USDA United States Department of Agriculture

CONSERVATION ENHANCEMENT ACTIVITY

E612C

CONSERVATION STEWARDSHIP PROGRAM

Establishing tree/shrub species to restore native plant communities

CONSERVATION PRACTICE: 612 - Tree/Shrub Establishment

APPLICABLE LAND USE: Forest

RESOURCE CONCERN: Animals, Plants

ENHANCEMENT LIFE SPAN: 15 years

Enhancement Description

Establish trees and/or shrubs to restore elements of plant communities and diversity that have been lost. Restoring stand-level diversity and function improves health and vigor through planting resilient and/or resistant native plant communities. Additional benefits include providing diversity in wildlife habitat and forage.

Criteria

- States will apply criteria from the NRCS National Conservation Practice Standard Tree/Shrub Establishment (Code 612), and any additional criteria as required by the NRCS State Office.
- Species selected for planting will be native to the site and will create a successional state that progresses toward the identified target plant community.
- To enhance native plant diversity, select a minimum of three different species of trees and/or shrubs to be planted. An exception is in situations where a native lost species is being restored to a fully-stocked forest stand. (i.e., American chestnut). Selection of species should also be chosen according to the site's natural disturbance regime. Species should be selected based on traits, successional status, structure, and composition.
- Selection of species should also be chosen according to the site’s natural disturbance regime. Species should be selected based on traits, successional status, structure, and composition.

- Build forest resilience by favoring existing species that are better adapted to projected future climate conditions, and by enhancing relative compositional and structural diversity.
- Do not plant species on the Federal or State invasive species or noxious weed lists.
- Only viable, high-quality and site-adapted planting stock or seed will be used.
- A precondition for tree/shrub establishment is appropriately prepared sites. Refer to criteria in **NRCS Conservation Practice Standard Tree/Shrub Site Preparation (Code 490).**
- Implementation and timing of planting will be appropriate for the site and ensure successful establishment.
- Planting must be protected from unacceptable adverse impacts from insects, disease, wildlife, and/or fire. Apply supporting practices and treatments to protect establishing trees and shrubs, as necessary.
- Each site will be evaluated to determine if mulching, supplemental water, or other treatments (e.g., tree protection devices, shade cards, weed mats) will be needed to assure adequate survival and growth.
- The enhancement will comply with all applicable federal, state, and local laws and regulations, and with States' Forestry Best Management Practices for Water Quality.

Documentation and Implementation Requirements

Participant will:

☐ Prior to implementation:
- provide an updated Forest Management Plan that documents intended objectives for restoring native plant communities.
- select a combination of at least three native tree/shrub species that will increase plant and stand diversity.

Species	Note selected species characteristic(s)

☐ During implementation:

- install and maintain erosion control measures as needed for the site.
- protect the planting(s) from plant and animal pests and fire.
- notify NRCS in writing of any planned changes to verify changes meet NRCS enhancement criteria.

TASK	Species	Species	Species
Planting Date			
Planting Technique			
Arrangement/Spacing			

NRCS will:

Prior to implementation:

- provide and explain **NRCS Conservation Practice Standard Tree/Shrub Site Preparation (Code 490)** as it relates to implementing this enhancement.
- verify the enhancement is planned for the appropriate land use.
- provide and explain **NRCS Conservation Practice Standard Tree/Shrub Establishment (Code 612)** as it relates to implementing this enhancement.
- verify no plants on the Federal or state noxious weeds list are included.
- NRCS will provide Technical Assistance, as needed, in the following:
    - Selecting a combination of species to meet enhancement criteria.
    - Selecting planting techniques, arrangement and spacing design, and timing appropriate for the site and soil conditions.
    - Planning the use of additional erosion control for the site, as needed.
    - Preparing specifications for applying this enhancement for each site using approved state implementation requirements, national technical notes, appropriate state technical notes, and narrative statements in the conservation plan, or other acceptable documentation.

During implementation:

- evaluate any planned changes to verify they meet the enhancement criteria and were established to specifications developed for the site.

