

TREE/SHRUB ESTABLISHMENT
Georgia Practice Job Sheet-612

Prepared for: _____

Prepared by: _____

Farm: _____ Tract Number: _____ Date: _____



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, treatment of waste, reduction of air pollution, sequestration of carbon, energy conservation, renewable energy systems and to enhance aesthetics.

CRITERIA

Species will be adapted to soil-site conditions and will be suitable for the planned purpose.
Planting or seeding rates will be adequate to accomplish the planned purpose.
Planting dates, and care in handling and planting of the seed 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.
Site preparation shall be sufficient for establishment and growth of selected species.

Adequate seed or advanced reproduction needs to be present or provided for when using natural regeneration to establish a stand.
Timing and use of equipment 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 adverse Impacts such as livestock damage or fire.
Comply with applicable federal, state, and local laws and regulations, including the <http://www.gfc.state.ga.us/ForestManagement/documents/BMPManualGA0609.pdf> (BMP's) during the installation, operation and maintenance of this practice.

SITE PREPARATION

Site Preparation may vary according to the species to be planted, ground cover, soil, slope, degree of erosion and other site factors. The objective is to reduce completion without removing or destroying topsoil and organic matter.

SITE IMPROVEMENT

Growth on wet and other low quality sites often can be improved by water control.

1. Water control should be designed to maintain optimum water table. In the flatwoods, pines grow best when the water table is at least 18 inches but less than 36 inches below the surface.
2. Bedding may be needed to improve drainage, make planting easier and improve survival and initial growth of loblolly pine. Pines planted on beds in wet areas benefit from improved nutrition and soil aeration.
3. Fertilization is generally considered an operational practice only in the poorly drained flatwoods and other soils of the Coastal Plains generally deficient in phosphorus.

SPACING

Trees should be spaced so that they will make normal growth until the time of the first cutting, which is usually a commercial thinning.

Some recommended spacing for GA are:

<u>Pines</u>	<u>Hardwoods</u>
6' x 10' (726 tpa)	8' X 10' (545 tpa)
7' x 10' (622 tpa)	10' x 10' (435 tpa)
8' x 10' (544 tpa)	12' x 12' (300 tpa)
6' X 12' (605 tpa)	
7' X 12' (519 tpa)	

Interplanted seedlings should be no closer than 8 feet from established seedlings. Spacing for special purpose plantings, such as wildlife or beautification, should be done in consultation with an appropriate Specialist.

Planting Conifer Seedlings

1. Seedling Quality - Plant a quality Loblolly or Longleaf pine seedling that's disease-free, root collar diameter no less than one-eighth inch, stiff and woody, with secondary needles present, maximum top length 14 inches and a root system no less than five inches not more than 9 inches Long.
2. Care of Seedlings - Seedling roots must be Kept moist at all times. Seedlings (especially the roots) should not be exposed to the sun, wind, heating, drying, or freezing at any time from lifting at the nursery plant beds until planted. No roots should be exposed to the sun or wind for more than 10 minutes. If cold storage is not available, keep seedlings packed in bags after delivery. They should not be stored in bags longer than 2 weeks.

Additional precautions should be taken for storing bags:

- a. Keep in a cool place. Avoid heated rooms.
- b. Protect bags from freezing.
- c. Water at least once each week to keep roots and packing moss moist.
- d. Stack bags on sloping racks to ensure air circulation, easy watering, and drainage of excess water.

Stock must be kept cool (33 - 40 degrees F) and protected from "heating". Stock that is well watered, protected from direct sunlight, and properly aerated usually will not heat. Seedlings that have been subjected to heating should not be planted.

The sooner seedlings are planted after being lifted from nursery beds, the better the chances for survival and normal growth

While planting, take the following Precautions:

- a. Water, wet moss, or wet burlap should be kept around the seedling roots.
- b. When hand planting, one seedling should be selected at a time and immediately planted.

Planting Hardwood Seedlings

Care of hardwood seedlings is similar to conifer seedlings with the following additions:

1. Seedlings must be large (at least 3/8" root collar diameter) and healthy. Small or weak seedlings invite planting failures.

