

Tree/Shrub Establishment – Seedlings/Cuttings

WV Conservation Practice Job Sheet Code 612



Definition

Establishing woody plants by planting seedlings or cuttings.

Purpose

To establish woody plants for forest products, wildlife habitat, erosion control and improvement of water quality, treating waste, reduction of air pollution, sequestration of carbon, energy conservation, enhancing aesthetics and/or improving or restoring natural diversity.

Considerations

The following should be considered for tree and shrub establishment:

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, 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 species which best meet local 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 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.

Use locally adapted seedlings or cuttings.

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

Consider associated insect, pest, and disease problems when selecting tree and shrub species (i.e. cedar-apple rust, etc.)

Consider shade tolerance when selecting tree and shrub species to plant.

Consider drainage class and soil type when making plant species selection

Native plant materials should be used whenever possible. Species considered locally invasive or noxious should not be used.

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.

Site preparation should be sufficient for establishment and growth of selected species. Site preparation is needed if competition from grass, weeds, and/or woody materials will interfere with plant establishment and growth. See WV Conservation Practice Standard Tree/Shrub Site Preparation, code 490, and Brush Management, code 314, and associated job sheets.

Control competing vegetation during the first 2 or 3 years by mowing, cultivating, mulching, herbicides, or plant mats.

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

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

Operation and Maintenance

The practice area should be inspected in the first few months and at least annually including after storm/fire events.

Replace dead and dying stock in newly established plantings. The practice area must be protected from grazing as well as, fire, insects, diseases, competing vegetation and wildlife. Noxious weeds will be controlled.

Where practical, management activities will be performed outside the primary nesting season (March 15 - July 15). An exception may be for mowing or cultivation to control vegetative competition.

Supplemental water as well as periodic applications of nutrients may be needed to maintain plant health and vigor.

Trees and/or shrubs can eventually become crowded slowing their growth, survival and composition of understory species. As the plants mature, periodic harvesting of some of the overstory trees and shrubs becomes an important activity for maintaining plant health and productivity.

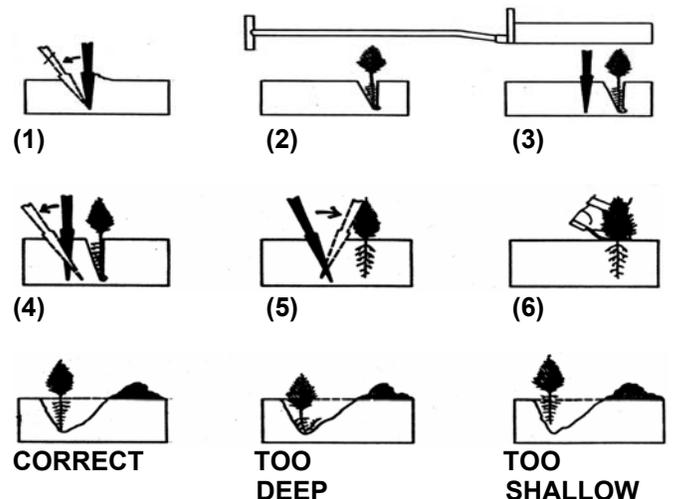
Pruning, thinning, and/or removal of dead or diseased plants should be performed and timed as to not interfere with the lifecycle of the plants or the intended purpose of the planting.

Specifications

Site-specific requirements are listed on the following pages of this job sheet. Specifications are prepared in accordance with the WV NRCS Field Office Technical Guide. See the WV conservation practice standard for Tree/Shrub Establishment, code 612, for specific requirements. Clients should work closely with NRCS personnel and WV Division of Forestry personnel when utilizing this practice.

