

# Forest Management Information Sheet



## Longleaf Pine Management

*Sixteen through Twenty-Nine Years of Age*

### LONGLEAF PINE QUICK FACTS

#### MANAGEMENT METHODS

Shelterwood  
Two-Aged  
Single Tree Selection  
Small Group Selection

#### FOREST PRODUCTS

Pulpwood  
Chip-n-Saw Logs  
Structural Lumber  
Pilings  
Power Poles  
Pine Straw

#### MANAGEMENT COSTS

Burns: \$30-\$50 per acre  
Herbicide: \$60-\$120 per acre

Longleaf pine is a long-living, fire-loving species capable of surviving more than 300 years. Prior to European settlement, much of East Texas was dominated by diverse, even-aged longleaf pine forests. As the most shade-intolerant of the southern yellow pines, forest fires that burned every 2-7 years aided longleaf's dominance.

Longleaf forests can be managed for timber, recreation, aesthetics, wildlife, and water quality all on the same tract at the same time. The site characteristics and owner objectives will influence how often and to what extent the site is thinned, burned, or affected by other silvicultural practices. As a primary objective, longleaf pine should not be grown for pulpwood because the properties of longleaf pine make it ideal for higher quality products, such as structural lumber, pilings, and power poles. The long-term goal should be pole and sawtimber production, and trees should be grown on a rotation of more than 30 years. It is generally believed that at sawtimber rotation age, 70 percent of longleaf pines produce poles.

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Longleaf is a slow starter, but not a slow grower. It has a distinctive seedling phase known as the grass stage. Although the seedling may not look like it is growing, it is putting down a sturdy taproot beneath the surface that will reduce the risk of wind throw as the tree reaches its full height. The grass stage may last 7 years or more, but a lengthy grass stage is not likely when regular burning, mechanical removal, or judicious application of herbicides controls the competition. Once out of the grass stage, sapling growth is rapid. It can frequently grow faster than other pines, particularly on sites formerly occupied by longleaf. Studies show that longleaf pines catch up in height to other southern pine species around 20 years of age.

A longleaf stand is a low risk species to manage. It is resistant to most serious diseases and insect pests that afflict other southern pines, including fusiform rust, annosus root rot, pitch canker, SPB and Ips beetles, and tip moth. Its deep taproot minimizes damage from wind throw during hurricanes and storms, and longleaf is more likely than other southern yellow pines to survive a wildfire.

Shelterwood and two-aged harvest systems are appropriate ways to harvest and regenerate existing even-aged stands. Generally, even-aged stands develop from one or several seed crops over a fairly short period of time as would happen following blow downs from hurricanes, straight-line winds, or tornados. In the shelterwood approach, several thinnings are made at approximately 10-year intervals, depending on the density and age of the initial stand, to reduce the basal area (BA) and stimulate growth of the remaining trees. This would be followed in about five years by a "seed cut" that reduces the basal area to approximately 30 square feet per acre. The remaining evenly-distributed mature trees (about 25-30 per acre) are needed to produce the seeds that will regenerate the stand. When a sufficient number of seedlings (about 3,000 to 6,000 per acre) are in place, the overstory trees are removed.

A modification of this system is two-aged management in which only a portion of the overstory trees is removed after seedlings are established, with 10 to 15 trees retained per acre. This method is a good way for the landowner to maintain a forest with some mature trees. As planted longleaf stands reach maturity, even-aged management guidelines can be employed to regenerate the stand naturally and avoid the expense of replanting.

Stands with three or more age classes are perfect for uneven-aged management, particularly if there are trees old enough to produce cones consistently. This method of all-age man-

agement represents the conditions that developed over time in a natural longleaf pine forest, with the mature trees dying from lightning strikes, bug kills, fires, and small-scale blow downs, and with regular regeneration occurring in gaps created over time. Uneven-aged management assures that the stand always contains canopy-stature trees and produces periodic (every 8 to 10 years) income from timber products while pro-

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viding for wildlife needs and maintaining biological diversity.

