

## Trees to Plant

The choice of species to plant will depend on management objectives, products desired, and soils. For trees that are to be planted for special purpose, such as seed production, carbon sequestration, or wildlife production, consultation with an appropriate specialist is advisable.

Studies have shown that bottomland hardwood forests can support two to four times as many wildlife species as upland forests. Several species of wildlife found in these forests are threatened or endangered.

Commercial forest species to favor and plant on various soils are listed in the woodland management and productivity section of the soil surveys under the trees to plant column.

## Seedling Sources

Managers and landowners should make sure they are planting high quality bare root and containerized seedlings and the seed sources come from the same geographic area in which the seedlings will be planted. Government and commercial nurseries will certify that the seed sources were within a 150 mile North-South zone of the planting site. Nursery seedlings must be dormant.

## Transportation, Handling, and Storage

Care should be taken in transporting and handling seedlings. Seedlings must be protected from physical damage, kept moist, kept cool, and kept in storage as short a time as possible. Every effort must be made to keep seedling roots moist while the seedling is out of the ground. Seedlings should either be planted or placed in cold storage as soon as possible after being lifted from the nursery bed. Seedlings may be stored up to 2 to 4 weeks in refrigerated storage with temperatures ranging from 34 to 40 degrees. Take only as many seedlings to the field as you can plant that day. Seedlings must also be protected from sun and wind. Tree planters should not hold more than one seedling at a time in their hand prior to planting. Seedlings must be stored in planting bags in the shade or under a tarp until they are planted. Longleaf seedlings can only be stored half as long as other pines and should be planted as quickly as possible.

## Seedling Quality

Seedlings that are diseased, forked, bent, or have multiple tap roots should be culled at the nursery. Seedlings must have no sign of heat damage (sour smell, discoloration); no root rot; no dieback; and no broken seedlings. Roots must be moist and treated with anti-desiccant.

Survival depends upon good seedling quality.

Seedlings not meeting specifications must be approved by a NRCS forester before planting.

## Pines

### Pine Seedling Specifications

Bare root pine seedlings should have a minimum root collar diameter of 1/4 inch, height of 6-14 inches, tap root length of 5-8 inches, and 4-8 lateral roots. Containerized pine seedlings should be the same except for the root specifications which will be restricted to the container. No root pruning will be allowed on pine seedlings.

### Pine Spacing and Planting Density

Loblolly pine seedlings planted for the production of pulpwood, sawlogs, or other wood products should be planted on a proven and acceptable spacing which will yield an initial density of 500-900 trees per acre. If pines must be planted below 500 trees per acre use the 9 x 10 or 8 x 11 foot spacing.

Longleaf pine bare root seedlings will be planted at a minimum rate of 800 trees per acre. Longleaf pine containerized seedlings will be planted at a minimum rate of 400 trees per acre and a maximum rate of 545 trees per acre. Spacing should be such that it will accommodate equipment available for control of competing vegetation. A list of suitable longleaf pine soils is attached to bottom of this document.

A well managed silvopasture system should contain between 250-500 trees per acre arranged in a prescribed silvopasture system. This silvopasture system should provide adequate sunlight for the forage crop. Tree rows should be aligned in an east-west row alignment for maximum sunlight exposure on the grass. Where possible, select genetically improved trees for planting. Longleaf plantings should be with containerized seedlings.

Suitable spacing for silvopasture trees are 6 x 15 (484 trees per acre), 8 x 15 (363 trees per acre), 8 x 12 (454 trees per acre), 12 x 12 (302 trees per acre), 4 x 8 x 40 (454 trees per acre), 6 x 8 x 40 (302 trees per acre), 6 x 9 x 40 (296 trees per acre), 6 x 8 x 50 (250 trees per acre), 6 x 8 x 30 (382 trees per acre), or similar approved spacing. Approval must come from a NRCS forester.

The spacing between the double rows of trees would be determined by species to be planted and equipment utilized by the landowner. Longleaf pine could be planted in double rows 20 – 40 feet apart, but loblolly and slash pine would require 40 – 50 foot openings because they have more limb density than longleaf pine. Bahiagrass is more shade tolerant and would not require as wide an opening as bermuda grass.

Refer to Silvopasture Establishment job sheet (ms-ecs-381-01 (js-ss) silvopasture) for additional information.

