

USDA
NATURAL RESOURCES
CONSERVATION SERVICE

MARYLAND CONSERVATION
PRACTICE STANDARD

TREE/SHRUB ESTABLISHMENT

CODE 612
(Reported by Acre)

DEFINITION

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

PURPOSE

This practice may be applied for one or more of the following purposes:

1. To establish woody plants for forest products;
2. To landscape and beautify an area;
3. To provide shade;
4. To sequester carbon;
5. To improve air quality, protect water quality, or provide other environmental benefits.

**CONDITIONS WHERE PRACTICE
APPLIES**

This practice may be applied on all suitable lands where establishment of woody plants is desired.

This practice does not apply to tree or shrub plantings that will be established primarily for erosion control, water quality benefits, wildlife habitat, or purposes for which other standards are applicable. (Refer to the conservation practice standards for Conservation Cover, Code 327; Critical Area Planting, Code 342; Field Border, Code 386; Hedgerow Planting, Code 422;

Riparian Forest Buffer, Code 391; and Windbreak/Shelterbelt Establishment, Code 380.)

CONSIDERATIONS

Assess site conditions including surrounding land uses, soils, residual herbicides (to the extent known), available moisture during the growing season, and existing vegetation on the site and in adjacent areas, including any noxious weeds which may be present.

For landscape and beautification plantings, consider foliage and flower color, season of flowering, and mature plant height and width.

Where multiple species are available to accomplish the establishment purpose, consider selecting species that will provide food and cover for wildlife.

Consider site preparation methods that are cost-effective and will protect wildlife habitat and water quality.

Identify and evaluate any constraints such as management options, economic feasibility, state and federal regulations, or cost-share program requirements.

CRITERIA

Select tree and/or shrub species based on their adaptability to the environmental conditions present and to the planned purpose.

Select plant species that are native to Maryland, or are introduced and are non-invasive (i.e., not likely to spread beyond the planted area and displace native species). Selection of native species shall be a priority when feasible.

Site preparation and planting shall be done at a time and manner to insure survival and growth of selected species. Competing vegetation shall be controlled by using appropriate mechanical and/or chemical methods. Supplemental moisture shall be applied if and when necessary to assure early survival and establishment of selected species.

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

Only viable, high quality seed and planting stock shall be used. Planting stock shall meet the minimum standards established by the American Nursery and Landscape Association.

The method of planting shall include hand or machine planting techniques, suited to achieving proper depths and placement for the selected plant species. Timing and use of planting equipment shall be appropriate for the site and soil conditions.

Planting or seeding rates shall be adequate to accomplish the planned purpose. Tree arrangement and spacing shall allow for access lanes if needed for future stand management and harvesting.

When using natural regeneration to establish a stand, adequate seed or advanced reproduction shall be present or provided. The acceptability and timing of coppice regeneration shall be based on tree species, age, and diameter.

Livestock shall be controlled or excluded as necessary to establish and maintain the planting to meet its intended purpose.

Plant and animal pest species shall be controlled as necessary to achieve and maintain the intended purpose of the planting.

Noxious weeds shall be controlled as required by state law.

Note: Specific cost-sharing programs or other funding sources may dictate criteria in addition to, or more restrictive than, those specified in this standard.

SPECIFICATIONS

Plans and specifications for Tree/Shrub Establishment shall be prepared for each site or management unit according to the Considerations, Criteria, and Operation and Maintenance described in this standard. They shall be recorded on specification sheets, job sheets, narrative statements in conservation plans, or other acceptable documentation. Documentation shall be in accordance with the section "Supporting Data and Documentation" in this standard.

Plans and specifications shall include the following: adapted tree and/or shrub species for the intended purpose, spacing, quantities, site preparation, planting methods, planting dates, cultural practices, and maintenance requirements, as applicable. Follow the establishment recommendations in the Maryland job sheet for Trees and Shrubs.

Selection of Species and Time of Planting

Refer to the Maryland Conservation Practice Standard for Conservation Cover, Code 327, for recommended planting dates (Table 1) and a selected list of native tree and shrub species that may be used (Tables 3 and 4). Other trees and shrubs that are native to Maryland, or are introduced and are non-invasive (i.e., not likely to spread beyond the planted area and displace native species), may also be suitable.

Planting Rates and Spacing

Planting rates and the spacing of trees and shrubs shall be based on the species, type of planting site, and the purpose of the planting. Calculate the number of trees needed by multiplying row width by spacing in the row (all measurements in feet), and then dividing the result into 43,560. A standard tree spacing/planting rate table may also be used.

Existing Woodland - Interplanting and underplanting are generally used to introduce desirable tree species into a stand of inferior species, or for filling voids in a stand. Spacing shall be as follows:

1. **Interplanting** - Plant between other species, but no closer than 8 feet from existing trees;

2. **Underplanting** - Plant no closer than four feet by four feet (4' x 4') under existing trees.

