

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

TREE/SHRUB ESTABLISHMENT

(Acre)

CODE 612

DEFINITION

Establishing woody plants by planting seedlings or cuttings, direct seeding, or natural regeneration.

PURPOSE

To establish woody plants for forest products, wildlife habitat, long-term erosion control and improvement of water quality, treat waste, reduction of air pollution, sequestration of carbon, energy conservation, [to maintain or restore natural genetic diversity](#) and enhance aesthetics.

CONDITIONS WHERE PRACTICE APPLIES

On any area where woody plants can be grown.

CRITERIA

General Criteria Applicable To All Purposes

Species will be adapted to site conditions and suitable for the planned purpose(s). [Select species from Section II of the FOTG or other Vermont technical references.](#)

Planting or seeding rates will be adequate to accomplish the planned purpose.

Planting dates, and care in handling and planting of the seed, cuttings or seedlings will ensure that planted materials have an acceptable rate of survival. [Plant roots shall be kept moist at all times and not allowed to dry out prior to planting.](#) Plants will be established prior to May 30 unless containerized seedlings are used or plants will be watered.

Only viable, high-quality and adapted planting stock or seed will be used. [Plant roots will be kept moist at all times and not allowed to dry out prior to planting.](#)

Site preparation shall be sufficient for establishment and growth of selected species. [Competing vegetation will be controlled through appropriate site preparation. See Site Preparation for Woody Plant Establishment, Code 490.](#)

Adequate seed or advanced reproduction needs to be present or provided for when using natural regeneration to establish a stand.

Timing and use of planting equipment will be appropriate for the site and soil conditions. [Use any method of planting that accomplishes the following:](#)

- [Trees and shrubs will be planted at the same approximate depth as they grew in the nursery, i.e., with the root collar at ground level.](#)
- [Trees and shrubs will be planted approximately vertical without doubling the roots.](#)
- [Soil will be firmly packed around the roots.](#)

The acceptability and timing of coppice regeneration shall be based on species, age, and diameter.

The planting will be protected from unacceptable adverse impacts from pests, wildlife, livestock damage, or fire. [Livestock will be excluded where appropriate.](#) Each site will be evaluated to determine if mulching, supplemental water or other cultural treatments will be needed to assure adequate survival and growth. [Where feasible and/or necessary, seedlings will be mulched. Mulch shall cover an area two feet by two feet \(2' X 2'\) around each stem, except within 6 inches of the stem. This is to avoid rodent damage. This area will be increased to 4' X 4' for larger stock.](#)

[Replanting will be required when survival is inadequate.](#)

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.

Comply with applicable federal, state, and local laws and regulations during the installation, operation and maintenance of this practice, [including Vermont's Acceptable Management Practices \(AMP's\)](#).

Additional Criteria For Improving Or Restoring Natural Diversity

Species selected will be indigenous to the site and will reflect species composition of the desired stands. [Plant species currently listed as invasive in Vermont will not be used.](#) [Natural Heritage Program Site] Recommended plant species are available in the FOTG reference files or the Plants Database.

Additional Criteria for the Purposes of Landscape and Beautification, To Provide Shade and To Provide Wildlife Habitat

[Each site will be evaluated to determine if mulching, supplemental water, or other cultural treatments will be needed to assure adequate survival and growth.](#)

CONSIDERATIONS

When underplanting, trees should be planted sufficiently in advance of overstory removal to ensure full establishment.

Use locally adapted seed, seedlings or cuttings. Priority will be given to plant materials that have been selected and tested in tree/shrub improvement programs. All plant materials should comply with the minimum standards, established by the American Nursery and Landscape Association, 1250 I Street Northwest, Suite 500, Washington, DC.

Plans for landscape and beautification plantings should consider foliage color, season and color of flowering, and mature plant height [and width](#).

Where multiple species are available to accomplish the planned objective, consideration should be given to selecting species which best meet wildlife needs.

Tree/shrub arrangement and spacing should allow for and anticipate the need for future access lanes for purposes of stand management.

Residual chemical carryover should be evaluated prior to planting.

Species considered locally invasive or noxious should not be used.

Species used to treat waste should have fast growth characteristics, extensive root systems, capable of high nutrient uptake, and may produce wood/fiber products in short rotations.