Planting Bar/Dibble Planting Technique

- (1) Insert the dibble straight down into the soil to the full depth of the blade and pull back on the handle to open the planting hole. (DO NOT rock the dibble back and forth as this causes soil in the planting hole to be compacted, inhibiting root growth.
- (2) Remove the dibble and push the seedling roots deep into the planting hole. Pull the seedling back up to the correct planting depth (the root collar should be ½ inch below the soil surface). Gently shake the seedling to allow the roots to straighten out. DO NOT twist or spin the seedling or leave the roots J-rooted.
- (3) Insert the dibble into the soil several inches in front of the seedling.
- (4) Push the handle forward to close the hole and hold the seedling in place.
- (5) Pull back on the handle to close the planting hole eliminating air pockets around the roots.
- (6) Remove the dibble and close and firm up the opening with your heel. Be careful to avoid damaging the seedling.



Job Sheet prepared by Barbara McWhorter, NRCS Forester
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Tree/Shrub Establishment – WV Job Sheet – Seedlings/Cuttings

Client:	Farm #:
Field(s):	Tract #:
Designed By:	Location:
Date:	Total Acres:

Purpose of Tree/Shrub Establishment:

Site Conditions Prior to Planting:

NOTE: 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 practice standard Tree/Shrub Site Preparation, 490 and/or Brush Management, 314, as applicable.

Is Tree/Shrub Site Preparation Needed? Yes No

If yes, see WV conservation practice standard Tree/Shrub Site Preparation, code 490.

Tree/Shrub Establishment Method (Refer to WV Practice Standard (612) Tree/Shrub Establishment for specific requirements)									
Field	Acres	Species ¹	Kind of Stock ²	Method ³	Planting Date	Plants / Acre	Average Spacing	Protection Method ⁴	Total Plants

¹ **Species:** If available, attach USDA Plants Database (<http://plants.usda.gov>) Fact Sheet or Plant Guide for each species planned

² **Kind of Stock:** Bareroot or Cutting (include size, caliper and age as applicable)

³ **Method:** Mattock, Planting Dibble, Hoedad, Planting Bar, Tile Spade, Post Hole Digger, Tractor/Auger, or Tree Planting Machine.

⁴ **Protection Method:** Tree Shelters, Repellants, Tree Mats, Other

SPACING	NUMBER OF SEEDLINGS PER ACRE	SPACING	NUMBER OF SEEDLINGS PER ACRE
6' X 6'	1210	10' X 10'	436
6' X 8'	908	12' X 12'	302
8' X 8'	680	15' X 15'	194
6' X 10'	726	16' X 16'	170
8' X 10'	544	20' X 20'	109

Formula: 43560 divided by (Row spacing X Seedling Spacing) = Plants / Acre



Tree/Shrub Establishment – WV Job Sheet –Seedlings/Cuttings

If needed, an aerial view or a side view of the practice can be shown below. Other relevant information, complementary practices and measures, and additional specifications may be included.

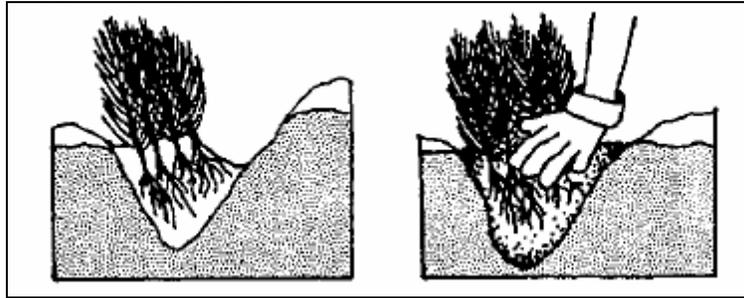
Additional Specifications and Notes: (i.e. cultural practices and soil amendments, etc.)



