

NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

FOREST 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.

A precondition for tree/shrub establishment is appropriately prepared sites. Site preparation is needed if competition from grass, weeds, and/or woody materials will interfere with plant establishment and growth. Refer to the practice standard Brush Management, 314, if applicable.

An appropriate site preparation method will be chosen to achieve the intended purpose and to protect desirable vegetation, site and soil conditions. ***Methods for forest site preparation may include: chemicals, hand cutting, brush cutting, scalping, mowing, harrowing, disking, tilling, plowing,***

furrowing, brushhogging, blading, or bedding.

Other complementary practices and measures will be used as necessary to control erosion, runoff, compaction and displacement to acceptable levels.

Slash and debris shall be removed, treated or eliminated as appropriate. Refer to the standard Forest Slash Treatment, 384.

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

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. If pesticides are used, refer to the standard Pest Management, 595.

Erosion and/or runoff will be controlled. Soil compaction and displacement will be minimized.

Comply with applicable federal, state and local laws and regulations during the installation, operation and maintenance of this practice.

If pesticides are used, apply only when needed and handle and dispose of properly and within federal, state and local regulations. Follow label directions and heed all precautions listed on the container.

NOTE: West Virginia NRCS does not make pesticide recommendations. Landowners should be instructed to read product labels and follow product specifications. Landowners must contact the West

Virginia Division of Forestry or the WVU Cooperative Extension Service for pesticide recommendations.

The area will be protected from fire and destructive grazing. See the practice standards Use Exclusion, 472, Fence, 382, Firebreak, 394, as applicable.

For riparian sites, leave a 3-foot untreated strip at the edge of the bank or shoreline.

Avoid sites that have had recent application of pesticides harmful to woody species to be planted.

Based on site conditions and predominant soil texture, procedures include:

Additional Criteria Applicable to Tree/Shrub Planting and/or Direct Seeding

Tillable sites with loamy/clayey soils

-Sod and alfalfa sites

Eliminate cover 1 year to kill the sod or alfalfa. Till (moldboard plow, disk plow, rototiller or similar equipment) in the spring before planting the stock. A fall-sown crop of oats may be used where needed to control erosion. See the practice standard Cover Crop, 340, for additional information.

Sod may be killed by non-selective herbicides the year previous to planting stock. Plant stock in the residue. On heavy soils, tillage is usually necessary to achieve a satisfactory planting when a tree planting machine is used.

-Small grain or row crop sites

If the site is in row crop, till (moldboard plow, disk plow, rototiller or similar equipment) in the fall or in the spring prior to planting the trees or shrubs. If the site has a plow or hard pan in subsoil, perform a deep disking or ripping operation in the fall. A fall-sown crop of oats may be used where needed to control erosion. See the practice standard Cover Crop, 340, for additional information.

If the site is in small grain stubble, the stock may be planted in the spring without further preparation. If fabric mulch is to be installed, till in the spring before planting.

Tillage on steep slopes must be on the contour or cross-slope. A cover crop between the rows may be necessary to control erosion and sediment deposition on planted stock. See standard for Cover Crop, 340, for additional information.

Tillable sites with sandy soils

-Sod and alfalfa sites

Till (moldboard plow, disk plow, rototiller or similar equipment) and plant to a spring cover crop (corn, grain, sorghum, etc.) the year prior to planting. Leave a stubble cover in which to plant. A light disking may be needed before planting if fabric mulch is used.

Sod may be killed by nonselective herbicides the year prior to planting. Plant trees and/or shrubs in the residue.

-Small grain or row crop sites

If the site is in small grain, corn, or similar clean tilled crop, and it is reasonable free of weeds, plant stock in the stubble without prior preparation. It may be necessary to till a narrow strip with a disk or other implement to kill weeds or volunteer grain, or to prevent stalks and other residue from clogging the tree planter. If fabric mulch is used, disking may also be needed. A cover crop or stubble may be needed between the rows to protect the planting from erosion. See the practice standard for Cover Crop, 340, for additional information.

Non-tillable sites or erosive sites (including sites with undesirable brushy or herbaceous species)

On sites where it is not practical or possible to operate equipment (steepness, rockiness, etc.), where tillage of the site will cause excessive erosion, or where tillage of the site is impractical, the methods listed below may be used.

- Machine or hand scalp an area at least 36 inches in diameter with subsequent plant placement in the center of the scalped area.

- **Rototill a strip at least 36 inches wide the year prior to tree planting with subsequent plant placement in the center of the tilled strip.**
- **Kill the vegetation in a 36-inch diameter or larger area or in a 36-inch or wider strip with a non-selective herbicide the year prior to planting and plant in the center or along the center-line of the treated area.**
- **Furrowing can be used in area too rocky for planting machines. Do not use furrowing in areas of heavy soils and high water table. Plow two furrows on the contour in fall or winter.**

Sites with undesirable brush will need initial treatment that physically removes and kills the brush species to facilitate planting of desired stock and prevent re-encroachment of the brush. Suitable methods include mowing, hand-cutting and removal, brush hogging, brush-blading, or other equivalent procedure with repeated treatment or use of herbicides to control re-sprouting.