Christmas trees should be planted at a rate of 800-1,000 trees per acre.

Pine Spacing (Feet)	Number of Trees per Acre
8 x 12	454
9 x 10	484
8 x 11	495
8 x 10	545
8 x 9	605
8 x 8	681
7 x 10	622
7 x 9	691
6 x 10	726
6 x 12	605
7 x 8	778
6 x 9	807
7 x 7	889
6 x 6	1210 for erosion control

Any planting density not listed above must be approved by a NRCS forester.

#### Planting Methods - Pine

Pines may be hand planted or machine planted. Planting should be done under good weather conditions when the soil is not too wet or dry, and the ground is not frozen. Tree planting will be delayed if the soil is too wet, too dry, or frozen. To survive, a

newly planted seedling must begin taking up water and nutrients immediately. NRCS foresters will make this determination in the field.

Pine seedlings should be planted between December 1 and March 31. Containerized seedlings should also be planted between December 1 and March 31, however, if adequate moisture is available on the site, the planting season for containerized seedlings can be expanded from October 1 to April 30. A NRCS forester will determine if containerized seedlings can be planted from October 1 to April 30 on a case by case basis.

The air temperature should be between 33 degrees and 70 degrees Fahrenheit. Pines may be planted with a dibble bar, hoedad, or planting shovel. The hole must be free of trash and large enough that the roots are not bound. Roots should be inserted in the planting opening straight. Make sure the roots are not twisted, balled, or U/L/J rooted. Soil should be packed firmly around the planted seedlings with no air pockets left in the planting hole. Pine seedlings should be planted about 1 inch deeper than they were grown in the nursery bed (root collar). Pine dibble bars, hoedads, or shovels must be a minimum of 10 inches long and 3 inches wide. Longleaf pine seedlings should be planted with the root collar ½ inch to 1½ inches above the ground (depending on soil type and slope). Longleaf planting should be done with containerized seedlings.

A tree planting compliance sheet must be completed before the tree planting vendor is paid for the tree planting job. The tree planting job will be certified if 85% of the seedlings planted on the tract are planted correctly.

Seedling survival will be determined after the first, second, or third growing season with at least 50% of the planted seedlings surviving.

## **Hardwoods**

### Hardwood Seedling Specifications

Hardwood seedlings should have a minimum root collar diameter of 3/8 inch, height of 18 to 24 inches, minimum tap root length of 8 inches, and 4-8 lateral roots.

Seedlings that are forked, bent or curled, or have multiple tap roots, should be culled in the nursery.

Root pruning will not be allowed on Hardwood seedlings unless a NRCS forester approves the pruning. If root pruning is required in hardwood seedlings because the roots will not go in the planting hole, the pruning will be done by pulling all lateral roots down the length of the tap root and cutting off any part of the lateral roots hanging

below the tap root. Root pruning will be carefully monitored by NRCS foresters. Each seedling will be required to have at least 4-8 lateral roots. Lateral roots will not be pruned unless they exceed 8 inches in length. The pruned length will be 5-8 inches.

### Hardwood Spacing and Planting Density

Hardwood and Baldcypress should be planted on a spacing that will yield between 302-453 trees per acre. Any deviation from these densities would require a NRCS forester approval. The goal of all hardwood plantings will be a 30% to 60% mix of hard mast species suitable to the site. On sites that will not support this mix, exceptions to this 30% to 60% mix of hard mast species may be granted by a NRCS forester (An example would be extremely wet sites requiring pure stands of Baldcypress and/or water tupelo). Only species suited to the soils in the planting site will be planted. Species mixes will be adjusted to match the soils.

#### Hardwood Spacing

Feet	Trees per Acre
12 x 12	302
10 x 12	363
12 x 9	403
10 x 10	435
12 x 8	453
14 x 7	435

### Planting Methods – Hardwood

Hardwood seedlings should be hand planted with a hardwood tree planting dibble bar with a blade at least 12 inches long and 4 inches wide. Hardwood seedlings will be hand planted unless machine planting is approved by a NRCS forester. Planting should be done under good weather conditions when the soil is not too wet or dry, and the ground is not frozen. No tree planting will take place in standing water with the exception of Baldcypress and water tupelo. These two species can be planted in standing water less than 6 inches deep. Tree planting will be delayed if the soil is too wet, too dry, or frozen. To survive, a newly planted seedling must begin taking up water and nutrients immediately. NRCS foresters will make this determination in the field. Hardwood seedlings will be planted from December 1 to March 31. The air temperature should be between 33 degrees and 70 degrees Fahrenheit. The planting hole must be free of trash and large enough that the roots are not bound. Roots should be inserted in the planting opening straight. Make sure the roots are not twisted, balled, or U/L/J rooted. Soil should be packed firmly around the planted seedlings with no air pockets left in the

planting hole. Hardwood seedlings should be planted about 1 to 2 inches deeper than they were grown in the nursery bed (root collar).