Open Areas - Open areas include agricultural fields, cut-over areas, and other non-wooded land. Spacing shall be as follows, or as specified by a licensed forester, licensed landscape architect, or other qualified resource management professional:

1. **Wood crops** -
 - a. Conifers - 8' x 8' to 10' x 10';
 - b. Hardwoods - 6' x 7' to 10' x 10'.
2. **Christmas trees** - 5' x 5' to 6' x 6'. Spacing may be as close as 4' x 4' for small trees;
3. **Landscaping, site beautification, shade, and other environmental purposes** - Varied spacing, according to a landscape plan.

Protecting Plantings

The planting shall be protected from unacceptable impacts from pests, wildlife, livestock or fire. Livestock shall be excluded as needed to establish the planting. Fencing, if used, shall be in accordance with the Maryland conservation practice standard for Fence, Code 382.

Vegetation surrounding the tree or shrub planting shall be sprayed with herbicide or mowed as needed to reduce rodent damage. Follow recommendations from Maryland Cooperative Extension when using repellents or poisons to protect the planting from mice and voles.

Tree shelters may be used to protect plantings from competition from weeds and from deer damage. Use shelters from an approved manufacturer. Tree shelters shall be a minimum of 4 feet tall if the potential for deer damage is severe; otherwise, they shall be a minimum of 3 feet tall. Each shelter shall be staked with a wooden stake (minimum 1-inch thickness), or a plastic or fiberglass post, that is at least the same height as the tree shelter being used. Do not use metal or bamboo stakes. Bird exclusion netting shall be used on the tops of tree shelters until the plantings extend out of the tubes.

OPERATION AND MAINTENANCE

An operation and maintenance (O&M) plan shall be prepared for each tree or shrub planting. Appropriate Job Sheet(s) may be used to serve as the management plan as well as supporting documentation, and shall be provided to the land user. At a minimum, the following components shall be addressed in the O&M plan, as applicable:

1. Inspect the trees and shrubs annually after the first and second years. If survival is less than expected, replant as needed to achieve the intended purpose of the practice;
2. If tree shelters are used, remove them before they impede the growth of the trunk. Removal should not occur until the seedling has adequate girth to support itself (usually 3 to 5 years after planting);
3. Check for insects and diseases, and if an incidence threatens stand survival, take corrective action to keep the pest under control;
4. Control undesirable plants by pulling, mowing, or spraying with a selective herbicide. Control noxious weeds as required by state law;
5. Protect trees and shrubs from fire and damage from livestock and wildlife, to the extent feasible;
6. Apply nutrients periodically if needed to maintain plant vigor. Use a soil test analysis to determine the appropriate nutrient application rates.

SUPPORTING DATA AND DOCUMENTATION

The following is a list of the minimum data and documentation to be recorded in the case file:

1. Field location and extent of planting in acres. Also note the location of the planting on the conservation plan map;
2. Assistance notes documenting the purpose of the practice, dates of site visits, discussions with the client, decisions made, and by whom;
3. Completed copy of the appropriate Job Sheet(s) or other specifications, and management plans. The following items shall be addressed, as appropriate:
 - a. Method of site preparation;
 - b. Species and rates to be seeded/planted;
 - c. Seeding/planting dates;
 - d. Rate and type of soil amendments to be applied;
 - e. Method(s) used to protect plantings from animal damage (e.g., fencing, repellents, tree shelters, etc.).

REFERENCES

1. American Nursery and Landscape Association. *American Standard for Nursery Stock*.
2. Maryland Cooperative Extension. *Wildlife Damage Control, Resistance of Woody Ornamentals to Deer Damage, Fact Sheet No. 655*. University of Maryland, College Park.
3. USDA, Natural Resources Conservation Service. *Conservation Practice Standard for Conservation Cover, Code 327*. Maryland Field Office Technical Guide, Suction IV.
4. USDA, Natural Resources Conservation Service. *Conservation Practice Standard for Critical Area Planting, Code 342*. Maryland Field Office Technical Guide, Suction IV.
5. USDA, Natural Resources Conservation Service. *Conservation Practice Standard for Fence, Code 382*. Maryland Field Office Technical Guide, Section IV.
6. USDA, Natural Resources Conservation Service. *Conservation Practice Standard for Field Border, Code 386*. Maryland Field Office Technical Guide, Suction IV.
7. USDA, Natural Resources Conservation Service. *Conservation Practice Standard for Hedgerow Planting, Code 422*. Maryland Field Office Technical Guide, Suction IV.
8. USDA, Natural Resources Conservation Service. *Conservation Practice Standard for Riparian Forest Buffer, Code 391*. Maryland Field Office Technical Guide, Suction IV.
9. USDA, Natural Resources Conservation Service. *Conservation Practice Standard for Windbreak/Shelterbelt Establishment, Code 380*. Maryland Field Office Technical Guide, Suction IV.
10. USDA, Natural Resources Conservation Service. *Trees and Shrubs, Practice Implementation and Maintenance*. Maryland Field Office Technical Guide, Section IV.