2. Seedlings must be of the correct geographic source.
3. The trees must be adapted to the site.
4. Site preparation and logging must be such that the soil is not abused, which causes erosion or puddling from working the soils when they are too wet.
5. Newly planted seedlings should be free to grow without severe competition. Intensive site preparation and proper follow-up to control competing vegetation are required.
6. Plantations must be carefully protected. Hardwoods are killed or injured by light fires; they can be destroyed by grazing cattle and deer, and they are sensitive to herbicides.

Time to Plant

Plant during the dormant season. (The season can be extended from two to four weeks by placing dormant seedlings in cold storage.) Avoid planting when ground is frozen or dry - or excessively wet and sticky. Planting when soil is in poor condition results in low survival, poor planting production, improperly planted seedlings and poor growth.

Planting Methods - Seedlings may be planted by hand or with a machine transplanter.

1. Depth of Planting – Plant bare root seedlings as deep as or slightly deeper than they grew in the nursery in all soils except deep sands where they should be planted 2 to 3 inches deeper than they grew in the nursery, exercising due care not to cover the terminal bud. It is recommended that containerized longleaf seedling be planted on cutover sites 1 inch above root collar of the seedling or at the bud. On agricultural scalped sites it is recommended that seedlings be planted 1-2 inches above root collar.

2. Condition of Roots - Roots must be planted straight down, not twisted, balled or U-shaped. The opening (slit, hole, or furrow) should be large and deep enough to accommodate the root system in its normal position.

Firmness - Soil must be packed firmly around the planted seedlings with no air pockets around roots.

Direct Seeding

Note: Direct seeding is not commonly practiced in GA due to predation of seed, inconsistent germination, and uncontrollable stocking rates.

SPECIFICATIONS (as applicable)

Species to be established

Plant spacing

Site preparation method

Planting method

Equipment to be used

Planting date's

Soil amendments

Cultural practices

A Forest management plan by a forester present prior to planting.

Other: _____

OPERATION AND MAINTENANCE

Planting Follow-Up - Seedling stocking and survival can be determined a year after planting by taking 1/100 acre randomly sampled plots in the plantation. The radius of a 1/100-acre plot is 11.75'. Sufficient plots are needed to give a good representation of area. As a rule, if 300 or more well-established seedlings survive per acre, it will not pay to replant. Replacement plantings should be made within 1 year after the original planting. Follow tree planting by implementing an herbicide

release treatment and also a prescribe burn. See 315 Herbaceous Weed Control and 338 Prescribe Burn job sheets for specific details for installing these recommended practices.

Release and Cultural Practices

- Planted seedlings or cuttings should be released from any overtopping vegetation not later than 2 years after planting. "Foliage Spraying" methods should not be used on areas planted to hardwood species.
- Noxious weeds must be controlled.
- Damaging pests (insects, rodents, and disease) must be monitored and controlled.

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

Protection of Planted Seedlings

- Livestock Exclusion

All plantations should be protected from grazing by livestock until the trees are at least 8 to 10 feet high. Domestic livestock should be completely excluded from all hardwood and Christmas tree plantations throughout the life of the stands. Hogs must be completely excluded from plantations of all species. Interplanted stands and young plantations of all species must be protected from fires.

Certification Job Sheet:

Prepared by: _____

Title: _____

Date: _____

Approved by: _____

Title: _____

Date: _____

Installation:

Circle: YES or NO to the following:

- Are Pine seedlings planted at a minimum of 519 to a maximum of 726 trees per acre?

Circle Yes or No

- Are hardwood seedlings planted at a minimum of 303 to a maximum of 545 trees to the acre?

Circle Yes or No

I certify that this practice has been installed in accordance with NRCS standards and specifications.

Certification by: _____

Date: _____

The United States Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact the USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write the USDA, Director, Office of Civil Rights, Room 326W, Whitten Building, 14th and Independence Avenue, SW, Washington, D.C. 20250-9410 or call (202) 720-5964 (voice or TDD). USDA is an equal opportunity provider and employer.