A tree planting compliance sheet must be completed before the tree planting vendor is paid for the tree planting job. The tree planting job will be certified if 85% of the seedlings planted on the tract are planted correctly.

Seedlings will be considered established when planted seedling survival is 50% or greater at the end of the first, second or third growing season.

### **Bottomland Hardwood Restoration for Wildlife Habitat**

Bottomland hardwood restorations addressing general wildlife habitat considerations typically are plantings with more species richness and diversity than those used to establish stands that benefit a specific objective such as: timber production or a single wildlife species. These more diverse plantings should include a mixture of hard mast, soft mast, and light seeded species. Tree species with different growth characteristics can provide variation in vertical structure desirable for bird habitat. Rapidly developing, pioneer species such as cottonwood, black willow, sweetgum, sycamore and green ash planted on appropriately prepared sites can provide vertical structure faster than hard mast species.

Seedling planting density should be no less than 302 TPA (trees per acre), and no more than 453 TPA. The hard mast component of the tree planting plan should comprise no less than 30% of the total stand and no more than 60% of the total stand. The non hard mast component should be evenly divided between light seeded and soft mast species. Only species suited to the planting site will be established. Species mixes will be adjusted to match the soil and site conditions. Examples of soft mast species are: persimmon, red mulberry, sugarberry, black cherry, locust, water tupelo and blackgum. Examples of light seeded species are: cottonwood, black willow, sweetgum, sycamore, green ash, red maple and Baldcypress. Wildlife habitat tree planting within bottomland hardwood restorations will be considered established when planted seedling survival is 50% or greater at the end of the first, second or third growing season. If operationally possible, surviving seedlings should be evenly distributed across the planting site in a random species mix. Potential seedling planting spacing and densities for general bottomland hardwood wildlife habitat establishment are:

- 12' x 8' = 453 seedlings per acre
- 14' x 7' = 435 seedlings per acre
- 12' x 12' = 302 seedlings per acre
- 12' x 10' = 363 seedlings per acre
- 12' x 9' = 403 seedlings per acre

10' x 10' = 435 seedlings per acre

Site preparation shall be sufficient for establishment and growth of the selected species and type of planting stock. The type and intensity of site preparation will vary according to ground cover, soils, and the species to be planted (See Tree/Shrub Site Preparation, Code 490). All site preparation activities must be done in a timely manner. Planting should be delayed if the site preparation is not completed properly.

Adequate herbaceous control by either mechanical, chemical, or a combination of both is required. The plan should take into account the existing competition and soils on the planting site and prescribe adequate control to allow light seeded species to be free to grow till they are above the competition. Care should be taken to prescribe only what is necessary to insure survival. See Forest Site Preparation job sheet (ms-ecs-490-03 (js-ss) forest site preparation) for more information.

### **Eastern Cottonwood for Carbon Sequestration/Trainer Tree Considerations**

In addition, general wildlife habitat establishment and carbon sequestration concerns may be addressed by establishing a cottonwood /hardwood inter-planting at 604 trees per acre when the cottonwoods will be removed. This planting will consist of 302 cottonwoods on a 12' X 12' spacing and 302 mixed hardwoods on a 12' X 12' spacing. This stand will be planted at spacing of 12' X 6' with cottonwood and hardwood alternating within every planted row. The hardwood component (non cottonwood component) will be a species mix of 30% to 60 % hard mast and remaining composition will be evenly divided between light seeded and soft mast hardwood species. Stands will be considered established when there are at least: 200 cottonwood and planted hardwood seedling survival is 50% or greater at the end of the first, second or third growing season. If operationally possible, surviving hardwood seedlings should be evenly distributed across the planting site in a random species mix. Seedling planting spacing for the enhanced carbon sequestration hardwood wildlife habitat establishment is:

12' x 6' = 604 seedlings per acre

### **The following specifications must be met for all plantings containing cottonwood:**

1. Suitable Soils – See suitable soils list for cottonwood at the bottom of this document.
2. Competition control is necessary for cottonwood and light seeded and soft mast hardwood survival. Minimum site preparation will consist of double disking and deep ripping to a depth of 18 inches. Additional competition control practices such as chemical spraying, supplemental disking, fertilization, and bush hogging may be required.