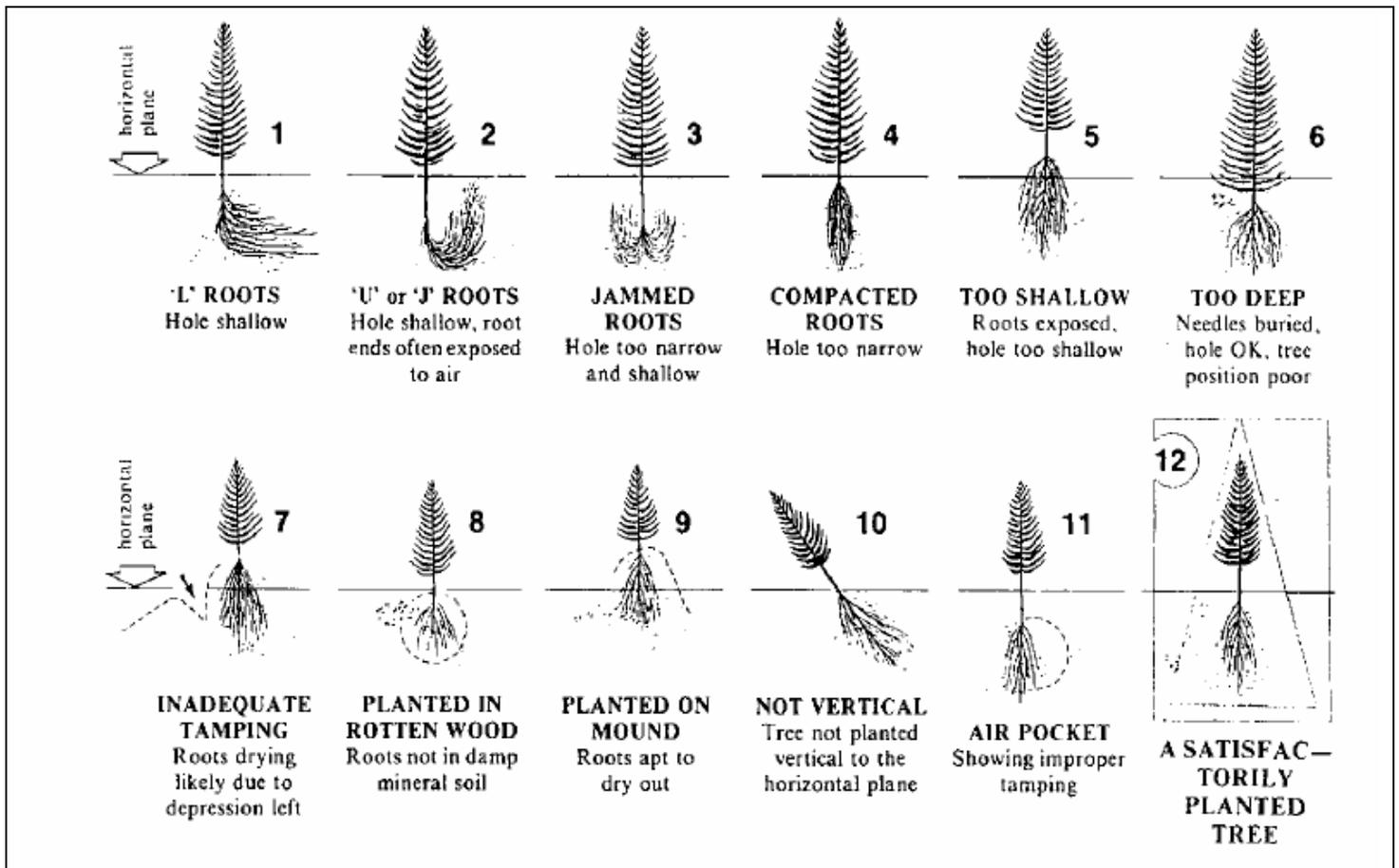
<p>Planting Times</p> <p>Trees/shrubs can be planted in the fall from the time growth stops until the soil is frozen; or in the spring after the soil has thawed until bud break which usually occurs by May 1st. Avoid fall planting in clay soils due to frost heaving.</p> <p>Additional requirements:</p>
<p>Site Preparation See WV Job Sheet Tree/Shrub Site Preparation (Code 490)</p> <p>Additional requirements:</p>
<p>Care, Handling , Size Requirements for Planting Stock</p> <p>To optimize survival, plant seedlings immediately upon their arrival from the nursery. If this is not possible, the bundles can be stored for two days in a cool (34 -38° F), dark place. Do not unpack the bundles! Water the bundles periodically to ensure the roots are well moistened. It is critical that the roots never be allowed to dry out; exposure to the air for even a few minutes can kill your seedlings. If controlled storage is not available and seedlings cannot be planted within two days of receipt, dig a trench about one foot deep and bury the seedling roots in soil. This is called "heeling-in". See drawing on the following page. Pack the soil firmly, water thoroughly, and make certain all roots are covered. Evergreens require extreme care. When heeling in evergreens, split bundles and spread out the seedlings in the trench to make sure the root system of each seedling is protected by soil. Live cuttings that will not be immediately planted shall be promptly placed in controlled storage conditions (34-38° F) and protected until planting time. Check planting stock at the time of planting to see if it is free of disease, insects, and mechanical injury and have a well-developed root system. All conifers must have dormant buds. Seedlings shall not be less than ¼ inch in caliper at 1 inch above the root collar. For cuttings, avoid using material less than ¾" in diameter. Tops of dormant-season collected cuttings may be dipped into latex paint, paraffin or sealing wax to prevent desiccation and mark the up-end. Rooted planting stock must not exceed a 2:1 shoot-to-root ratio and have a minimum of a 1:1 root shoot ratio. General size guidelines are as follows: Hardwoods - seedlings should have a minimum height of 6-12 inches and a minimum root length of 10 inches. Conifers - seedlings should have a minimum height of 6-12 inches and a minimum root length of 8 inches</p> <p>Additional requirements:</p>
