United States Department of Agriculture
Natural Resources Conservation Service

Restoration & Management of Rare & Declining Habitats

Longleaf Pine Establishment and Restoration

Virginia Conservation Practice Job Sheet *643*

Definition of Practice
Restoring and maintaining a native longleaf pine ecosystem as well as the ecological maintenance processes to conserve biodiversity in the historic longleaf range in Virginia.

Purpose
This practice is applied as a component of a resource conservation plan to provide longleaf pine habitat for rare and declining species and other wildlife associated with this system.

Conditions where practice applies
This practice is available on land with suitable soils within the historic longleaf pine range in the counties and cities of Accomack, Brunswick, Greenesville, Sussex, Prince George, Southampton, Isle of Wight, Surry, Norfolk, Hampton, Poquoson, Suffolk, Portsmouth, Chesapeake, Virginia Beach, James City, Newport News, Williamsburg, York, Gloucester, Mathews, Northampton and Dinwiddie. This practice applies on any land that previously or currently supports this rare and declining habitat.

Longleaf Pine (*Pinus palustris*) Physiology
The longleaf pine ecosystem is characterized by a relatively sparse tree canopy and a very diverse herbaceous understory. Although it grows best on dry, infertile soils, this species is found on a variety of sites from dry, sterile ridges to wet, low flatwoods, and in sand, loam or clay. On a landscape level scale, the longleaf pine ecosystem contains innumerable embedded microhabitats, including but not limited to picture plant bogs, seepage slopes, wetland flats and scrub oaks.

It is the nature of the longleaf pine to develop very little above ground for the first 2 to 6 years. During this time the longleaf is stemless and focuses on developing an extensive root system and the root collar increases in diamter. During this time, a dense clump of green needles is all that appears on the surface. This is the distinctive growth phase called the “grass stage” of a longleaf pine (Figure 1). The seedling is at this point are highly fire resistant.

When the root collar diameter approaches 1 inch in diameter, height growth begins (Figure 2). A field-grown seedling grows 10 feet in 3 years once height growth is initiated. Branch production is delayed until the seedling reaches 10

Figure 1. Longleaf grass stage

Figure 2. Longleaf sapling stage

to 16 feet in height.

General Criteria and Specifications

*Controlling competition and ripping to break hard pans are the two most vital management practices in establishing a successful stand. Furthermore, after the longleaf pines are established and greater than 5 feet, this practice **requires** supplemental management practice 338, Prescribed Burning for the management of the longleaf pine community at intervals of 2-3 years.*

Site Preparation and Competition Control

Competition control is the most important management practice for establishing longleaf pine. Competition for light, water, and nutrients slows the growth of the seedlings and prolongs the duration of the grass stage. Adequate competition control will increase survival and shorten the time it takes longleaf to begin height growth.

Herbicide application is an effective tool for controlling competition. NRCS shall not develop herbicide recommendations or change label instructions or recommended specifications for herbicide application. Consult your local Virginia Cooperative Extension (VCE) agent for specific herbicide recommendations or the VCE Pest Management Guide (http://www.ext.vt.edu/pubs/pmg/). Always follow the label instructions when using herbicides. The pest management component of a conservation plan shall be developed and implemented in compliance with all applicable Federal, Tribal, State, and/or local regulations

An option to herbicides for site preparation is to burn the area every year prior to planting the longleaf pines. In addition, there should also be a site prep burn in April/May of the year the trees are planted. Burning alone may not completely control the top growth and plants often come back quickly.

If the area has a hard pan or is suspected to have a hard pan, deep rip (subsoil) area to be planted 2-3 months prior to planting to allow time for soil to settle prior to planting. *Ripping hard pans is the second most important management practice for establishing longleaf pine*. Herbicide, either broadcast spray or banded along ripped row where trees are to be planted. Seedlings are not to be planted directly in the subsoil rip.

Site preparation will vary for sites that are not pastures or crop fields. These sites may be described as cutovers; abandoned cutover forest land; pine stands without longleaf in the overstory, with or a history of fire; mixed pine stands with a longleaf BA (Basal Area) of at least 20 square feet per acre in the canopy, with or without a history of fire; and longleaf stands, with or without a history of fire. If any of these are the existing condition of the land considered for restoration, it is recommended to consult with a forester or other conservationist specifically trained in longleaf pine restoration.