3. There should be no cultivation within 35 feet of a stream bank; therefore only mixed hardwoods, not cottonwood, should be planted within 35 feet of the stream.

**Cottonwood Establishment - Planting Material.** Use cuttings prepared during the dormant season from the previous season's growth. The cuttings should be taken from healthy, moderately vigorous stock plants growing in full sunlight. At least two nodes should be included in the cutting. Cuttings should be at least 1/4 inch and preferably 3/8 to 3/4 inches in diameter. They should be at least 12 inches long; 15 to 20 inches preferred. The top should be horizontal and the bottom should be beveled at a 45-degree angle.

**Cottonwood Establishment - Planting Method.** Cuttings should be soaked in water 2-3 days prior to planting and kept cool during the planting operation. They should be hand planted at the grid intersections of subsoil trenches leaving 2 inches of the cutting above ground level. Soil should be packed firmly around cuttings with no air pockets remaining in the planting hole. Plant cuttings at optimum moisture conditions; between December 1 and March 31; and avoid freezing weather and frozen soil. Planting spacing and density should be 12'x12' and 302 stems per acre.

During early stand development cottonwood can act as a nurse crop for the mixed hardwoods but must be removed by natural mortality, deadening or cutting in a timely manner to maintain the hardwood stand's health and vigor. The cottonwood stocking must be reduced by 30 to 50% before age 12, reduced by an additional 30 to 50% by age 22, and all remaining cottonwood must be gone by age 30. Planting design must be such to allow for the mechanical removal of the cottonwood component without causing significant damage to the residual stand of hardwood.

### **Selecting the Appropriate Soil for Cottonwood**

#### Initial Soil Query Criteria Best Sites for Cottonwood Growth

Cottonwood is the predominating species in the 302/302 hardwood planting design. Cottonwood soil suitability interpretations were based on hydrological and soil characteristics that are silviculturally appropriate for the long-term health and production of the cottonwood stand. Cottonwood can survive on deep, infertile sand and clay but its best suited on moist, well drained, loamy fluvial deposits.

#### **Revised soil property criteria (Best to Mediocre Sites):**

Soil Texture (surface horizon) – sand separate less than 70% and clay separate less than 60%

Drainage - somewhat poorly to well drained;

pH (surface horizon) - between 5.0 and 8.5;  
Apparent Water Table depth – from 30 cm and 183 cm; and  
Landform - used as coarse filter to exclude uplands (natural levees, stream terraces, terraces, flood plains, alluvial flats, depressions, and meander scrolls).

### Seedling Protection

1. Grazing must be excluded from newly planted plantations until trees attain a height that damage for livestock is minimal. Pine plantations should be 3-5 years old and hardwood plantations should be 15-20 years old and longleaf plantations should be 8'-12' tall. All plantations should be protected from harmful grazing (See Prescribed Grazing Standard Code 528 and Access Control Code 472)
2. Fire protection is necessary for all plantations. Firebreaks should be established. (See Firebreak Standard Code 394)
3. Insects can damage recently planted seedlings.

### Replanting

If first year seedling survival for pine and hardwood meets minimum survival rates with uniformly distributed trees then replanting will not be required. If plantations have large openings larger than 50 feet across caused by mortality then the opening should be planted within two growing seasons. Losses caused by fire or drought should be replanted within two growing seasons. When interplanting, openings should be at least twice the width of the height of adjoining trees to assure sufficient sunlight for survival and normal growth. In plantations where survival is unsatisfactory, interplanting should be done the following planting season. A Tree Planting Compliance Sheet with seedling survival documentation must be included in the case file. The number of seedlings surviving should be subtracted from the number planted to get the number to replant. A NRCS or MFC forester must concur with any replanting. Adequate site preparation should precede all replanting operations. Underplanting with shade intolerant species should not be attempted.

Spacing for special purpose plantings, such as wildlife, seed production, fruit production, or beautification, will be done by consultation with an appropriate specialist.

