

**NATURAL RESOURCES CONSERVATION SERVICE
CONSTRUCTION SPECIFICATIONS**

TREE/SHRUB ESTABLISHMENT

1. Scope

The work shall consist of establishing woody vegetation by planting seedlings, direct seeding, or natural regeneration and by performing the necessary maintenance to ensure this practice functions as designed. This specification (including references made within to other conservation practice standards and technical notes), and Form KS-ECS-5, Tree/Shrub Planting, shall be used to design the practice. Practice application will be documented on the Form KS-ECS-5 and in the conservation plan.

2. Site Factors

Soils, climate and topography should be considered when selecting trees and shrubs to plant. Check soils for drainage, texture, depth, and pH (6 to 7.2 preferred for trees). A soil test prior to planting is beneficial but not required.

3. Species Selection

Refer to Kansas Forestry Technical Note KS-10, Conservation Tree/Shrub Plantings Suitability Groups, Windbreak Suitability Groups, and Plantings for Kansas, for tree/shrub species adaptation to soil site conditions and tree/shrub attributes. Species listed that are considered locally invasive should not be used in planting.

4. Planting Sites

Cut-over forest land. Cut-over forest is that which most or all of the merchantable timber has been cut or harvested. Planting cut-over forest is generally for the purpose of supplementing natural reproduction, speeding up the stocking process, or increasing the number of desirable species.

Land conversions. Sites no longer desired for crop production or pasture or areas too small for large equipment, may be desirable for forest products. Severely eroded sites may not be desirable for hardwood timber production; however, these sites may be desirable for firewood or fence post plantings.

Inter-planting in forest land. Inter-planting is for the purpose of introducing desirable species in a stand of inferior species or for filling voids in an existing forest stand. Black walnut may be successfully planted in small openings in forest lands on suitable sites. The distance across openings should be a least 2 times the height of adjacent dominant trees. Use species that are shade-tolerant such as northern red oak, hackberry, hickory, and silver maple for plantings in smaller openings. Less desirable tree species may be removed to provide needed light and space. Black walnut maybe planted in areas of low stocking and quality, then released in 3 to 4 years.

5. Direct Seeding

Direct seeding is the process of planting tree/shrub seed by hand or by mechanical methods. Success of direct seeding is dependent upon site preparation, soil moisture, rodent population, timing, seed scarification, plant competition, seed dormancy species requirements, and predators.

Refer to Kansas Forestry Technical Note KS-9, Tree/Shrub Establishment and Maintenance Guidelines, for additional information on direct seeding.

6. Species Spacing

The spacing of trees and shrubs will be related to the planned purpose. Suggested spacing is as follows:

- Gully or erosion control—2 x 2 ft or 3 x 3 ft.
- Christmas trees—5 x 5 ft minimum. Spacing between rows should vary to accommodate equipment. Spacing should be arranged to obtain 900 to 1,200 trees per acre.
- Wood products (walnut, other sawlogs, or firewood)—8 x 8 ft or wider up to 12 x 12 ft.
- Nut production—35 x 35 ft or wider.
- Beautification (Aesthetics)—varied spacing. Should be according to a landscape plan.
- Conservation Practices 380, Windbreak/Shelterbelt Establishment; 442, Hedgerow Planting; and 391, Riparian Forest Buffer, plantings—see appropriate specifications for spacing recommendations.

The following table gives the number of trees per acre for various spacing:

Tree Spacing—Number of Trees per Acre

Spacing (ft)	Sq ft per Tree	Number of Trees per Acre
2 x 2	4	10,890
5 x 5	25	1,742
6 x 6	36	1,210
8 x 8	64	680
10 x 14	140	311
12 x 12	144	302
12 x 16	192	227
14 x 14	196	222
10 x 20	200	218
35 x 35	1,225	36

7. Planting Details

Specific planting requirements for site preparation, proper stock handling techniques, establishment methods, and survival percentages are provided in Kansas Forestry Technical Note KS-9.

8. Maintenance Details

Maintenance requirements are provided in Kansas Forestry Technical Note KS-9.