

Site Preparation

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Introduction

Site preparation includes any number of treatments used to prepare a site for regeneration. Proper site preparation will increase early survival and long-term productivity of regeneration.

The choice of which site-preparation technique you use should be based upon which site-limiting factors are present. These site-limiting factors include drainage, competing vegetation, debris on site, and soil compaction.

Drainage

Drainage is a common problem found in many areas of Mississippi. Floodplains and other areas inundated with water for significant parts of the year can cause problems for regeneration. Mechanical methods are the only effective ways to alter site-drainage problems. All of the commercially important pine species, as well as most hardwood species, perform better on well-drained sites.

The common way to reduce the impacts of a high water table found in saturated soils is to “bed” the site. Bedding is the use of a bedding plow, or disks, to create aerated beds in which to plant trees. Thousands of acres in Mississippi have been planted using bedding. The key is to get the trees established in the well-aerated soil of the beds.

Competing Vegetation

Competing vegetation can significantly reduce the early survival and growth rates of your new stand of trees and will result in longer rotation ages with less volume and value harvested in the future. Many species of plants will compete with your newly regenerated forest, but they can be broken down into the broad general categories of grasses, broadleaf herbaceous weeds, vines, and woody plants. The single best method for reducing competing vegetation is through the use of herbicides.

A number of herbicides can be used in managing your forestland. Since chemicals and formulations change frequently, you should obtain a copy of the current Mississippi State University Extension Publication 1532 *Mississippi Weed Control Guidelines*. These guidelines are updated annually to reflect changes in chemicals, formulations, and application methods. This publication is available from your county Extension Service office, and can be found online at: msucares.com/pubs/publications/p1532.html. Additional help is available from MSU Extension foresters, MFC Service foresters, and any

number of consulting foresters and herbicide company representatives and applicators across Mississippi.

It is important to use the right chemicals for the vegetation found on your site. The chemicals your neighbor used on his property may not work on the vegetation found on your property. Also, follow all label directions for proper handling, preparing, applying, and storage of all herbicides. More information on herbicide safety and use can be found at: www.MSUCares.com/forestry.

Debris on Site

One of the single biggest limitations on many sites is the presence of slash and other logging debris. Slash makes it more difficult for trees to be planted, and makes natural regeneration difficult. In addition, the slash left behind can be a fire hazard. A number of treatments are available to remove this slash:

- Years ago, crushing and roller chopping were used to reduce debris on the site. This involves either a large self-powered machine or a chopper towed behind a bulldozer, breaking up the debris and incorporating it into the soil. This method works reasonably well for reducing slash on site; however, it can compact the soil and is very expensive, especially when compared to other site-preparation treatments. In addition, this process does nothing for controlling competing vegetation. The high costs and lack of vegetative control resulting from these treatments have resulted in a dramatic reduction in the use of crushing and roller chopping across the southern United States.

- A common way to remove slash and debris from a site is to create windrows. A bulldozer with a plow or a rake moves across the site, pushing the debris into piles. These piles can then be burned in place or left to decompose naturally. This method makes nice, clean planting sites, but it also removes topsoil when the windrows are made. The burning of these piles is problematic because of the heavy amounts of smoke produced and the long burning times associated with burning windrows.

- Prescribed burning is another treatment for reducing the amount of debris on site. Prescribed burning for site preparation is normally done in the fall while the weather is still hot and dry. This is to ensure that the large debris left on site is sufficiently dry enough to burn. Before conducting any forestry burns, the guidelines spelled out in the Mississippi Prescribed Burning Act of 1992 should be followed. A full description of these regulations can be found in Chapter 10.

Soil Compaction

Most soil compaction problems in Mississippi come from the presence of “plow pans” in old agricultural fields. Over time, the movement of a plow over the same site at the same depth creates a dense, semi-impervious layer of soil called a “plow pan.” Some soils also have what’s called a “fragipan.” These pan layers are dense and restrict the flow of water and the roots’ ability to grow through them. Breaking, or fracturing, these pan layers is key to the early growth and survival of planted seedlings.

Pans are fractured by the use of a sub-soiling shank pulled by a tractor or a bulldozer. Typically, the shank is pulled at a depth of 12-18 inches, which is usually deep enough to fracture plow pans. Fragipans that are deeper than that cannot be easily fractured.

Disking is often used to loosen the top few inches of the soil. While this makes the site look nice for planting or making food plots, it does very little to improve overall soil compaction and does even less for vegetation control. Care must be taken on slopes to avoid erosion.

Site-Preparation Costs

All of these site-preparation methods have a cost associated with them which must be considered during planning for regeneration. Many landowners want the “Cadillac” treatment when a “Chevy” treatment would work just fine. It’s important to remember that you should pick the treatment you need based on your site, goals, and finances.

While costs fluctuate and change over time, some generalities can be made. Mechanical treatments tend to be the most expensive. It costs a lot of money to haul in a bulldozer and to drive it across a site. It is common to combine multiple treatments into a single-pass operation. For example, many operators today have a bedding plow, sub-soiling shank, and shearer all attached to the same bulldozer. This “three-in-one” plow dramatically reduces the cost of using the three treatments individually. Still, this is the most expensive of all site preparation treatments.

Most forestry herbicides are applied with a helicopter. The costs for herbicide site-preparation treatments are typically around \$80-100/acre, depending on the acreage being treated, the chemicals being used, and the application rate. Some applicators use skidders or tractors for ground applications instead of a helicopter. Individual stem injection can also be used in certain situations. The costs are typically comparable across all methods.

Prescribed burning is the least expensive of all the site-preparation treatments, costing about \$20 per acre. Again, it's important to remember with prescribed burning that all guidelines spelled out in the Mississippi Prescribed Burning Act must be followed.

Summary

Many site preparation options are available to landowners, ranging from disking and bedding, to prescribed burning, to herbicides. In many cases, these methods are combined to provide the best possible conditions for favorable regeneration. For example, prescribed burning in the fall is often used following a summer herbicide treatment to remove slash, as well as recently killed competing vegetation.

It is important to remember that these treatments all have costs associated with them. It may be more cost effective

to have your property treated in combination with others in your area. This reduces the fixed costs for the operator involved with moving equipment, thus reducing the cost to the landowner. Also, herbicide application companies prefer to treat a large number of tracts while they are in a given area. Talk to a consulting forester or applicator for information.

Site-preparation treatments should be tailored to your site. What was needed on your neighbor's property, or on other property you own, may not be needed on another property. All of the site-preparation practices discussed create costs up front, which will ultimately reduce total earnings. You might want to follow the rule-of-thumb concerning site-preparation activities: do as much as necessary to get your stand regenerated, but as little as possible as far as costs are concerned.

References

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