☐ After implementation:

- verify the plantings were protected from plant and animal pests and fire.
- verify all erosion control needed for the site is functioning and is maintained to specifications developed for the site.

NRCS Documentation Review:

I have reviewed all required participant documentation and have determined the participant has implemented the enhancement and met all criteria and requirements.

Participant Name _____ Contract Number _____

Total Amount Applied _____ Fiscal Year Completed _____

_____ _____

NRCS Technical Adequacy Signature Date

CSP WILDLIFE BENEFICIAL WOODY PLANT SPECIES

TABLE 1
APPROVED PLANTS*/PLANTING RATES**
MISSISSIPPI

NATIVE SHRUBS / FORBS (Planting Dates for Plants: November 15 - March 15)

Species	Spacing**	Approximate Plants/Acre
American Beautyberry	6' x 6'	1200
Native Blueberries (*Vaccinium* spp., ex.: highbush blueberry)	6' x 6'	1200
Chokeberry (black and red)	8’ x 8’	700
Crabapple	10' x 10'	450
Deerberry	6' x 6'	1200
Native Dogwoods (*Cornus* spp., ex.: Rough Leaf Dogwood)	8' x 8'	700
Eastern Red Cedar	10' x 10'	450
Elderberry	8' x 8'	700
Hawthorn spp.	6' x 6'	1200
Native Hollies (*Ilex* spp., ex.: Deciduous Holly)	8' x 8'	700
Huckleberry	6' x 6'	1200
Pawpaw	8’ x 8’	700
Sassafras	10’ x 10’	450
Serviceberry	8’ x 8’	700
Sumac	8' x 8'	700
Viburnum spp.	6' x 6'	1200
Native Plums (*Prunus* spp., ex.: Chickasaw)	8' x 8'	700
Native Blackberries (*Rubus* spp.)	6' x 6'	1200

**Other:

TABLE 1
APPROVED PLANTS*/PLANTING RATES**
MISSISSIPPI (Cont.)

NATIVE TREES (Planting Dates for Plants: November 15 - March 15)

Species* / Spacing**	Species* / Spacing**
Pine [b]	White Oak [a]
Loblolly	Willow Oak [a]
Longleaf	Live Oak [a]
Slash	Black Cherry [b]
Hardwood	Black Walnut [a]
Cherrybark Oak [a]	Black Gum [b]
Chinkapin Oak [a]	Hackberry (Sugarberry) [b]
Northern Red Oak [a]	Hickory [a]
Nuttall Oak [a]	Red Mulberry [b]
Overcup Oak [a]	Pecan [a & c]
Pin Oak [a]	Persimmon [b]
Scarlet Oak [a]	Cypress [b]
Shumard Oak [a]	Green Ash [b]
Southern Red Oak [a]	American Holly [b]
Swamp Chestnut Oak [a]	Pawpaw [b]
Water Oak [a]	Eastern Red Cedar [a & d]

[a] - Hard Mast Producer
[b] - Soft Mast Producer
[c] - No commercial varieties of pecans planted in an orchard fashion planting.
[d] - Eligible only where a dense screen or quick cover is especially needed.

INTRODUCED TREES (Planting Dates for Plants: November 15 - March 15)

Species* / Spacing**
Hardwood
Sawtooth Oak [a]
Chinese Chestnut [a]
White Mulberry [b]

[a] - Hard Mast Producer
[b] - Soft Mast Producer

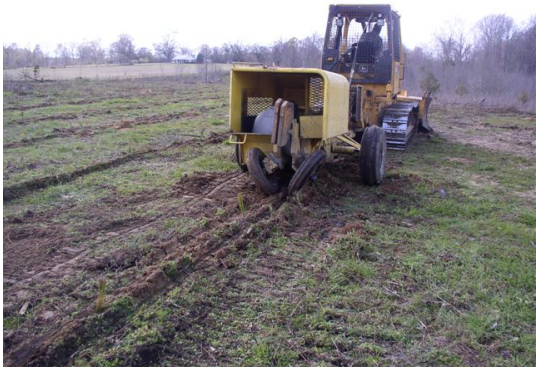
***Due to the wide variety of geographical areas and plants species which might be suitable for wildlife, this listing may be incomplete. However, other species added must be approved by the area or state biologist before they can be used for CSP. Caution should be exercised not to plant species that have an invasive nature.**

****Planting rates shown are for planned conservation practices approved for CSP.**
Recommended planting rates and spacing may vary slightly depending on intended wildlife uses (cover vs. food) and may be less than rates recommended in planting guides. Reference the appropriate Standard and Specification in the Field Office Technical Guide and the "Mississippi Planting Guide". Also consult with area biologist.