See the practice standard, *Brush Management*, 314, for additional information.

Additional Criteria Applicable to Site Preparation for Natural Regeneration

Hand/Mechanical

When establishing trees through natural regeneration, light seed-bearing trees must be located on or next to the area to be regenerated, preferably along the windward side. Some acceptable species for natural regeneration are eastern white pine, pitch pine, shortleaf pine, Virginia pine, yellow-poplar, white ash and maple. See Table 1 for additional information on the above mentioned species.

Heavy seed-bearing trees must be adequately spaced within the treatment area to be regenerated. Some acceptable heavy seed-bearing trees are black cherry and oaks.

Use of other species whose seed is dispersed by wind may be planned, if needed, to meet the objective of the client.

In sod-bound areas, expose at least 60% mineral soil just prior to seedfall by disking, dragging, scraping, shallow plowing, raking or other similar means.

Table 1. Seed-bearing information by species

SPECIES	SEED BEARING AGE MINIMUM (YEARS)	SEED DISPERSAL DATES	INTERVAL BETWEEN LARGE SEED CROPS (YEARS)
White Pine	5-10	Aug – Sept	3-10
Pitch Pine	3-4	Fall*	4-9
Shortleaf Pine	5-20	Oct-Nov	3-10
Virginia Pine	5	Oct-Nov	1
Yellow Poplar	15-20	Oct-Nov	1
White Ash	20	Sept-Dec	3-5
Sugar Maple	30	Oct-Dec	3-7
Red Maple	4	April-July	1

*** Many cones remain closed for several months or years.**

Chemical

In existing woodland where competing vegetation such as, ferns, grasses, striped maple, beech suckers are present, pre-harvest spray during the months of July-August prior to a scheduled timber harvest.

NOTE: WV NRCS does not make pesticide recommendations. Landowners should be instructed to read product labels and follow product specifications. Landowners must contact the West Virginia Division of Forestry or the WVU Cooperative Extension Service for pesticide recommendations.

Additional Criteria Applicable to Prescribed Burning

Prescribed burning may be used as a method of site preparation for the establishment of conifer species in some instances, however, West Virginia NRCS does not currently have a Prescribed Burning standard, 338.

Landowners must contact the West Virginia Division of Forestry for assistance in planning and implementing all prescribed burning activities.

A Prescribed Burning Plan must be developed and approved by the West Virginia Division of Forestry State Forester, or his/her designee, not less than three days prior to ignition. The Air Pollution Control Board must be notified and a permit, if required, obtained. The landowner must assume all legal/financial responsibility should the fire escape to the lands of another. Prescribed burning should be done outside the established fire seasons (October-December and March-May). If burning is to be done within established fire seasons, a burning permit must be obtained from the West Virginia Division of Forestry.

CONSIDERATIONS

Impacts on wildlife species, habitat and aesthetics should be considered when selecting site preparation methods.

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

The site preparation method should be cost effective and protect cultural resources, wildlife habitat, threatened and endangered species, water resources, and identified unique areas.

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 site preparation activities.

Consider planting in prepared ridges or beds in areas with high water tables.

PLANS AND SPECIFICATIONS

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. ***Requirements for operation and maintenance of the practice shall be incorporated into site specifications.***

At a minimum, the following will be identified in the conservation plan (as appropriate):

- ***Purpose of the practice***
- ***Description of the existing vegetation prior to forest site preparation activities***
- ***Area affected***
- ***Field location / Plan view***
- ***Methods (type of site preparation, timing, practice specifics, etc.)***
- ***Protection required for desirable woody plants (if any)***
- ***Any required permits, including but limited to, the CPA-052 or similar environmental documentation***
- ***Operation and maintenance requirements***

OPERATION AND MAINTENANCE

The following actions shall be carried out to insure that this practice functions as intended throughout its expected life. These actions include normal repetitive activities in the application and use of the practice (operation), and repair and upkeep of the practice (maintenance).

Maintain erosion control measures as necessary.

Control locally invasive and noxious plants as necessary. If pesticides are used, refer to the standard Pest Management, 595.

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 Use Exclusion, 472.

Practice areas should be checked periodically, but especially in the first three to six months after planting to see if additional control of competition is needed to insure the survival of desired vegetation.

Repair erosion control measures as necessary to ensure proper function.

Additional operation and maintenance requirements shall be developed on a site-specific basis to assure performance of the practice as intended.

NOTE: Bold italic indicate information added to the national standard by West Virginia.

References

USFS, NASPF, Service Forester's Handbook, February, 1978

West Virginia Division of Forestry, West Virginia Forest Land Enhancement Program (FLEP) Reference Manual, March 2004