## Direct seeding

### Southern pines

Specifications are given for longleaf, loblolly, and slash pine. Direct seeding should not be conducted on soils rated "severe" for seedling mortality.

### Methods of sowing

All of the Southern pines can be sown by a number of hand and machine methods. The choice often depends on the size of the area, soil type, cover conditions, stocking desired, and the facilities available to the landowner.

#### a. Spot seeding

Prepare the site by raking debris from an area approximately 4 sq. ft. in size. Drop 5 to 6 seeds on the cleared spot and press into the mineral soil. Spacing of the spots shall be approximately a 7' x 9' x 8' spacing. These spacings would yield a recommended 600 to 1,000 spots per acre.

#### b. Broadcast seeding

1. Hand cyclone seeders.
2. Tractor mounted cyclone seeders.
3. Aerial seeding.

#### c. Furrow or drill seeders (row)

## Longleaf pine

### Seed treatment

Seed must be treated with bird and rodent repellent. Longleaf seed need not be stratified.

### Seedbed preparation

Exposure of a minimum of 50% of the surface mineral soil is required for good soil-seed contact. Seeding may be done on a light grass rough obtained by burning

the site in the spring of the year in which sowing is to be done to approximately six months prior to sowing. Row and spot seeding do not require as much exposed mineral soil, but woody competition should be in check prior to sowing. On dry sandy sites (soil types with ordination symbols of 8s) disking using a heavy offset disk in 7 to 8 foot wide strips spaced 8 feet apart is required. Grazing livestock shall be excluded from longleaf direct seeded areas for three years or until stand is satisfactorily established.

#### Time of sowing

Seed shall be sown in the fall (November 15-December 15) when soil moisture is adequate and maximum daytime temperatures drop below 85°F. However, those sites that are subject to frost heaving and clipping of seedlings by rabbits shall be sown in late winter (January 15-February 15). Longleaf seed do not require cold stratification prior to sowing.

#### Recommended seeding rate

Seeding rates shall be based on sowing method and soil conditions. The following are the recommended rates:

Broadcast Seeding	3 lbs/acre
Disk-Broadcast Seeding	2 lbs/acre
Furrow or Drill Seeding	1.5 lbs/acre

Seeding rates can be reduced 35% on moist sites. There are approximately 4,000 cleaned longleaf pine seed per pound.

### Loblolly pine

#### Seed treatment

Loblolly pine seed shall be stratified for 30-60 days at 36-40 degrees Fahrenheit. Seed must be treated with a bird and rodent repellent.

#### Seedbed preparation

#### Direct seeding in open grassy areas

Prepare these areas for planting by either burning, disking or chemical site preparation followed by a burn.

Burning – Apply on sites with soils rated slight in plant competition.

Disking – Apply on sites with soils rated moderate in plant competition.

Chemical/Burn – Apply on sites with soils rated severe in plant competition.

Double disk strips 7 to 8 feet wide and 6 to 8 feet apart in August or September when grass roots are most readily killed. Livestock shall be excluded from seeded area for three years.

### Direct seeding under upland hardwoods

NOTE: No direct seeding of hardwoods will be done in Mississippi on federal cost share programs.

Prepare a seedbed by conducting a prescribed burn from November 1 to January 15 depending on safe burning conditions and desired objectives. If fuel is not sufficient to carry a prescribed fire, burning for site preparation is not required, and direct seeding can be conducted under existing conditions. Overtopping hardwoods will be deadened no later than May or June of the first year after seeding. There should be a minimum of 350 well distributed seedlings per acre to justify release from hardwood.

### Time of sowing

Seeding will be conducted between February 1 and March 1.

### Recommended seeding rates

Broadcast Seeding	1.00 lbs/acre
Disk-Broadcast Seeding	0.61 lbs/acre
Furrow or Drill Seeding (rows 6 ft. apart)	0.41 lbs/acre
Spot Seeding (1,000 spots per acre)	0.32 lbs/acre

There are approximately 18,500 cleaned loblolly pine seeds per pound.

### Slash pine

#### Seed treatment

All seed must be treated with a bird and rodent repellent. Seed must be stratified at 36°F - 40°F for 30 days.

