

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD
TREE/SHRUB ESTABLISHMENT**

(Ac.)

CODE 612

DEFINITION

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

PURPOSE

Establish woody plants for:

- forest products such as timber, pulpwood, etc.
- wildlife habitat
- long-term erosion control and improvement of water quality
- treating waste
- storing carbon in biomass
- reduce energy use
- develop renewable energy systems
- improving or restoring natural diversity
- enhancing aesthetics.

CONDITIONS WHERE PRACTICE APPLIES

Tree/shrub establishment can be applied on any appropriately prepared site where woody plants can be grown.

Utilize other practice standards for specialized tree/shrub establishment situations, e.g., [Riparian Forest Buffer \(391\)](#), [Windbreak/Shelterbelt Establishment \(380\)](#); [Critical Area Planting \(342\)](#) .

CRITERIA

General Criteria Applicable to All Purposes

Composition of species will be adapted to site conditions and suitable for the planned purpose(s).

No plants on the Federal or state noxious weeds list shall be planted.

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

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.

Only viable, high-quality and adapted planting stock or seed will be used.

Appropriately prepared sites are a precondition for successful tree/shrub establishment. Refer to [Windbreak/Shelterbelt Establishment Tree Planting Procedures \(380TPP\)](#) for preparation of planting sites.

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

Selection of planting technique and timing will be appropriate for the site and soil conditions.

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

The planting will be protected from plant and animal pests and fire. Refer to standard [Integrated Pest Management \(595\)](#) to assist with site-specific strategies for pest prevention, pest avoidance, pest monitoring, and pest suppression.

Each site will be evaluated to determine if mulching, supplemental water or other cultural treatments (e.g., tree protection devices,

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Conservation practice standards are reviewed periodically and updated if needed. To obtain the current version of this standard, contact your Natural Resources Conservation Service [State Office](#) or visit the [Field Office Technical Guide](#).

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shade cards, brush mats) will be needed to assure adequate survival and growth.

Additional Criteria for Treating Waste

Species used to treat waste shall have fast growth characteristics, extensive root systems, high nutrient uptake capacity and tolerance of the planned effluent.

Additional Criteria for Improving or Restoring Natural Diversity

Composition of species selected for planting or those favored for natural regeneration will be native to the site and create a successional stage or state that can progress to the potential natural plant community. Refer to [Restoration of Rare and Declining Habitats \(643\)](#) for guidelines for restoring declining forest habitats.

Additional Criteria for Storing Carbon in Biomass

The species and plant communities that attain biomass more quickly will sequester carbon faster. The rate of carbon sequestration is enhanced as trees and/or shrubs mature and soil organic matter increases. Select plants that have higher rates of growth and potential for carbon sequestration in biomass and are adapted to the site. Plant species at the appropriate stocking rate for the site.

Additional Criteria for Developing Renewable Energy Systems

Select plants that can provide adequate kinds and amounts of plant biomass to supply identified bioenergy needs.

Intensity and frequency of energy biomass removals will be managed to prevent long-term negative impacts on the system.

The harvesting of energy biomass shall be accomplished in a manner that will not compromise the other intended purpose(s) and functions.

Additional Criteria to Reduce Energy Use

Orient trees to shade a building to reduce summer energy usage. The first priority is placement on the building's west side where the greatest daily heat gain occurs. The second priority is the east side.

Select plants with a potential height growth that will be taller than the structure or facility being protected.

Use proper plant densities to optimize the shade produced and meet energy reduction needs.

Trees planted within 30 to 50 feet of the building generally provide effective shade to windows and walls depending on tree height potential.

Keep trees at least 10 feet or further from the structure, depending on mature crown spread, to avoid damage to foundations or restrict maintenance access to windows and walls.

CONSIDERATIONS

Priority should be given to plant materials that have been selected and tested in tree/shrub improvement programs. All plant materials should comply with minimum standards such as those as established by the American Nursery and Landscape Association, Nebraska Forest Service, or state-approved nursery.

Plans for landscape and beautification plantings should consider foliage color, season and color of flowering, and mature plant height.

Consider using diverse species combinations which best meet locally native wildlife and pollinator needs.

