Longleaf Leaflet
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North Carolina Forest Service

RENOVATING LONGLEAF PINE STANDS FOR PINE STRAW RAKING

It is generally necessary to control competing vegetation in order to permit maximum access and harvest pinestraw in a forest stand. However, one should know that any manipulation of vegetation will either benefit or hinder the existence of associated flora and fauna. The frequency and intensity of vegetation management determines the response from various species of plants and animals. We are only beginning to understand the effect of altering vegetation on the longleaf ecosystem.

It is largely agreed that the exclusion of fire, a form of vegetation management, is detrimental to the health of the longleaf pine ecosystem 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, controlled burning has been largely abandoned for various reasons. One of the most obvious reasons is that burning destroys the straw---the very item 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 herbicide has yielded positive results. Large scrub oaks, which shade out longleaf reproduction and wiregrass (*Aristida sp.)*, have been controlled. With the use of herbicides, Well's Pixie-moss (*Pyxidanthera barbulata var. brevifolia)* has been re-established; the habitat for the federally endangered red-cockaded woodpecker (*Picoides borealis*) has been improved; and leguminous and other herbaceous plants have been increased.

Herbicides may be applied by several methods, some of which can greatly limit the 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 a low impact means of applying an herbicide to a narrow zone of treatment.

In contrast, a broadcast application of various tank mixed herbicides control a wider spectrum of plant species, depending on 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 a list of registered herbicides and methods of application to control woody vegetation in stands of longleaf.

Table 1. Herbicide 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 Cut stump surface	Foliar, stem, & some soil
Hexazinone granular	Spreader (hand or mechanical)	Soil
Hexazinone liquid	Broadcast spray Spotgun	Soil
2,4-D amine	Cut stump surface 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 & stem
Triclopyr amine	Injection or Hack/Squirt Cut stump surface Foliar spray (directed)	Foliar & stem

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

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

Liquid and granular forms of hexazinone have cleaned up more acres of longleaf than any other herbicide. Hexazinone controls scrub oaks prevalent in longleaf pine stands, while having little or no effect on leguminous plants and grasses beneficial to wildlife. The liquid form of hexazinone may be applied to the soil using a spotgun to meter the herbicide on a grid pattern or applied 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 depends on the soil texture. So, it is important to read and follow the label closely.

When applied correctly, hexazinone targets unwanted trees. Typically two or three defoliations should occur during the growing season. Once the trees fail to leaf out after treatment, they may be cut, piled or removed.

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 trees, 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.

Table2. Optimum Timing for Ground-applied Forestry Herbicides in the South

Herbaceous Weed Control	Jan	Feb	Mar	Apr	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 + Disesel		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.[2]

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

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