United States Department of Agriculture

Tree/Shrub Establishment

Implementation requirements (612)



Prepared For:	
Prepared By:	
Farm:	Tract: Date:

Definition

Tree/shrub establishment is the planting, direct seeding or natural regeneration of woody plants to produce forest or other woody plant products, restore native woody vegetation, provide wildlife habitat, reduce surface water run-off and soil erosion, improve water quality, treat waste, increase net carbon sequestration, provide renewable energy biomass, conserve energy, and/or enhance aesthetics.

Purpose

Tree/shrub establishment is the planting, direct seeding, or natural regeneration of woody plants to produce forest or other woody plant products, restore native woody vegetation, provide wildlife habitat, reduce surface water run-off and soil erosion, improve water quality, treat waste, increase net carbon sequestration, provide renewable energy biomass, conserve energy, and/or enhance aesthetics.

Application

Trees/shrubs selected for establishment must be adapted to soil and site conditions; spacing of plants and site preparation (prior to or at planting) must be sufficient for establishment and normal growth. Planting can be accomplished by hand (using several different tools/implements), or by machine. Tree/shrub establishment plans for forestry, site restoration, wildlife, and ecological purposes are usually prepared and supervised by foresters, biologists and other professionals registered/certified in Mississippi.

Tree/Shrub Establishment Specifications

Site specific requirements are prepared in accordance with the NRCS Field Office Technical Guide. The forest management plan contains the specifications for tree/shrub establishment on the target fields in this IR Document. The forest management plan is a site-specific plan which addresses one or more resource concerns on land where forestry-related conservation activities or practices will be planned and applied.

Forest Management Plan

Prepared By: Title: Date:

Purpose (check all that apply)

☐Forest Products	☐Restore or maintain native plant communities
☐Wildlife Habitat	☐Develop renewable energy systems
☐Control Erosion	☐Conserve energy
☐Improve water quality	☐Improve and restore natural diversity
☐Sequester and store carbon	☐Enhance aesthetics

Spacing and Arrangement

Field(s)	Tree species (by field)	Type of stock (bareroot, container, etc.)	Planting Dates	Distance (ft) between tree/ shrubs in row	Distance (ft) between rows	Estimated tree/shrubs per acre

Additional Notes or Requirements

Planting Instructions

Site Preparation: Seedlings should only be planted after a proper site preparation has taken place. Refer to 490_MS_IR_Treeshrubsitepreparation_2020, and the approved Forest Management Plan for specific requirements.

Cultural Practices: Fertilizer, weed barrier/moisture conservation fabric, or other cultural items required at planting and specified below.

Planting Method: ☐Hand ☐Machine

For container and bare root pines, plant stock to a depth even with the root collar in holes deep and wide enough to fully extend the roots. Containerized longleaf seedlings should be planted with ½ inch to 1½ inches of the top of the plug above ground (depending on soil type and slope). Pack the soil firmly around each plant

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 machine planting must be approved by a NRCS forester. Hardwood seedlings should be planted about 1 to 2 inches deeper than they were grown in the nursery bed (root collar). For burlap-balled stock, dig a hole at least 2 times the root width and depth.

Cottonwood cuttings are inserted in moist soil with at least 2 to 3 buds showing above ground. 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.

Planting Dates: Planting will take place 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

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. Area Foresters will make this determination in the field. Seedlings must be planted in moist soil to begin root development. To survive, a newly planted seedling must begin taking up water and nutrients immediately. No tree planting will take place in standing water except for Baldcypress and water tupelo.