Consider the invasive potential when selecting plant species.

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 and alter species selection and/or timing of planting/seeding.

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

Consider establishing trees/shrubs through natural regeneration when seed or current tree/shrub reproduction is adequate to establish an acceptable stand in the time frame desired. Trees/shrubs must be desirable and meet the objectives of the customer and

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the appropriate criteria and considerations in this standard. Contact your local forester for assistance.

Existing or expected regeneration needs to be protected from domestic and/or wild animals, fire, logging, herbicide damage, etc.

Use locally adapted seed, seedlings or cuttings. Give priority to plant materials that have been selected and tested in tree/shrub improvement programs.

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

To minimize adverse offsite effects avoid designing tree cover that causes habitat fragmentation of intact grasslands needed by grassland nesting birds and other wildlife dependent on large expanses of contiguous grass habitat.

Species considered locally invasive or noxious shall not be used.

Species used to treat waste should have fast growth characteristics and extensive root systems, be capable of high nutrient uptake, and have the characteristic of producing 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.

Specifications/practice design will be based on this practice standard (612) and procedures found in the [Tree/Shrub Design Procedures \(612DP\)](#), [Windbreak/Shelterbelt Establishment - Tree/Shrub Planting Procedures \(380TPP\)](#), and Tree and Shrub Planting Plan Job Sheets ([NE-CPA-15](#) and [NE-CPA-15B](#)).

As a minimum, specifications will contain the following data per the [NE-CPA-15](#) and [NE-CPA-15B](#):

- Operator name, address, phone number
- NRD, county location, type of planting
- Conservation Tree/Shrub Suitability Group and soil name, based on soils on the site
- Area to be planted
- Planned weed control within and between tree/shrub rows
- Planned planting method(s) and date(s)
- The type of fabric mulch to be installed if fabric mulch is being used
- Planned site preparation, including method utilized to eliminate aggressive dense sod-forming grasses
- Planned species to be planted in each row
- Spacing within and between each row planted
- Estimated number of each plant needed
- Actual number of plants planted
- Maps or drawings as needed to show location and site layout
- Who installed the plantings
- Signature and date(s) planted

Specifications for direct seeding methods will contain information detailed in [Tree Planting Procedures \(380TPP\)](#) and Tree and Shrub Establishment, Direct Seeding Job Sheet ([NE-CPA-15B](#)).

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). Refer to [Tree/Shrub Planting Procedures \(380TPP\)](#) for detailed care and maintenance requirements.

Access by vehicles or equipment during or after tree/shrub establishment shall be

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controlled to protect new plants and minimize erosion, compaction and other site impacts. Refer to the standard [Access Control \(472\)](#).

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.

If needed, competing vegetation will be controlled until the woody plants are established. Noxious weeds will be controlled. Refer to standard [Integrated Pest Management \(595\)](#).

Replanting will be required when survival is inadequate. Refer to [Nebraska Forestry Technical Note No. 63](#) for detailed replanting requirements.

Supplemental water will be provided as needed.

Periodic applications of nutrients may be needed where soil tests indicate nutrient deficiency. If nutrients are applied, refer to [Nutrient Management \(590\)](#).

After trees and/or shrubs are established, refer to the standards [Forest Stand Improvement](#)

[\(666\)](#) and [Tree/Shrub Pruning \(660\)](#) for subsequent management.

REFERENCES

Kucera, Michael and James Harder. 2002. Guide for Evaluation of Survival for Conservation Tree and Shrub Plantings. [Nebraska Forestry Technical Note No. 63](#), Lincoln NE.

McPherson, E. Gregory; Simpson, James R.; Perper, Paula J.; Maco, Scott E.; Gardner, Shelley L.; Cozad, Shauna K.; Xiao, Qingfu 2006. Midwest community tree guide: benefits, costs, and strategic planting. USDA Forest Service General Technical Report PSW-GTR-199, p. 1-99.

Talbert, Cheryl. 2008. Achieving establishment success the first time. Tree Planters Notes, Vol. 52 No. 2 pages 31-37.

University of Nebraska Neb Guides and other references at:
<http://www.ianrpubs.unl.edu/epublic/pages/>.