Tree Planting

Containerized seedlings

1. Plant the containerized longleaf pines in the late fall to early winter during the dormant season. 300-500 trees per acre shall be planted.
2. On many cutover sites where the presence of logging slash, stumps, or uneven terrain makes machine planting difficult, hand planting of container-grown seedlings is recommended. This method allows for better depth control on "trashy" sites as compared to machine-planting.
3. Plant with adequate soil moisture.
4. On flat planted sites, leave plug slightly exposed ABOVE the soil surface.
5. If the area was cropland or heavily prepared site, plant seedlings so the root collar is ¼ to ½ inch beneath the soil surface.
6. Plant the longleaf pine seedling as vertically as possible.
7. In areas that have been ripped, DO NOT plant in the rip. Instead plant 6 inches to the side of the rip.
8. DO NOT plant in unprepared areas of pasture grass. Pasture grasses are extreme competitors and should be

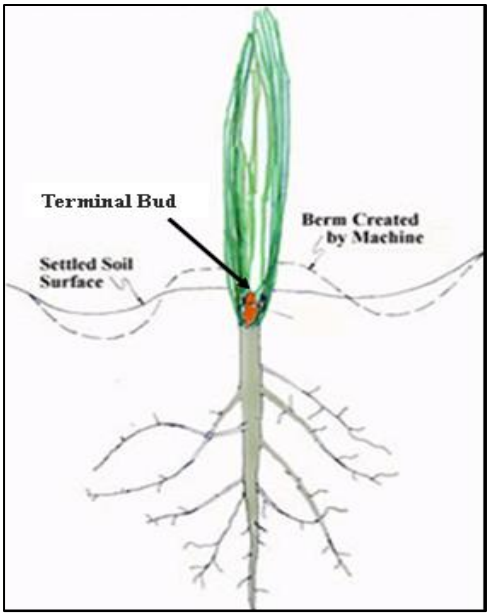

Figure 3. Bareroot seedling

addressed prior to planting.

Bareroot Seedlings

1. Plant bareroot seedlings so that the terminal bud is at or slightly below the soil surface (Figure 3).
2. Plant seedlings as soon as they are lifted and not less than one week when they are lifted from the nursery. Keep seedlings cool and moist.
3. Bareroot seedlings are most effectively planted by machine but can also be planted with shovel or hoe dad.
4. Avoid J-rooting seedlings.
5. Do not chop roots with machette just prior to planting. Instead, if a few pieces of lateral root stick out of the ground after planting, let them air prune.
6. Do not twist seedling into hole.

Hardwood Control

Longleaf seedlings continue to be susceptible to herbaceous competition until height growth begins. Plan for 2-3 backpack herbicide sprays to control hardwoods during the period the trees are susceptible to fire to aid in controlling competition (between 18" or 5').

Burning is an option to control hardwoods early and late in the longleaf growth. Be very careful early in the growing season, as fire can easily kill the longleaf as well.

Prescribed Burning

The prescribed burns shall be conducted according to a written burn plan prepared by a VA DOF (Virginia Department of Forestry) certified burner. Conservation Practice Standard 338, Prescribed Burning shall be followed.

Prescribed Burning (338) is a required supplemental management practice for the establishment and management of the longleaf pine community. After the trees are > 5 feet, burn the pines every 2-5 years during the growing season (mid March through May).

Once the pines are between 18" or 5', they are highly susceptible to burning and should not be burned.

Operation and Maintenance
If the pines get brown spot or are over competed after planting while in the grass stage (<18") burning or herbicide application is recommended for eradication.

Control invasive species.

Monitor the plantings and replace dead plants.

Plantings must be protected from grazing animals and un-necessary traffic.

Burn at the planned intervals according to the site prescribed burn plan.

Declining Habitat Job Sheet 643

Landowner:	*Farm #:*
Field(s):	*Tract #:*
Assisted By: *Drawing No(s).:*	*Date:* *Signature:*

Purpose ☐ plant diversity ☐ wildlife ☐ declining species

Field Number	Site Preparation	Prescribed Burning [a]	Herbicide Treatment [b]	Planned Date and frequency	Other (invasives, etc.)

[a] The prescribed burns shall be conducted according to a written burn plan prepared by a VA DOF (Virginia Department of Forestry) certified burner. Conservation Practice Standard 338, Prescribed Burning shall be followed.

[b] Consult your local Virginia Cooperative Extension (VCE) agent for specific herbicide recommendations or the VCE Pest Management Guide (http://www.ext.vt.edu/pubs/pmg/)

Installation shall be in accordance with the specified drawings, specifications, and special requirements. **No changes are to be made in the drawings or specifications without prior approval from the technical specialist developing the plan.**

Sketch of Layout