Once established, an uneven-aged stand will consist of trees of all ages. It can be maintained indefinitely, with a 10-year or greater thinning cycle that reduces the basal area to no less than 60 square feet per acre, depending on site quality and landowner objectives. Two harvest methods work best under uneven-aged management: single tree and small group selection. With single tree selection, damaged or poor quality trees throughout a stand are marked for removal to release adjacent seedlings, saplings, and smaller trees. With small group selection, trees of all sizes are removed in irregularly shaped patches that vary in size from one-quarter of an acre to three-quarters of an acre, with an ideal size of about half an acre. This releases pre-existing reproduction and creates new light-filled gaps of sufficient size for suc-

cessful establishment and growth of seedlings. However, the gaps cannot be so large that seeds from surrounding trees do not disperse evenly across the gap. The maximum width should be no more than twice the average height of the cone-bearing trees surrounding the opening. Oblong shapes work best for gaps closer to three-quarters of an acre.

The longleaf pine straw industry has blossomed in the past two decades and can now be a major source of a grower's income. Depending on the quality of straw, a bale can be sold for \$0.75 to \$1.50. Longleaf pine generally produces enough straw to rake beginning at 10 to 15 years of age.

Longleaf can produce pulpwood by age 20, chip-n-saw logs at 30, and higher-class products like sawtimber, poles, and plywood by age 40. Longleaf almost always has a higher specific gravity than other southern pines, both as sawtimber and pulpwood, and thus produces more dry weight per unit volume.

Prescribed burning has many uses and benefits and is essential in longleaf pine management. It is used to reduce hazardous fuels, to prepare sites for natural seeding or planting, to improve wildlife habitat, and/or to control competing vegetation or brown spot needle blight. Most nutrients are returned to the soil in a more readily available form than they were prior to burning. Prescribed burns are best conducted when there is adequate soil moisture, a steady wind between 8 and 15 miles per hour, and the relative humidity is above 20 percent. A certified



## MANAGING LONGLEAF PINE

- Control competition
- Conduct prescribed burns every 3 years
- Apply herbicide regularly
- Utilize ten-year or greater thinning cycle

burn vendor should always complete the prescribed burning, and an acceptable burning plan should be formulated with appropriate documentation prior to conducting the burn. This plan should detail all information regarding the planned prescribed fire and should be followed as closely as possible. Fuel dryness, wind speed, wind direction, humidity, topography, fuels, and smoke management all play a part in conducting a safe and successful burn. Longleaf can be prescribed burned as early as 1 to 2 years of age if site and weather characteristics are appropriate. Tree mortality can occur in instances of high fire intensity.

Dormant season burns every 2 to 3 years will reduce fuel loading and top-kill woody brush. The basal and root sprouting that will occur from the top-killed woody vegetation will likely produce browse that is more palatable and attainable to wildlife than was present before the burn. Dormant season burns are typically done from December through February.

Growing season, or spring, burns will greatly reduce the number of woody stems that

regenerate and will promote more native grasses in the understory. Burning during this time can, however, temporarily interrupt nesting and feeding areas for game birds if conducted over a very large area. Growing season burns are most successful when the canopy is fairly open, the fuel load is not too heavy, and the vegetation is not too green or spotty to carry a fire. It is typically necessary to conduct multiple dormant season burns over several years to prepare a site for a growing season burn. Growing season burns may be done in May and early June if the weather conditions are appropriate and there is not heavy fuel loading. With warmer temperatures and usually drier weather, growing season burning requires extra precautions. Growing season burns are often done on a 3- to 5-year cycle or as needed.

Longleaf pines are the most shade intolerant of the southern pines; therefore, it is absolutely necessary to control competition from the seedling grass stage to maturity. In the past, naturally occurring fires every two to seven years kept stands free of hardwoods and helped

maintain the open park-like appearance associated with longleaf pine stands. Therefore, if longleaf pine is your tree of choice, prescribed fire is necessary to establish and maintain a healthy forest. It can be used before planting for debris removal (either as a stand-alone site preparation tool or following mechanical or chemical site preparation); after planting while the trees are still in the grass stage to help control brown spot needle blight; and, it is required after establishment to maintain health and control competing vegetation. Since using prescribed fire does carry risks and requires careful planning, landowners are encouraged to work with a professional resource manager to assist in the application of this necessary management tool.

Prescribed burns cost approximately \$30-\$50 per acre, and herbicide application costs vary from \$60-\$120 per acre depending on site location, fuel costs, and vegetation to be controlled. These costs are generally considered worthwhile for the production, wildlife, aesthetic, and recreation benefits provided by longleaf pine stands.