

NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

TREE/SHRUB SITE PREPARATION

(Acre)

CODE 490

DEFINITION

Treatment of areas to improve site conditions for establishing trees and/or shrubs.

PURPOSE

- Encourage natural regeneration of desirable woody plants.
- Permit artificial establishment of woody plants.

CONDITIONS WHERE PRACTICE APPLIES

On all lands needing treatment to establish trees and/or shrubs.

CRITERIA

General Criteria Applicable to All Purposes

The method, intensity and timing of site preparation will match the limitations of the site, equipment, and the requirements for establishing the desired woody species.

An appropriate site preparation method will be chosen to achieve the intended purpose and to protect desirable vegetation, site and soil conditions. Other complementary practices and measures will be used as necessary to control erosion, runoff,

compaction and displacement to acceptable levels.

Remaining slash and debris shall not create habitat for or harbor harmful levels of pests.

Remaining slash and debris shall not hinder needed equipment operations or create an undue fire hazard. Refer to the standard Prescribed Burning, 338, for slash and debris that will be burned.

Measures, including the use of equipment, will be implemented to control or protect against locally invasive and noxious species that may arise from site preparation activities.

All chemicals will be applied in accordance with label guidelines.

Comply with applicable federal, state, and local laws and regulations, including [Guide to Forestry Best Management Practices in Tennessee](#) (BMP's), during the installation, operation, and maintenance of this practice.

CONSIDERATIONS

The chosen site preparation method should be cost effective and protect cultural resources, wildlife habitat, threatened and endangered species, springs, seeps, wetlands, and other identified unique areas.

Particulates, smoke, and other air pollutants generated by site preparation may have on-site and off-site effects on air quality.

Visual quality objectives should be considered when selecting site preparation methods.

Anticipate possible off-site effects and modify the site preparation design accordingly.

Consider personnel safety during preparation activities.

METHODS OF SITE PREPARATION

Some type of site preparation is needed on any area before either planting, direct seeding, or natural seeding is accomplished.

Mechanical

Various types of equipment are used for mechanical site preparation. Several methods usually are combined for greater effectiveness.

Shearing - Removal of large standing trees by shearing off at ground level using sharpened angle and V-blades mounted on large crawler tractors. The blade should be kept just above ground level to avoid removal of topsoil. Shearing is usually followed by raking debris into piles or contour windrows (if applicable).

Root Raking - Removal of surface debris, shallow roots, and small stumps using large-toothed blades mounted on crawler tractors. Soil damage is always a risk in this operation due to removal of topsoil with the debris. Use of a straight blade without teeth makes the problem most severe. Soil compaction is also a problem due to equipment travel.

Chopping - Rolling drum choppers pulled behind tractors or skidders to knock down

small diameter trees. Chopping is effective in providing short-term vegetation control while causing little soil erosion, and is a favorable choice on soils with moderate to severe erosion hazard.

Disking - Use of heavy disks or harrows to break up thick grass sods, loosen the surface soil and cut small roots. This method is used primarily on sites where little large debris remains and in old fields. A burn may be necessary to clean up the site before disking when logging debris remains. Disking may follow a root take operation, but it should be completed several weeks before planting to allow loosened topsoil to settle.

Bedding - Use of special bedding harrows to form raised planting beds. These harrowed beds are shaped and packed by a rolling hourglass shaped drum, which usually has a center mounted coulter. Beds are used where a high-standing water table or poor surface drainage prohibits pine seedling establishment. Bed formation requires a relatively clean site and is preceded by shearing, root raking, and disking when appropriate. Bedding should not be used on slopes greater than 2 percent.

Subsoiling and Ripping - Use of shanks on large tractors for ripping to a depth of 1.5 to 2 feet to break up hardpans, fragipans and plowpans.

Ripping/subsoiling should be limited to slopes less than 30 percent and done along slope contours to prevent surface runoff from channeling into the furrow. Allow the subsoiled furrow to settle to eliminate air pockets before planting. Seedlings should be planted 2-3 inches to the side of the subsoil furrow to prevent settlement into the furrow and excessive planting depths.

Scalping - For *pine being planted pastureland or other grassy sites*, remove the first 1-2 inches of soil/sod from the surface to a minimum width of 24 inches (sod scalper or other satisfactory implement). Scalping involves the use of plow disks in a fire plow configuration or sweep type plow to throw the soil/sod out from the center of the planting row. This reduces competition from grasses, and exposes the mineral soil for better chance of survival. This measure also reduces the need for potential multiple herbicide applications to control early grass and weed competition. This measure should be used in conjunction with subsoiling as needed.

Chemical

Herbicides provide several alternatives to mechanical site preparation. They are particularly useful on sites where mechanical site preparation leads to erosion. Depending on the site conditions and vegetation, herbicides are applied using several methods.

Foliar Sprays - For treating large tracts using helicopter or with specialized ground spray equipment. Treatment is also possible using backpack sprayer provided the competition is less than 5 feet tall. After leaf fall (six to eight weeks) the area should be burned.

Soil Application - Broadcast of liquid or granular soil-active herbicides using helicopters or ground units. Soil texture, organic matter, and moisture are key factors in determining the selection, rate, and effectiveness of soil-active herbicides. Always follow label directions when selecting the proper herbicide and rate.

Single Stem Injection Treatments - Injection of herbicide into the tree stem

through cuts or frills in the bark that expose the sapwood. Single stem treatment is more labor-intensive than broadcast treatments, but can be effectively used to kill medium to large hardwoods that cannot be controlled by prescribed burning.

Always read and carefully follow the herbicide label directions when selecting and using any herbicide. Use only herbicides currently registered for site preparation treatment in Tennessee. Contact the Cooperative Extension Service for information.

Prescribed Burning

Fire can be used effectively for natural regeneration systems and direct seeding where a mineral soil seedbed is required for pine seed to germinate. However, fire alone will not provide adequate competition control in a seedling plant situation. Fire increases the effectiveness of mechanical and chemical site preparation treatments. Fire is used to dispose of debris placed in windrows and piles, and is an integral part of chemical herbicide treatments. Treatment with herbicides in early spring to the new leaves or soil, followed by a mid-summer burn, will substantially reduce competition and prepare for fall planting or seeding. See NRCS practice standard Prescribed Burning (Code 338) for further guidance in using fire in forest establishment and management.

PLANS AND SPECIFICATIONS

Plans will address method of site preparation, species, and protection required for desirable woody plants.

Specifications for applying this practice and protection of the site shall be prepared and recorded using approved specification sheets, job sheets, technical notes, and

narrative statements in the conservation plan, or other acceptable documentation.

OPERATION AND MAINTENANCE

Repair or maintain erosion control measures as necessary to ensure proper function.

Access by vehicles during site preparation or after (i.e., before adequate tree and shrub establishment occurs) should be controlled to minimize erosion, compaction, and other site impacts.

Control locally invasive and noxious plants as necessary.

Access by vehicles or equipment during or after site preparation shall be controlled to minimize erosion, compaction and other site impacts. Refer to the standard Access Control, 472.

REFERENCES

Natural Resources Conservation Service (NRCS), Conservation Practice Standards

- Code 472 – Access Control
- Code 338 – Prescribed Burning
- Code 612 – Tree and Shrub Establishment

Tennessee Department of Agriculture, Division of Forestry. Guide to Forestry Best Management Practices in Tennessee. 2003.