FORESTRY HERBICIDES

landowners updated about these valuable aids to controlling undesirable vegetation

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If you own or manage pine timberlands in the South, you know only too well that unwanted vegetation can be stubborn when you arc trying to reforest, convert a stand, or improve pine growth by reducing competition. Are you aware. however, that many forestry herbicides are proving effcctivr in eliminating this undesirable vegetation, both before and after pine establishment? You can sometimes even apply the chemicals yourself, although in many other cases only a licensed applicator should use them.

Either way, herbicides can be a vital tool in your management plans. In this article we will update you on products currently registered and used for various forest management treatments and will also mention developments likely to occur in research on these herbicides.

Current Status

Site preparation. Herbicides now appear to be thk most promising treatment for site preparation. These chemicals have the least impact on site quality, since valuable topsoil is not disturbed and organic matter is left in place to decompose and provide slow-release nutrients to the new stand.

Registered pelleted herbicides currently are limited to formulations of picloram and hexazinone. The latter is discussed below. Picloram is available as the 10 percent pellet which is generally broadcast at the rate of 20 to 85 pounds per acre. It controls a wide variety of plant species but is particularly noted for its activity against kudzu. Pines are susceptible and care must be exercised in planting seedlings in areas which have been treated with maximum doses.

Registered liquid formulations that arc effective for site preparation are listed in Table 1. Most products listed have been around for some time. The newest site preparation chemicals on the market are fosamine, glyphosate, hexazinone and

trichlopyr.

Fosamine is generally applied in late summer or early fall as a foliar spray. It is not soil active. Brush responses are not observed until the following spring when treated plants either fail to leaf out or produce miniature abnormal leaves. Spring application usually inhibits growth of treated plants. It is applied at 2 to 3 gallons of product per acre for site preparation. Fire should not be used the winter or early spring following application. Fosamine gives good control of a variety of woody plants but is less active on maple, blackgum, hickory and poplar. Pines are susceptible.

Glyphosate may be applied as a foliar spray anytime during the growing season but spring application usually requires higher rates of treatment than late summer application. It can be applied at rates up to 1 gallon of product per acre. Glyphosate is less effective against blackgum, maple and dogwood than it is on other species.

Hexazinone is commercially available in three formulations: the liquid (Velpar L®) and pellets (Velpar® Gridball® and Velpar® Gridball® ½cc brush killer) All are effective, and if foliar application is practical, the liquid is more cost-effective than the pellet The pellet has undergone some changes since its first introduction as the Velpar Gridball. U.S. Forest Service research indicates that a new pellet (½cc), which is ¼ as large as the original, is 50 to 75 percent more effective against small hardwood stems and is just as effective as the original formulation against large stems.

Further. when used for pine release. there seems to be less pine mortality with the smaller pellet. Hexazinone rates for site preparation must he determined on the basis of soil texture and organic matter. Generally. hexaiinone pellets are applied in early spring at the rate of ¾ to 3 pounds active ingredient per acre. It is effective against a wide variety of species but is less effective against dogwood, maple, hickory, and blackgum.

Trichlopyr is available in an emulsifiable concentrate of 3 and 4 pounds per gallon. It is best applied as a foliar spray in spring at 1 to 3 gallons per acre depending on species present and the type of mixture being applied. Costs can be significantly altered and a broader spectrum of activity obtained by mixing a formulation of trichlopyr with Tordon 101 according to label instructions.

Advances are also being made by the U.S. Forest Service which will permit regeneration of lands now infested with particularly persistent weed species. One of these problem areas is the palmetto-wire grass-pine types of the lower Coastal Plain flatwoods. Saw-palmetto can now be controlled with an equal mixture of Acme Super Brush Killer and Garlon 4E at 8 to 12 pounds active ingredient per acre, by applying broadcast from a tractor-mounted boom sprayer or by hand. The control, 80 to 100 percent depending on amount of chemical applied. lasts for two to four years, enough for either planting or natural regeneration of pine.

