

FORESTRY Leaflets

North Carolina Division of Forest Resources

Renovating Longleaf Pine Stands for Pinestraw Raking

While it is generally necessary to control competing vegetation in order to permit maximum access and harvest of pinestraw within a forest stand, one should not fail to realize that any manipulation of vegetation will either benefit or hinder the existence of associated flora and fauna. The frequency and intensity to which vegetation management is exercised will determine the response from various species of plants and animals. Most certainly, we are only beginning to understand the effect of altering vegetation on the longleaf ecosystem.

It is largely agreed, however, that exclusion of fire, which is a form of vegetation management, is detrimental to the health of longleaf ecosystems and that under many management regimes, continued exclusion of fire may ultimately result in the loss of the longleaf pine itself.¹

In spite of the benefits of fire, control burning has been largely abandoned for various reasons. One of the most obvious reasons is that burning destroys the straw---the very item that is being sought.

The quickest way to clean up a straw stand is to bushog or chainsaw the impeding vegetation and stack it for disposal. However, mechanical control alone is mostly ephemeral and unless an herbicide is applied, the shrub competition soon returns.

Many may wish to avoid the use of herbicides from fear of totally disrupting the ecosystem; however, there are a number of cases in which the judicious use of an herbicide has yielded apparently positive results. Large scrub oaks, which once shaded out longleaf reproduction and wiregrass(*Aristida sp.*),

have been controlled. Well's Pixie-moss(*Pyxidantha barbulata var. brevifolia*) has been re-established; the habitat for the federally endangered red-cockaded woodpecker (*Picoides borealis*) has been improved; and an increase of leguminous and other herbaceous plants has also been noted, following the use of herbicides.

It is important to realize that herbicides may be applied by several methods, some of which can greatly limit the overall impact to non-target organisms. Treating cut surfaces of stumps, injection of selected stems, using directed sprays, or applying soil active formulations only where needed can offer low impact means of applying an herbicide to a very narrow zone of treatment.

In contrast, a broadcast application of various tank mixed herbicides can be utilized to control a wider spectrum of plant species, depending upon the rate of application. The rates applied may be adjusted to achieve either greater or lesser control---with respect to both species and time.

The point is that one can tailor herbicide applications to have a lesser or greater effect on vegetation, commensurate with one's management objectives.

Table 1 provides currently registered herbicides and methods of application useful for controlling woody vegetation in stands of longleaf.

Table 1. Herbicides for Control of Woody Plants

| Active Ingredient | Method of Application | Mode of Uptake |
|-------------------|---|----------------|
| glyphosate | Foliar spray Injection or Hack/squirt Cut stump surface | Foliar & stem |
| imazapyr | Foliar spray Injection or Hack/squirt | Foliar, stem & |

¹ Gilliam, F.S. Old-growth Longleaf Pine Stand Structure Under Conditions of Chronic Fire Exclusion. Page 403 in Proceedings 18th Tall Timbers Fire Ecology Conference. 1991.

| | | |
|---------------------|---|---------------------|
| | Cut stump surface | some soil |
| hexazinone granular | Spreader(hand or mechanical) | Soil |
| hexazinone liquid | Broadcast spray Spotgun | Soil |
| 2,4-D amine | Injection or hack/squirt | Stem & soil |
| 2,4-D ester | Foliar spray(usually directed) | Foliar |
| picloram+ 2,4-D | Cut stump surface Injection or Hack/squirt | Foliar, stem & soil |
| triclopyr ester | Foliar spray(directed) Basal bark Cut stump surface | Foliar and stem |
| triclopyr amine | Injection or Hack/Squirt Cut stump surface Foliar spray(directed) | |

It is important to read the label closely before using or even purchasing any herbicide intended for release of longleaf regeneration. Some products must be used only as a directed spray applied to the target vegetation. Others may be used over the top of longleaf regeneration as a broadcast spray.

Of all of the herbicides that are available for use, the liquid and granular forms of hexazinone have cleaned up more acres of longleaf than any of the others. This herbicide is particularly useful in control of scrub oaks so prevalent in longleaf pinestands, while having little or no effect on leguminous plants beneficial to wildlife. The liquid form of hexazinone may be applied to the soil using a spot-gun to meter the herbicide on a grid pattern throughout the stand, if necessary, or merely to apply it beneath unwanted trees. Granular formulations may be similarly applied by hand or by use of gasoline powered backpack blowers. Helicopters may also be used. The rate of herbicide applied is dependent upon the soil texture, so again, it is important to read the label closely.

If the hexazinone has been sufficiently taken up by the targeted trees, two or three defoliations should occur during the growing season. Once the trees fail to leaf out after treatment, they may be cut and piled.

Quick results may be obtained from the use of other herbicides by using tree injection or hack and squirt applications, although these applications are generally more labor intensive than applications of soil active herbicides, such as hexazinone. Special tree injectors may be used, but a hatchet and squirt bottle will work equally well in most cases for most species. Again it is important to follow the label to use the correct amount of herbicide. In general larger trees will require more hacks or points of injection than small ones and if the herbicide is diluted, more of the mix and closer spacings may be necessary than if the product is undiluted.

Table 2 provides the optimum timing for several application methods of various herbicides and should be followed as closely as possible for best results.

Table 2. Optimum Timing for Ground-applied Forestry Herbicides in the South

| Herbaceous Weed Control | Jan | Feb | Mar | April | May | June | July | Aug | Sept | Oct | Nov | Dec |
|----------------------------|--------------------------|------|------|--------------|------|------|------|------|------|-----|-----|--------------|
| Oust | | ■ | ■ | best | ■ | | | | | | | |
| Oust + Velpar L | | | best | ■ | ■ | | | | | | | |
| Oust + RoundUp | | | | | best | ■ | ■ | | | | | |
| Poast or Fusilade | | | | | ■ | ■ | | | | | | |
| Spotgun | | | | | | | | | | | | |
| Velpar L | | ■ | ■ | best | ■ | ■ | | | | | | |
| Injection | | | | | | | | | | | | |
| Tordon 101 R/RTU | ■ | ■ | ■ | questioned | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| 2,4-D amine | | | | | | | | ■ | ■ | ■ | ■ | ■ |
| Garlon 3A | ■ | ■ | ■ | questioned | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| RoundUp or Accord | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Directed Sprays | Apply at first full leaf | | | | | | | | | | | |
| Weedone 2,4-DP | | | | | best | ■ | ■ | | | | | |
| Garlon 4 & 3A | | | | | | best | ■ | ■ | ■ | ■ | | |
| RoundUp or Accord | | | | | ■ | ■ | best | ■ | ■ | ■ | | |
| Arsenal | | | | | | ■ | ■ | best | ■ | ■ | | |
| Streamline or Basal | | | | | | | | | | | | |
| Garlon 4 + Diesel | ■ | best | ■ | questionable | ■ | ■ | ■ | ■ | ■ | ■ | ■ | questionable |

* Dates are approximate for the upper coastal plains. Spring dates will shift to the right going from the coastal plains to the mountains. Likewise, fall dates will shift to the left going from the coastal plains to the mountains because of earlier frost.

* ²Adapted from USDA, Forest Service, Management Bulletin R8-MB 28, 1989, by Miller, J.H. and Larry M. Bishop.