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.

Additional Notes or Requirements

Conifer seedlings: 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. Every effort should be made to keep seedlings in good condition. Seedling roots must always be kept moist . Seedlings (especially the roots) should not be exposed to heating, drying, or freezing at any time from lifting at the nursery plant beds until being planted. Roots should not be exposed to sun or wind for more than 10 minutes. When hand planting, one seedling should be selected at a time and immediately planted. Roots must be planted straight down, not twisted, balled or J-shaped. The opening must be deep enough to accommodate the root system in its normal position. The soil must be packed firmly around planted seedlings with no air pockets around roots. Test by grasping the seedling by 4-5 needle tips and pulling, if the seedling comes out of the ground, the seedling is not packed firm enough; if the needles come loose, the seedling is packed firmly. When machine planting, check for the depth of the trench, tracking of packing wheels, and closure of trench. Check root placement by opening one side of the trench with a shovel to expose the seedling in place. Pine seedlings planted to produce pulpwood, saw logs, 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 Seedlings: Longleaf pine planted under all federal cost share programs in Mississippi **must be containerized seedlings**. Planting depth is critical in containerized longleaf pine survival. The terminal bud sits on top of the root plug and it must be planted so it will remain above the ground line. Tree planters must plant the containerized longleaf seedlings with ½ inch to 1½ inches of the top of the plug above ground (depending on soil type and slope). If the soil has been ripped, do not plant the seedling in the rip. The containerized longleaf seedling should be planted 2 -3 inches to the side of the rip. DO NOT plant containerized longleaf pine seedlings in pasture grasses. The plant competition is too severe for good seedling survival. Longleaf pine containerized seedlings will be planted at a minimum rate of 400 trees per acre and a maximum rate of 622 trees per acre. Spacing should be such that it will accommodate equipment available for control of competing vegetation. Other spacings and initial stocking rates must have approval from a NRCS forester.

Longleaf Pine Initiative, Eligible MS Counties: Adams, Amite, Attala, Claiborne, Clarke, Copiah, Covington, Forrest, Franklin, George, Greene, Hancock, Harrison, Hinds, Jackson, Jasper, Jefferson, Jefferson Davis, Jones, Kemper, Lamar, Lauderdale, Lawrence, Leake, Lincoln, Madison, Marion, Newton, Pearl River, Perry, Pike, Rankin, Scott, Simpson, Smith, Stone, Walthall, Wayne, and Wilkinson.

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

Alaga	Boswell	Freest	Latonia	Mclaurin	Paden	Rumford	Stough
Annemaine	Boykin	Harleston	Lexington	*Nugent	Petal	Ruston	Suffolk
Bama	Brantley	Heidel	Lorman	Neshoba	Pheba	Rutan	Susquehanna
Bassfield	Cahaba	Irvington	Lucedale	*Oaklimeter	Poarch	Saffell (Guin)	Sweatman

Baxterville	Columbus	Izagora	Lucy	Ocilla	Prentiss	Saucier	Toinette
Beauregard	Darco	*Jena	Luverne	Okeelala	Providence	Savannah	Troup
Benndale	Escambia	**Kirkville	Malbis	Olla	Quitman	Shubuta	Vancleave
Bigbee	Eustis	Lakeland	Maubila (Cuthbert)	Ora	Rattlesnake Fork	Smithdale	Wadley

* – Occasionally or Rarely Flooded ** – Occasionally or Rarely Flooded in Coastal Flatwoods – Not Pitcher Plant Bogs

Silvopasture: 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. The table below shows suitable spacings for silvopasture trees. Other similar spacings must have approval from a NRCS forester.

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),

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. Bahia grass is more shade tolerant and would not require as wide an opening as Bermuda grass. Refer to Silvopasture Establishment IR document for additional information.

Hardwoods: 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.

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.

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 black gum. 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. See recommended hardwood spacings below:

12 x 12, 302 Trees per acre	12 x 9, 403 Trees per acre	12 x 8, 453 Trees per acre
10 x 12, 363 Trees per acre	10 x 10, 435 Trees per acre	14 x 7, 435 Trees per acre

Eastern Cottonwood: 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', (304 trees per acre) 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', (304 trees per acre). The following soils are suitable for cottonwood in Mississippi.