<p>Planting Methods</p> <p>Roots of bareroot stock shall be kept moist during planting operations. Any directions received with the seedlings regarding care of the seedlings while planting shall be followed. If no directions accompany the seedlings, roots of bareroot stock shall be kept moist during planting operations by placing the seedlings in a water-soil (mud) slurry, peat moss, super-absorbent (e.g., polyacrylamide) slurry or other equivalent material. Rooting medium kept moist at all times by periodic watering. Pre-treat stored cuttings by soaking just before planting. Stock shall not be planted when the soil is frozen or dry. Rooted stock will be planted in a vertical position with the root collars approximately ½-inch below the soil surface. Insert cuttings to the depth required to reach adequate soil moisture. The planting trench or hole must be deep and wide enough to permit roots to spread out and down without J-rooting or L-rooting. After planting of rooted stock or cuttings, pack soil around each plant firmly to eliminate air pockets.</p> <p>Additional requirements:</p>
<p>Operation and Maintenance</p> <p>The practice area must be inspected periodically and protected from damage to maintain proper function. Replace dead and dying stock in newly established plantings. The practice area must be protected from destructive grazing as well as, fire and pests. Noxious weeds should be controlled. Competing vegetation may be controlled by mowing, cultivating, mulching, pesticides, or plant mats.</p> <p>NOTE: NRCS does not make pesticide recommendations. Contact the local office of the West Virginia Division of Forestry or the WVU Cooperative Extension Service for assistance. Clients should request the product name, strength and amount used. All chemicals must be applied in accordance with label specifications.</p> <p>Additional requirements:</p>
<p>Protection Methods</p> <p>If used, tree mats and shelters should be installed according to manufacturer guidelines. Shelters should be maintained for a minimum of five years or until they disintegrate naturally. Competing vegetation should be removed from around the protected seedlings. Repellents should be applied according to manufacturer guidelines. Protect from livestock, fire and other damage. See the WV conservation practice standards, Use Exclusion, 472 and Firebreak, 394.</p> <p>Additional requirements:</p>

Questions regarding the planting or maintenance of the Tree/Shrub Establishment should be directed to:

_____ at _____



One method of long-term tree storage is the “heeling-in” technique. Roots must be packed tightly in the soil and kept moist. The heel-in trench must be shaded and protected from the wind.



Drawings 1 – 11 illustrate various ways that seedlings **SHOULD NOT** be planted. The ideal planting is shown in drawing 12.

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