low pressure and a small diameter spray tip make it easy to wet the base of the tree with a minimum amount of oil-soluble herbicide. (Harvey Holt)