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

Natural Regeneration: Adequate seed or advanced reproduction need to be present or provided for when using natural regeneration to establish a stand. Natural Regeneration from seed applies to light-seeded intolerant species with wind disseminated seed (native pines, cottonwood, and yellow poplar). Heavy-seeded, tolerant hardwoods (oak and hickory) can reproduce satisfactorily from coppice (existing rootstock/stumps). Refer to FOREST STAND IMPROVEMENT IR document (666) for information on managing a stand for natural regeneration.

Operation and Maintenance

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.
Inspect periodically for pest (insects and weeds) and disease problems.
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.
Fire protection is necessary for all plantations. Firebreaks should be established.
Replanting will be required when survival is inadequate. Generally, replacement or interplanting should be done within 2 years of the original planting.
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.

Certify and document installation of conservation practices according to Title 450, General Manual (GM), Part 407, and applicable conservation practice Statement of Work (SOW) found in Section IV of the eFOTG

Tree Planting Compliance Form

Landowner _____

County

Contractor _____

Date Inspected _____

Inspector _____

Acres _____

Seedling Source

○ MFC ◉ Other _____

Packing Date (if known) _____

Planting Dates

Began _____ **Ended** _____

Plot Number	Number of Seedlings	Is the seedling closest to plot center correctly planted?		
		Yes	No	Error Code(s)
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
Total				

NOTES:

Compliance Results

Seedlings/Acre: _____

Correctly Planted: _____

Instructions

Seedlings/Acre: Divide the total seedlings counted in all plots by the total number of plots taken, then multiply by 100 for pine and hardwood

Correctly Planted: Divide the total number of plots checked "Yes" (correctly planted) by the total number of plots taken then multiply by 100 for both pine and hardwood

Minimum Plots Required

Planted Acres	Plots Required
1 to 10	5 plots
11 to 40	1 plot per 2 acres
41 to 100	20 plots
101 and over	25 plots

Pine and hardwood plot radius is 11'9.3" (1/100th acre plot)

Planting Errors

A. U-Rooting
B. L-Rooting
C. Too deep
D. Too shallow
E. Top slit open
F. Multiple trees in slit
G. Too loose
H. Debris in slit
I. Twisted/balled roots
J. Improper pruning
K. Excessive leaning
Pine: +30 degrees
Hdwd: +45 degrees
L. Roots exposed
M. Other (Explain)

PRACTICE CONSTRUCTION AND CERTIFICATION

I. Practice Design

IR Prepared by (Name & Title): Date:

Implementation Requirements Reviewed with the Client/Producer on (insert date):

Printed Producer Name Producer Signature

II. On-Site Practice Inspection & Checkout

Amount Completed (units) (Note: Take picture(s) and mark As-Built location on practice certification map)

Checkout By: (Name and title) **Date:**

Remarks:

III. Construction/Installation Certification

This practice meets NRCS standards and specifications: ☐ Yes ☐ No
(If No, state reason(s) in remarks sectionbelow).

Remarks:

Certification by (Name & Title): **Date**:

USDA United States Department of Agriculture

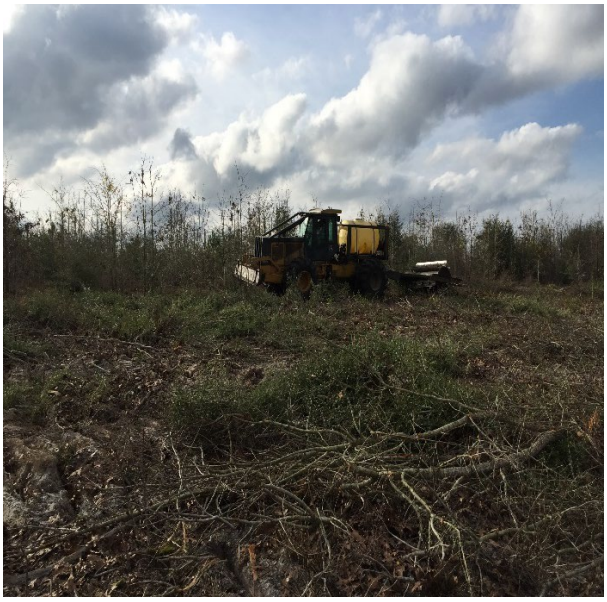
Tree/Shrub Site Preparation

Implementation Requirements (490)

