



Longleaf Leaflet

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North Carolina Forest Service

INTRODUCTION TO LONGLEAF PINE

History

Longleaf pine (*Pinus palustris*) historically was the 'king' of the southeastern coastal plain forest, covering an estimated 90 million acres of land. The illustration, at right, shows the native range of longleaf pine. Longleaf pine's abundant supply of pine sap (resin) led to the economic development of the southern forests for the production of "naval stores." The raw pine resin was collected from the trees, distilled and then processed into glue, turpentine, rosins, and other by-products that were necessary for the shipbuilding industry in the 19th and early 20th-century. The advent of petroleum-based distillates in the mid-1900's, along with the damaging effects of the pine sap collection process, and the transition away from water transportation all put an end to the naval stores industry.



Current Status

Longleaf pine is considered a species in decline across much of the South, including North Carolina. The reasons behind this decline are complicated and involve many factors, including:

- Conversion of longleaf pine forests to non-forest uses (cleared for agriculture or development).
- Exclusion of frequent, low-intensity fires from the forest landscape.
- Inherent challenges in regenerating longleaf pine, either by natural methods or by out-planting.
- Replacement of longleaf pine with other pine species in plantations.

In North Carolina, longleaf pine is primarily located among the drier soils in the Sandhills region, as well as select areas across the central and southern Coastal Plain. A few isolated remnant pockets of longleaf pine can still be found in the eastern Piedmont.

Growth Pattern



Longleaf pine grows un-like any other pine tree in the South. After the seed germinates, the tree takes the form of a large, thick clump of pine needles on the soil surface. This initial growth pattern is called the 'grass stage' since the tree appears much like a bundle of needle-like grass. This grass stage remains intact for about 2-to-5 years, when the longleaf pine tree is building its root system underground. The grass stage also allows longleaf pine to be tolerant of low-intensity fires. The clump of green needles protects the white-colored terminal tree bud located in the center of the tree. This special genetic adaptation of tolerating and withstanding fires is just one reason why longleaf pine is a "fire adapted" species - essentially, longleaf pine needs periodic low-intensity fires to naturally regenerate from seed and out-compete other tree species on a site.

After the grass stage, longleaf pine begins to increase quickly in height for another 3-to-5 years. The tree's form consists of a slender, straight main stem (trunk), with the pine needles growing up and down the entire tree stem, or clustered around the top of the stem. During its sapling growth stage, longleaf pine is more susceptible to damage and mortality from wood fires. Once the tree's bark thickness has increased adequately to insulate the interior cell tissues, the longleaf pine once again becomes tolerant of low-intensity fires.

Unique Benefits

Longleaf pine has many superior qualities that should be considered by a forest owner if the soil and site conditions are favorable for growing longleaf pine.

- Timber quality is usually excellent due to the tree's wood density, straight form and consistent taper. Longleaf pine timber is a preferred species for use as utility line poles.
- Pine straw from longleaf pine is valuable for landscaping and can be harvested on regular intervals, thereby producing supplemental income for a forest owner.
- Certain animal and plant species are adapted to live or grow in the same kind of fire-adapted ecosystem that favors longleaf pine. By establishing a longleaf pine stand, you may be able to attract these unique plants and animals.
- Longleaf pine is typically more tolerant and has higher resistance to disease and insect infestations. This is due to its abundant pine resin production and longleaf pine's genetic adaption to more aggressively 'thin out' other surrounding longleaf pines that are weaker or suppressed. This natural thinning process provides the vigorous and healthy longleaf pine trees more room to grow and avoid stagnant growth.
- Longleaf pine typically lives longer than other pine species. This longer time of growth allows a forest owner greater flexibility in deciding when to harvest the timber. While loblolly pine begins to stagnate and decline after age 50, many times longleaf pine growth remains consistent and may even add growth in later years if the stand is thinned.

Tree Regeneration

In the past, foresters faced challenges in regenerating longleaf pine. Bare-root longleaf pine seedlings require delicate handling and precise planting in the ground to assure seedling survival. Fortunately, by the early 2000s important advances were realized in forest tree nursery technology and the cultivation of genetically-improved longleaf pine seedlings. Today, you can purchase and plant a containerized longleaf pine seedling that has been field-tested and quality-checked to assure that the seedling is of the highest quality for sustaining or establishing a longleaf pine forest.

A containerized tree seedling comes with its root system encapsulated within a small 'plug' of potting soil material. This plug keeps the roots moist and greatly reduces mortality and difficulty of planting the seedling. Since the use of containerized seedlings began, there have been significant gains in the survival success rate when planting longleaf pine seedlings.

Containerized longleaf pine seedlings are available to purchase from the N.C. Forest Service state nursery, as well as from commercial nurseries. For more assistance in determining if longleaf pine is suitable to grow on your forestland, speak with a registered forester or contact your county forest ranger office. More information is also available on the website, www.ncforestservice.gov.



Longleaf pine trees in the sapling growth stage.



A longleaf pine plantation managed for pine straw production.



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