### Seed preparation

#### Direct seedling in open grassy areas

Slash pine may be seeded successfully with burning being the only site preparation employed on some soils. Disking is required on soils with a woodland ordination symbol reflecting a low site index and a droughty soil condition. Disk strips 7 to 8 feet wide and 6 to 8 feet apart in late summer or early fall. Livestock shall be excluded from seeded areas for 3 years.

#### Direct seeding under upland hardwoods

Prepare a seedbed by conducting a prescribed burn from November 1 to January 15 depending on safe burning conditions and desired objectives. If fuel is not sufficient to carry a prescribed fire, burning for site preparation is not required, and direct seeding can be conducted under existing conditions. Overtopping hardwoods will be deadened no later than May or June of the first year after seeding. There should be a minimum of 350 well distributed seedlings per acre to justify release from hardwood.

### Time of sowing

Seeding will be conducted between February 1 and March 1.

### Recommended seedling rates

Broadcast Seeding	1.00 lbs/acre
Disk-Broadcast Seeding	0.60 lbs/acre
Furrow or Drill Seeding (rows 6 ft. apart)	0.55 lbs/acre
Spot Seeding (1,000 spots per acre)	0.46 lbs/acre

There are approximately 13,500 cleaned slash pine seeds per pound.

### Bottomland hardwoods

Specifications are given for sawtooth, cherrybark, Shumard, Nuttall, water, willow and swamp chestnut oaks, and native sweet pecan. With the exception of sawtooth oak, all of these species are adapted to and can be planted on most bottomland soils.

### Methods of sowing

Both hand and machine seedling are acceptable. The choice usually depends on the size of the area, soil, and cover conditions, the pattern of stocking desired, and the availability of facilities to the landowner. The Mississippi Forestry Commission has machine planters available for loan to landowners.

### Seed treatment

Seed must be checked for soundness. Proper treatment procedures shall be followed in order to obtain desirable germination. Soundness of seed can be checked by floating, cutting, or cracking. Acorns and nuts should be filled out to the outside shell and have a good white, yellow, or orange color. Dark spots indicate freeze damage, excessive drying, or weevil damage. Unsound seed, with the exception of overcup oak and native sweet pecan, will float. The seed of these two species should be checked for soundness by cutting. Preventing moisture loss is the most critical factor in maintaining seed viability. Seed should be placed in cold storage as soon as possible after collection and stored in polyethylene or burlap bags at 35°F - 40°F. Do not freeze.

### Time of seeding

Bottomland hardwood will be direct seeded from October 31 to April 1.

### Site preparation

Sites should be strip disked or rotor tilled prior to direct seeding by machine. Disking will not precede the planting by more than 45 days. Depth of penetration should be a minimum of 3 inches with all vegetation turned under. For highly erodible land, the disked strip will be a maximum of 6 feet wide on centers spaced the same as the seed will be planted. An undisturbed strip of at least 4 feet wide will be left between disked strips.

All disked strips will be on the contour. For wetland soil types or non-highly erodible, the entire field can be disked or disk 14 foot strips which accommodates plantings of 10' x 3' or 12' x 2 1/2'. If the area is to be hand-planted, either bushhog or burn to remove vegetation.

### Depth of sowing (seeding)

Acorns and pecans should be planted 2-6 inches deep; depending on soil moisture. Small acorns should be planted 2-4 inches deep in clayey soils. Soil moisture will dictate planting depth.

### Rates and spacing

Acorns and nuts will be sown at a rate of 1,250 to 1,500 seeds per acre to ensure a good stand. Spacing will be 10' x 3' or 12' x 2.5'.

### Average rates on small acorns and nuts

Water Oak	4-5 lbs/acre
Willow Oak	3-4 lbs/acre
Cherrybark	3-4 lbs/acre
Southern Red Oak	3-4 lbs/acre
Laurel Oak	3-4 lbs/acre

### Average rates on large acorns and nuts

Delta Post Oak and Overcup	8-10 lbs/acre
Sawtooth Oak	10 lbs/acre
Nuttall, Shumard & White Oak	12-15 lbs/acre
Cow Oak	20-25 lbs/acre
Sweet Pecan	10-12 lbs/acre
Hickory	8-20 lbs/acre

All of the above seeds vary in size from tree to tree.

Cottonwood Planting – See Cottonwood planting job sheet

## **Natural regeneration**

This practice of regeneration is the utilization of existing seed sources to establish areas to native trees and shrubs. Seed dispersal is usually accomplished by wind, water wildlife, etc. A natural seed source can be used if it is located within a reasonable distance from the area to be regenerated.