Prepared For: _____

Prepared By: _____

Farm _____ Tract _____ Date _____



About Tree/Shrub Site Preparation

Tree/Shrub Site preparation is utilized to prepare a field for planting or natural regeneration where woody plant establishment is desired. Care should be taken to select a method that will adequately prepare the site for regeneration. Several methods of site preparation are employed by land managers.

Forest Management Plan

This site preparation implementation requirement (IR) provides information to prepare a forest management plan for the fields listed below. The guidelines of the forest management plan must be followed. The forest management plan contains the specifications for site preparation on the target fields in this IR Document. The forest management plan is a site-specific plan which addresses one or more resource concerns on land where forestry-related conservation activities or practices will be planned and applied.

Purpose *(check all that apply)*

☐ Permit artificial establishment (planting) of woody plants

☐ Encourage natural regeneration of desirable woody plants.

Site Preparation Area

Field or Stand#	Acres	Site Prep Method	Timing (Month and Year)

SPECIFICATIONS

Species to be planted or regenerated naturally

☐ Loblolly Pine (bareroot)	☐ Hardwoods (bare root)
☐ Loblolly Pine (container)	☐ Hardwoods (container)
☐ Longleaf Pine (container)	☐ Other

Site Preparation Method (check all that apply)

☐ Chemical - Ground Application on Open Field	☐ Mechanical - Medium, Ripping or chopping
☐ Chemical - Ground Band Spray	☐ Mechanical – Medium, bedding
☐ Chemical - Aerial herbicide application	☐ Mechanical – Light, ripping or subsoil
☐ Mechanical - Heavy, Shearing and Windrowing	☐ Mechanical – Light, mow or disc
☐ Mechanical - Heavy, Mulching	☐ Prescribed Burn – Heavy site prep burn

Chemical Site Preparation

Herbicide applications are used to treat unwanted vegetation that would compete with young trees for available water and soil nutrients. Herbicide applications can minimize soil disturbance, target individual species, and be used on small areas. Different kinds of vegetation require different herbicide treatments. The types of herbicides to use are site specific based on species to be controlled, soils, proximity to streams and sensitivity of adjacent vegetation. Herbicide applications have several advantages over mechanical site preparation such as minimal site disturbance, more cost effective on small acreage, and can be used on severely sloping land with severe equipment limitations. **Always read and follow all label directions.**

Broadcast and banded herbicide applications should be considered when ground cover vegetation exceeds 60% and/or hardwood sprouts is greater than 100 trees per acre. Foliar herbicides can be applied by air using airplanes or helicopters and by using sprayers attached to skidders, tractors, ATVs, and other ground equipment. The potential for spray drift onto untargeted or sensitive areas should be considered during practice planning. Foliar spraying is usually done in the summer and fall. Foliar spraying is often followed by a prescribed burn 6 to 8 weeks later.

Spot treatments can be used to treat small areas that do not require broadcast treatments.

Some herbicides are applied to the soil by broadcasting, using a grid pattern, or treating individual stems. Soil active chemicals can be in granular or liquid form. They can be useful for treating small areas with spot guns or similar equipment. The application needs to be made in the late spring to take advantage of the water uptake by the plants.

Tree injection or hack and squirt can be used to treat individual trees. The herbicide is applied through a cut in the tree bark. Basal bark sprays can also be used on young trees with thin bark. This treatment can be used all year but is most effective during the growing season.

Mechanical Site Preparation

Mechanical site preparation involves using machinery to clear unwanted vegetation, logging debris, and prepare an adequate seedbed. Sometimes this method is used in conjunction with herbicides and prescribed burning to adequately prepare the site for planting.

