



Woodland Owner Notes

Site Preparation Methods and Contracts

Most commercially valuable tree species found in North Carolina require full or almost full sunlight for seed germination, establishment and early growth. For regeneration to succeed, remove competing trees, weeds and brush or else reduce their density. Such steps must be taken before planting or before pines or hardwoods can regenerate naturally. To do this, several alternative site preparation methods are available to landowners. Which method(s) is selected will depend on the type, composition and density of the competition.

Site preparation may not be necessary when cropland is converted to timber production or where a logging operation leaves a site sufficiently free of weeds and brush.

Soil type, soil moisture and geographic region must also be considered. For example, highly productive soils will require more intensive site preparation than less productive soils due to competing vegetation's faster growth. To prevent soil damage during preparation, restrict the operation of heavy equipment when soil moisture is high. Furthermore, soil disturbance on steep slopes should be limited to minimize erosion.

Alternatives for site preparation include heavy equipment, manual labor, herbicides and fire. Costs of site preparation range from \$10 per acre for burning to over \$200 per acre for the more mechanical methods.

Selecting the Proper Method(s)

The best method would be one which achieves the owner's goals and objectives such as:

- Improve early soil moisture conditions by eliminating competing vegetation and excess water.
- Improve survival by removing competing vegetation and overhead shade.
- Make tree planting easier by eliminating cull hardwoods or logging debris.
- Increase wood production.
- Improve early growth so the first thinning for wood products can be made earlier.
- Shorten length of harvest cycle or rotation.
- Optimize financial returns.
- Improve wildlife food and cover.
- Improve accessibility for firefighting and logging equipment.
- Reduce fire hazard.
- Prepare seedbed for natural regeneration or direct seeding.

Site Preparation Methods

Shearing or KG Blading is the best way to remove large numbers of stems over 4 inches in diameter. Shearing or KG blades

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are bulldozer blades with a sharpened lower edge, are angled or V-shaped and have a “stinger” for splitting large trees and stumps. With care, trees can be sheared at ground level and felled or piled (windrowed) with little soil disturbance. An inexperienced or careless bulldozer operator, in contrast, can reduce soil quality by compacting, mixing soils or moving productive topsoil into piles. To minimize erosion and site deterioration, limit shearing to moderate slopes and stable soils.

Drum chopping can be effective where brush competition is dense but of small diameter (less than 4 inches). A rolling drum chopper with offset blades is used to uproot, chop and compact brush; it continues to displace roots, which reduces resprouting. An experienced operator carefully matches chopper size and weight to the density and size of competition. This is essential to minimize soil damage, especially on shallow soils, heavy clay soils or soils that are low in nutrients. If additional weight is necessary, fill the chopper with water.

Summer chopping (late June to August) is best in several ways. First, it reduces resprouting. Second, the compacted brush provides adequate fuel necessary to burn the chopped area 4 to 6 weeks later. Finally, summer chopping produces a “triple kill” when frost kills those stems that resprout following chop and burn.

Lopping involves using hand tools or chain saws to fell residual stems and leaving the felled stems where they fall. Lopping is cost effective where scattered large diameter residuals are present. Because it offers little soil disturbance, lopping is a good choice for fragile soils or steep slopes with a high risk of erosion. Lopping can be especially useful on tracts too small for heavy equipment.

Herbicides can be a safe, economical alternative to manual or mechanical methods, since herbicides may be broadcast by air or ground. They can also be used to treat individual stems by tree injection, stump treatment or basal spraying.

Several herbicides are labeled for site preparation. The success of chemical weed control depends on the size, density and composition of vegetation; on the kind and formulation of herbicide; on the volume applied and timing of application; and on proper equipment selection and calibration. Labeled herbicides applied according to label directions can be used with a minimum of concern regarding harm to humans, wildlife, soil, air or water.

Discing with heavy discs may be all that is required to prepare a site for natural seeding or direct seeding.

Fire is used alone or in combination with the methods above. Fire improves access and visibility and facilitates

planting; it also controls competing vegetation. Although burning is simple and cheap, it should be done only by trained personnel under carefully controlled conditions. The North Carolina Division of Forest Resources and several private contractors provide site preparation burning services.

Bedding, scalping, drainage or water control may be needed in certain situations. Raised beds on excessively wet areas improve drainage, make planting easier and increase seedling survival and growth. A scalper may be used to remove grass competition and clear small trash from the planting area. In very poorly drained or excessively wet areas, installing drainage ditches or water control structures may be the only practical method to insure seedling survival and early growth. A topographic survey and soils evaluation are vital to properly design a drainage system.

Site Preparation Contract

General items to include in a site preparation contract include:

- **maps** of the site to be prepared with accompanying legal descriptions, boundary landmarks or other area descriptions;
- accurate description of which site preparation **method** to be used;
- method and timing of **payment**; cost per acre (or hour); time of year or, more specifically, beginning and completion dates;
- notification of landowner by the contractor **when work begins**;
- right of contractor to, or not to, **subcontract** to a third party;
- verification that the contractor is covered by Workmen’s Compensation and liability **insurance**;
- provisions for **settlement** in case of a misunderstanding or for extension in case of inclement weather or site conditions that do not allow completion in the stated time;
- specific width, location and treatment of **filter strips** (should also be designated on the site maps);
- responsibility for **damage** to roads, fences, gates or other improvements and a clause to prevent the contractor from obstructing streams or waterways or leaving debris in roads, fields or ditches;
- a clause absolving the landowner from damage to adjoining properties caused by **negligence** of the contractor;
- satisfactory **performance guidelines**, such as, destroying a minimum of 80 percent of the overstory;

- restriction on **wet weather** conditions when preparing the site would no longer protect soil productivity;
- the site preparation contractor must comply with all **Best Management Practices** in accordance with Forest Practices Guideline (15 NCAC 1L.0101-.0209).

Specific clauses relating to the site preparation method include:

Shearing or KG Blading

- Keep the KG blades sharp to shear trees rather than to up-root trees which disturbs topsoil;
- Specify whether sheared trees are/are not to be piled (windrowed); note the location of windrows on the contour as well as the location of breaks in windrows;
- Indicate the minimum and maximum size of trees to be sheared and/or piled;
- Insure that there is no significant movement of topsoil.

Drum Chopping

- Specify the size and weight of chopper(s);
- Stipulate keeping the chopper blades sharp;
- Determine the size stems that will be chopped;
- Pull chopper up and down the slope, if possible.

Lopping

- Note the height that stems are to be cut above the ground;
- State the name and rate of herbicide to use if such chemicals are used to treat stumps;

- Indicate the minimum and maximum sizes of trees to be felled.

Herbicides

- Name the herbicide and rate to be used including adjuvants which enhance activity or uptake or prevent drift;
- State the method of application and precautions to prevent drift or damage to nontarget plants;
- Verify that the applicator is licensed or certified to apply herbicides commercially;
- Note who has responsibility for flagging flight lines if aerial application is used.

Fire

- Set the width and location of firebreaks or firelanes.

If appropriate, also include height, width and spacing of beds; scalping depth; distance between and depth of ditches; and specifics of water control methods.

Conclusion

Several site preparation alternatives are available to woodlot owners. Choose the method which achieves the set goals and objectives at the lowest cost. Several points must be considered: soils, terrain, vegetative cover, tract size, capital and tree species. Consult a professional forester for help in selecting the proper method for a specific site and to determine if the site's potential justifies the cost to prepare it. Consult the North Carolina Forest Service, the county Extension agent, forest industry personnel or a consulting forester for more information.

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