Stand release. At present, only two chemicals are registered that can be broadcast throughout the South for releasing pines from hardwood competition. Probably the most widely used is Velpar. It can be very effective when the small pellet is used (see discussion of hexazinone under site preparation). Roundup has recently been registered for late season application for conifer release throughout the South.

Weedone 2,4-DP is registered in Arkansas, Mississippi, North Carolina, Tennessee and Louisiana for aerial or ground broadcast application and in Alabama for use as a directed spray. Best results are obtained when applied after pines have completed the first growth flush and hardwoodsare in full leaf and growing vigorously.

Many techniques for individual stem treatments have been developed over the years. the most common being injection with a herbicide. Individual stem treatment with a pelleted herbicide is also a promising technique, and much less of a chore than injection. Soil-active herbicides are most effective on well-drained, sand) and loamy soils. They are least effective on poorly drained wet soils and should not be applied where there is often standing water. They are also less effective on heavy clay soils and soils with high organic matter content. It is possible to at least partially compensate for lower effectiveness on a particular soil by increasing the treatment rate up to the limit imposed by the label.

A heavy Found cover of herbaceous weeds is a different problem. But chemicals that effectively control most weeds and grasses without harm to pine seedlings are being tested and some are already available. Hexazinone, applied as Velpar L at label rates, controls many herbaceous weeds including goldenrod, pokeberry and ragweed. It also controls blackberry and to some extent switchcane and wild grape. Oust® is a patented herbaceous weed control agent which can safely be applied over tops of one-year-old pine seedlings at rates up to 2 pounds active ingredient per acre. Oust exhibits both pre- and post-emergence activity and is typically applied at rates up to ¼ pounds active ingredient per acre. As a post-emergent herbicide, Oust gives excellent control of goldenrod, dogfennel, blackberry, pokeberry, and ragweed. It also gives good control of Japanese honeysuckle but does not appear to affect other vines such as trumpet *creeper* and Virginia creeper. Herbicide formulations effective against other individual problem species are also being developed.

Herbicide Research

Perhaps the most encouraging aspect of current research is the development of herbicides that are highly effective against some serious problem species. yet not harmful to pines and valuable hardwood species. Herbicides are also readily adaptable to small tracts, and in the case of pelleted herbicides can he easily applied by hand.

Prescriptions of the proper herbicide or herbicide mixture which will control competing species on specific sites and combinations of herbicide treatments with a mechanical treatment and/or prescribed fire can reduce treatment costs. Continued research will eventually provide the forest manager with a number of low-cost treatments so that site-specific prescriptions can he made to meet the landowner's management objectives at a reasonable cost and at minimum risk to the productivity of the site.

The mention of trade names does not imply endorsement by the authors, the U.S. Department of Agriculture, Forest Service, or Forest Fanners Association. When using these chemicals, read the label carefully and follow directions closely. □

Liquid herbicide formulations registered for site preparation in the South.

Trade Name	Chemical	Manufacturer
Acme Super Brush Killer	Trimec (2,4-D + 2,4-DP + Dicamba)	PBI Gordon
Banvel 4ws	Dicambo	Velsicol
Banvel 520 and 720	2,4-D + Dicamba	Velsicol
DMA 4	2,4-D amine	DOW
Esteron 99	2,4-D	Dow
Garlon 3A and 4E	Trichlopyr amine and ester	Dow
Krenite	Fosamine	DuPont
Roundup	Glyphosate	Monsanto
Tordon 101 mixture	Picloram + 2.4-D	Dow
Transvert	MSMA	Union Carbide
Velpar L	Hexazinone	DuPont
Weedar 64	2.4-D amine	Union Carbide
Weedone 170	2.4-D + 2,4-DP	Union Carbide
Weedone 2,4-DP*	2,4-DP	Union Carbide

*24(c) registration for site preparation in Texas Virginia South Carolina Alabama Arkansas and Georgia Check with each state division of forestry for possible state-imposed restrictions before using any of the listed chemicals