Ripping (or Subsoiling) is necessary when a restrictive layer or hard pan exists within the top 24 inches of the soil. It is usually necessary to rip old agricultural fields and old pastures before planting these sites. The subsoiling depth should be 12-18 inches. Ripping can be conducted between August 1 and December 1 when the soil is dry and soil moisture content less than 30% of field capacity at the maximum ripping depth. If ripping occurs between November 1 and December 1, a minimum of 30 days with ample rainfall will be required prior to planting.

Bedding is a mechanical means of site preparation that mounds the soil in narrow strips for tree planting. This treatment is usually done on sites with poor surface drainage but is also common on sites with good surface drainage. Bedding can be used in conjunction with ripping to improve soil tilth, improve seedbed preparation, and to allow rapid root penetration and development.

Bedding can be done with a narrow 2-axled disk or bedding plow. Bedding is often done after the site has been sheared and windrowed or prescribed burned to remove surface vegetation. These beds should not exceed 1 foot in height and 3 feet in width. Bedding is utilized on wet sites to raise the seedlings out of the water. On frequently flooded sites, beds up to 3 feet high could be used to assure seedling survival. Bedding provides an excellent medium for early seedling growth and raises the soil temperature in the bed. Sunlight strikes the bed from three sides giving the seedling an earlier start in the growing season by 7 -10 days. Some considerations for bedding are as follows:

1. Bedding should be done on the contour to control erosion on sloping land.

2. Beds should be allowed to settle prior to planting. Bedding should be done several months prior to planting to allow time for the beds to settle. Four or five good rains are needed to break down clods in the beds and close air pockets formed by bedding.

3. Bedding can turn over weed seeds dormant for years and cause new weed growth.

4. Bedding will require additional chemical site preparation on some sites to control competing vegetation.

5. Beds can serve as dams or dikes causing unwanted pooling of water.

6. Excessive amounts of litter (farm residue, grass, weeds, etc.) should not be part of the bed. The site should be prescribed burned, disked, or bush hogged prior to bedding. Chemical herbicide applied to pastures followed by a good prescribed burn are very beneficial prior to bedding.

Scalping is a mechanical means of site preparation and should be used when attempting to plant longleaf pine on agricultural sites, whether the site was in pasture or cultivation. The only exception would be fields with steep slopes where erosion is likely to occur. Scalping a field means that the upper layer of soil and/or sod is peeled back. Ensure that scalping is done with the contour and scalp several months prior to planting. Scalping is often done in conjunction with ripping or subsoiling to fracture any hardpan. Seedling root growth is enhanced with subsoiling resulting in better seedling survival and growth.

Scalping helps control competition during the first growing season on fertile old field sites recently removed from row cropping or pasture use. Scalping reduces weed competition, improves moisture relations, reduces pressure from certain root pathogens, and reduces insect damage.

Scalping has the potential of causing erosion if it is too deep and is not done with the contour of the land. Scalped rows must have time to settle prior to planting.

Ensure that scalping is done with the contour and scalp several months prior to planting. Scalp as shallow as possible. On cultivated fields, 2-3 inches is deep enough. When sod is present, it may be necessary to scalp 4-5 inches deep to remove rhizomes and root systems of perennial grasses. Scalping sometimes produces large clods of rolled up sod and soil turned over by the scalping plow. It may be necessary to run an implement to break up the clods and level the field. The scalped width is generally about 2 – 2 1/2 feet.

For best results, scalp and rip the rows several months prior to planting. This will allow the soil to settle prior to planting. Never plant the seedling directly in the soil rip. Instead, plant a few inches to the side of the rip to prevent the seedling from settling down in the ripped slit.

Plant the seedling shallow. If the terminal bud is covered with soil, the seedling will not survive. The terminal bud should be about ¾ of an inch to 1 inch above the ground in a scalped row.