For optimal carbon storage, select plant species that are adapted to the site to assure strong health and vigor and plant the full stocking rate for the site.

PLANS AND SPECIFICATIONS

Specifications for applying this practice shall be prepared for each site and recorded using approved specification sheets, job sheets, technical notes, and narrative statements in the conservation plan, or other acceptable documentation. [NRCS VEGSPEC computer program may be used to identify species and develop a job sheet.](#)

Plans and specifications will include the following: adapted tree species for the purposes outlined, spacing, planting methods, cultural practices, maintenance requirements, and variations in methods and species between interplanting, underplanting, and planting in open areas. Separate specifications can be prepared for each of these planting methods [in Attachment 1](#).

[The following practices may be used in conjunction with this standard: Riparian Forest Buffer \(391\), Site Preparation for Woody Plant Establishment \(490\), Critical Area Planting \(342\), Windbreak/Shelterbelt Establishment \(380\), Wildlife Wetland Habitat Management \(644\), Wildlife Upland Habitat Management \(645\), Fish Stream Improvement \(395\), Wetland Restoration \(657\), and Early Successional Habitat Development/Management \(647\).](#)

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).

If needed, competing vegetation will be controlled until the woody plants are established. Noxious weeds will be controlled.

Replanting will be required when survival is inadequate.

Supplemental water will be provided as needed.

The trees and shrubs will be inspected periodically and protected from adverse impacts including insects, diseases or competing vegetation, fire and damage from livestock or wildlife.

Periodic applications of nutrients may be needed to maintain plant vigor.

ATTACHMENT 1

VT Supplemental Specifications

INTERPLANTING

Purpose

- Increase stocking levels in project site to increase competition in order to improve stem quality or protect the site from erosion.
- Diverse species composition of a site to better meet management objectives.

Adapted species

- Use species that grow well in full sunlight to partial shade. Refer to appropriate Cooperative Extension publications, the FOTG reference file or Plants Database.

Spacing

- Plant between other species, but no closer than 2 feet from any existing plants.

Planting Methods

- Plant by hand.

Cultural Practices

- Weed control is necessary, either by hand cutting, herbiciding or mulching for at least 2 years.

Maintenance Requirements

- Inspect plantings every year and replace dead or diseased and injured plants.

UNDERPLANTING

Purpose

- Create desirable understory species composition for targeted objectives.
- Establish advanced regeneration prior to overstory removal.

Adapted species

- Use species that grow well in partial to full shade conditions. Refer to appropriate Cooperative Extension publications, the FOTG reference file or Plants Database.

Spacing

- No less than 100 well-spaced trees per acre will be planted to insure adequate stocking of crop trees (21' x 21'). Trees will not be planted closer than four feet by four feet (4' x 4').

Planting Methods

- Plant by hand.

Maintenance Requirements

- Inspect plantings every year and replace dead or diseased and injured plants.

PLANTING IN OPEN AREAS (Previous Agricultural Fields)

Adapted species

Use species that grow well in full sunlight. . Refer to appropriate Cooperative Extension publications, the FOTG reference file or Plants Database.

Spacing

- Not less than 450 Larch or Red Pine, 700 white spruce, black spruce or Norway Spruce, and 1200 White Pine per acre will be planted in single species plantations.
- For hardwood tree species plantings, 10' X 10' spacing is recommended.
- In mixed tree species plantings, at least 700 trees per acre will be planted.
- No less than 100 well spaced tree species per acre will be planted to insure adequate stocking of crop trees (21' X 21').
- Trees will not be planted closer than four feet by four feet (4' X 4'). Shrubs will not be planted closer than two feet by two feet (2'x2').

Site Preparation

- Remove weeds and grass prior to planting and keep out for at least two years. See Site Preparation for Woody Plant Establishment (490) for standards and specifications.

Planting Methods

- Arrange trees and/or shrubs in the rows so that they are staggered with relation to the plants in adjacent rows.

Cultural Practices

- Weed control is necessary, either by mowing, herbiciding or using mulch.

Maintenance Requirements

- Inspect plantings every year and replace dead or diseased and injured plants.

CLEARCUT REGENERATION

- Follow Vermont's Heavy Cutting Rules (H536 & 10.V.S.A. Sect 2622).