### a. Pine

There are three methods used to naturally regenerate pine. (See Forest Stand Improvement, Code 666).

- (1) Seed tree.

- (2) Shelterwood.
- (3) Clearcutting.

Methods No. 1 and No. 2 are those silvicultural practices where a specific number of seed trees are left per acre, depending on diameter breast high (d.b.h.), for the purpose of regenerating a stand naturally. These trees will be harvested once sufficient regeneration is present. Method No. 3 depends on trees bordering the clearcut as a seed source. Maximum width of area to be regenerated by using this method would be 400 feet and located perpendicular to prevailing winds.

b. Hardwood

A natural seed source can be used if it is located within a distance of 0-100 yards from the area to be restored and wind blown light seeded species are present. Examples of these species would be green ash, sweetgum, maple, sycamore, elm, cottonwood and willow. Seed from species such as overcup oak, water hickory, water tupelo and baldcypress will be dispersed by water primarily through backwater flooding. Distances regenerated through this method will be dependent on the flooding regime of the area. Sites that are likely to be invaded by light seeded species which will out-compete planted hard mast species should be naturally regenerated. Acceptable planting survival on these sites will be 125 free to grow seedlings per acre at the end of the third growing season.

Insects - Some of the most damaging insects to pine seedlings are:

Texas leaf-cutting ants (town ants)

Pine reproduction can seldom become established where ants are numerous, as they destroy newly germinated or planted seedlings. Most of the activity on pines occurs from fall to spring when there is very little green vegetation. Control is difficult and even when a town has been eradicated, another colony of ants may move in and occupy the empty town.

Pales weevils

This insect is attracted by freshly cut pine stumps. They destroy pine seedlings by feeding on the bark and cambium. Losses are generally minor after 6 months have elapsed after harvesting. Control methods include delaying tree planting for a year or treating seedlings with an insecticide.

Nantucket pine-tip moth

The larvae of this insect kills the bud and twigs of young planted and natural loblolly and shortleaf pines. Control is very difficult and treatment is generally not economical.

The following soils are suitable for growing longleaf pine in Mississippi:

Lucy	Freest	Bama	Boykin
Ruston	Harleston	Latonia	Malbis
Smithdale	Suffolk	Vancleave	Maubila(Cuthbert)
Okeelala	Eustis	Ocilla	Alaga
Petal	Olla	Prentiss	Beauregard
Poarch	Ora	Savannah	Saffell(Guin)
Troup	Mclaurin	Lucedale	Saucier
Cahaba	Escambia	Baxterville	Annemaine
Lakeland	Sweatman	Boswell	Suffolk
Irvington	Columbus	Shubuta	Bassfield
Wadley	Providence	Heidel	Rumford
Luverne	Lexington	Paden	Susquehanna
Benndale	Stough	Pheba	Izagora
Bigbee	Quitman	Brantley	Rattlesnake Fork

Nugent – Occasionally or Rarely Flooded

Jena – Occasionally or Rarely Flooded

Kirkville – Occasionally or Rarely Flooded in Coastal Flatwoods – Not Picture Plant

Bogs

Oaklimeter – Occasionally or Rarely Flooded

Atmore

Bayou

The following soils are suitable for growing cottonwood in Mississippi:

Adler	Falaya	Oaklimeter
Adler variant	Freeland	Ochlockonee
Ariel	Freestone	Olivier
Ark	Frizzell	Ouachita

Arkabutla	Gillsburg	Pearson
Askew	Griffith	Riedtown
Belden	Hatchie	Robinsonville
Bosket (askew)	Houlka	Silverdale
Bosket (dubbs)	Inglefield	Souva
Bowdre	Iuka	Steens
Bruin	Jena	Talla
Calloway	Kinsey	Teksob
Cascilla	Kirkville	Tensas
Catalpa	Leeper	Tippo
Chenneby	Leverett	Trinity
Chewacla	Mantachie	Tutwiler
Collins	Marietta	Urbo
Collins variant	Mathiston	Velda
Commerce	McRaven	Vicksburg
Convent	Mooreville	Wakeland
Dexter	Morganfield	Wanilla
Dubbs	Newellton	Weyanoke
Dundee		