Disking can also be used to eliminate unwanted vegetation (particularly grass and weeds) from the site prior to planting. Disking will be completed prior to tree planting and will avoid wildlife nesting periods (April 15 – July 1). Strip disking, producing a tilled strip 3 feet wide centered on the rip, can be utilized in some fields. If cropland is being planted, consider a post planting herbicide application for weed competition.

Mowing can be used to provide access for tree planters. Mowing will be completed prior to tree planting and will avoid wildlife nesting periods (April 15 – July1). Mowing for site preparation should be done in late summer and fall.

Mulching can be used to shred logging debris and residual vegetation within a strip along the tree planting row. Limbs, treetops, bushes, and trees can all be mulched for site preparation. A mulching machine does not disturb the soil on the site. Mechanical mulching works very well in small pre-commercial pine stands when a pre-commercial thinning is required.

Drum chopping can be used to run over logging debris to prepare a site for tree planting. The drum chopper crushes the woody vegetation and cuts it into smaller pieces. Drum chopping minimizes soil loss and may be used on soils that have a moderate to severe erosion hazard. This method is used in the summer and in conjunction with a prescribed burn in 4 to 6 weeks.

Shearing is usually done when the vegetation to be removed is larger than 6 inches in diameter. The blade on the shear should be kept out of the soil to minimize soil disturbance. A large V-blade or KG-blade can be used to remove logging debris and residual vegetation from the site. If the removed vegetation is windrowed, it will be necessary to provide lanes for tree planters and wildlife corridors through the windrows. Care must be taken to avoid pushing any dirt into the windrow (keep the blade above the soil) and all windrows will be placed on the contour.

Mechanical site preparation may adversely impact cultural resources and should be submitted to the Cultural Resource Specialist for a determination of impacts before the practices commences.

Prescribed Burning

Prescribed burning is utilized to facilitate tree planter access and reduce wildfire fuel load. Prescribed burning is the least expensive site preparation method and can be used in conjunction with other site preparation methods.

For natural regeneration, a stand will need to be prescribed burned several times over a period of years to control undesirable vegetation. When a good seed crop is projected, the stand should be prescribed burned prior to seed fall to prepare the seedbed.

Installation and application of this practice MUST comply with all applicable federal, state and local laws/ordinances. **The guidelines of the Mississippi Prescribed Burning Act must be followed. See 338_MS_IR_Prescribed_Burning_2020 for requirements.**

Operation and Maintenance:

Repair erosion control measures as necessary to ensure proper function.

Control locally invasive and noxious plants as necessary.

Control vehicle access during and after site preparation to minimize compaction, erosion and other site impacts.

Site preparation activity involving heavy rubber-tired equipment should be done under dry to moist conditions. Stop operation of this type of equipment under wet conditions; soil compaction and rutting under wet conditions will have significant negative impacts on on-site productivity.

Additional Requirements:

Note where chemical herbicides are used:

A WIN-PST site assessment must be completed and included in practice specifications to provide information on potential risks to planning site water resources.

Only herbicides that are registered for use in Mississippi will be selected. Specific use recommendations may be found on the herbicide label and in the current Mississippi State University Extension Service's Weed Control Guidelines for Mississippi. Verification of registered herbicides labeled for use in Mississippi may be obtained by contacting the Mississippi Bureau of Plant Industry, Mississippi Department of Agriculture and Commerce.

Certify and document installation of conservation practices according to Title 450, General Manual (GM), Part 407, and applicable conservation practice Statement of Work (SOW) found in Section IV of the eFOTG

United States Department of Agriculture

PRACTICE CONSTRUCTION AND CERTIFICATION

I. Practice Design

IR Prepared by (Name & Title): | Date:

Implementation Requirements Reviewed with the Client/Producer on (insert date):

Printed Producer Name | Producer Signature

II. On-Site Practice Inspection & Checkout

Amount Completed (units) (Note: Take picture(s) and mark As-Built location on practice certification map)

Checkout By: (Name and title) | **Date:**

Remarks:

III. Construction/Installation Certification

This practice meets NRCS standards and specifications: ☐ Yes ☐ No
(If No, state reason(s) in remarks sectionbelow).

Remarks:

Certification by (Name & Title): | **Date**: