

Longleaf Seedling Trends

Mark J. Hains¹

Demand for longleaf pine (*Pinus palustris* Mill.) seedlings continues to increase throughout the Southeast. Overall production of longleaf pine seedlings has increased annually for at least the last 3 years (51% increase over the past 3 years), while demand for seedlings has continued to exceed the supply. There are several reasons for the increased interest in longleaf pine.

Longleaf pine has long been recognized as the South's finest pine tree. In general, longleaf produces the best quality sawtimber, the greatest percentage of poles, the highest specific gravity per unit volume, and the best quality pine straw. Besides its outstanding physical characteristics, longleaf is also more resistant to insect damage, fusiform rust, and wind-throw, wind-breakage, and fire damage than are loblolly or slash pine.

With these outstanding characteristics, why have forest industry and most private landowners converted their land to loblolly or slash pine? The answers can be found in the seedling characteristics and early growth of these three species.

Longleaf seedlings have a "grass" stage during which it has no stem and closely resembles a clump of grass. Loblolly and slash pine, on the other hand, start stem growth immediately after germination. Because loblolly and slash pine seedlings have well-developed stems at planting time, both are easier to plant. Planting depth is critical with longleaf pine. Loblolly and slash pine seedlings have several inches of vertical leeway in which they can be planted and survive. Longleaf has a narrow window (approximately $\frac{1}{2}$ - $\frac{3}{4}$ inch) in which it can be correctly planted.

Bareroot longleaf pine seedlings are also much less tolerant of abuse than are loblolly or slash pine seedlings. Bareroot longleaf pine seedlings do not ship or store as well as do loblolly or slash. Bareroot longleaf also tend to have longer lateral roots, which make them harder to plant than the other southern pines. The difficulties associated with artificial regeneration of longleaf pine are major reasons why our forests were converted from longleaf to other southern pines.

Another important factor in the decline of longleaf has been the shift by forest industry to short-term volume and fiber production. On most sites, loblolly and slash will produce more volume in short pulpwood rotations. Exceptions to this rule are excessively drained soils such as sand ridges, where longleaf produces as much or more volume in shorter rotations. When rotations are extended for sawtimber and poles, longleaf compares very favorably with loblolly and slash on most soils in its natural range from Virginia to Texas.

Knowing that longleaf is more difficult to plant and does not grow as fast initially, why are people planting more longleaf every year? Again, several factors come into play. Undoubtedly, the advent of container-grown seedlings has been one of the most important factors.

Container-grown longleaf are grown in blocks or cells that produce a seedling where the entire root system is enclosed in a "plug". Good quality container-grown longleaf are hardier seedlings than even bareroot loblolly or slash. This has been well demonstrated on the Solon Dixon Forestry Education Center in lower Alabama, surrounding industrial forestland, and across much of the Southeast where recent spring droughts have caused poor survival and planting failures for bareroot loblolly, slash, and longleaf pine. However, despite 7 to 8 weeks of drought, plantings of container-grown longleaf have yielded 80% to 90% survival on several sites.

Container-grown longleaf are more compact than bareroot longleaf, making the plugs easier and faster to plant. Today's hand-planting crews are, on average, more familiar with and comfortable planting container-grown longleaf pine. One large tree-planting contractor even offers guaranteed survival rates when hand-planting longleaf pine seedlings. Longleaf planting success rates have never been better and are increasing every year as planting crews gain experience. In fact, experienced crews planting containerized longleaf can expect similar or higher survival rates as those achieved with bareroot loblolly and slash pine.

Additionally, many landowners are placing other objectives ahead of volume production. One value associated with longleaf pine is the relative security of the investment. Some landowners are replanting slash pine lost to wildfires in Florida with longleaf. Other landowners are replanting stands of loblolly lost to southern pine beetle with longleaf. Still others landowners are converting stagnated stand of slash or loblolly on sand ridges back to longleaf that once dominated these sites. While longleaf is not immune to southern pine beetle, fire, or fusiform rust, a landowner has considerably lower risk associated with longleaf.

Demand for longleaf pine seedlings reflects the increased interest in longleaf pine. South wide, container-grown longleaf production was estimated at 31.1 million seedlings in 1996. Production increased approximately 12% in 1997 to 34.9 million. Production increased again in 1998 by 13% to 39.6 million. In 1999, it is estimated that production will increase a whopping 36% to 54.1 million seedlings! Bareroot production for 1999 is estimated at 26.5 million for an overall production of 80.6 million longleaf seedlings annually.

¹Research Coordinator for the Longleaf Alliance

Another factor affecting demand and production of longleaf pine seedlings is the Conservation Reserve Program (CRP). Landowners signed up over 100,000 acres of cropland to be planted to longleaf pine in the next 2 years, with nearly 75% of this acreage located in Georgia. With the increased demand that is provided by the CRP, as well as a greater demand to regenerate cutover tracts, it may take several years before longleaf seedling production can meet demand.

Unfortunately, a bottleneck in longleaf restoration may arise in the year 2000. Seed companies purchased virtually all-available longleaf seeds in 1999, with little available for sale. Even worse, it appears that cone and seed production will be low across most of the Southeast this year. Unless seed becomes available, overall production of longleaf pine seedlings will probably decrease in 2000.

In the long term, things are looking up for longleaf pine. The Longleaf Alliance tracks nursery production and produces the "Longleaf Nursery List". The Alliance has added numerous nurseries to the "Longleaf Nursery List" in the last couple of years. When more seeds become available, production will probably increase dramatically. This spring's flower production suggests that we may have a bumper cone crop in 2000. The seed companies have indicated that with a good cone crop they will greatly increase their seed collection efforts.

Furthermore, foresters, tree planters, herbicide applicators, and landowners are becoming more familiar with the silvicultural techniques required to successfully regenerate longleaf pine. Many landowners have developed a 'spiritual' attachment to this beautiful tree and ecosystem. As landowners see successful established longleaf pine plantations become commonplace, they are becoming more interested in planting longleaf on their property.

Longleaf may also be the most viable economic alternative for many landowners. Data from timber sales in Alabama and Mississippi consistently reflect superior prices paid for longleaf timber. From timber sold off the Solon Dixon Center in 1999, longleaf sawtimber and poles have yielded roughly five to seven times the price per unit volume as compared to loblolly pulpwood. Stands of longleaf sawtimber consistently bring higher prices per thousand board feet than do similarly aged stands of loblolly.

The Longleaf Alliance is a partnership of private landowners, forest industries, State and Federal agencies, conservation groups, researchers, and other enthusiasts interested in managing and restoring longleaf pine forests for their ecological and economic benefits. Membership is approaching 700 individuals and organizations and is growing at a rapid rate. The Longleaf Alliance serves as a clearinghouse for information on regenerating, restoring, and managing longleaf pine; provides networking opportunities for members to connect with other landowners, managers, and researchers with similar interest and problems; and coordinates technical meetings and educational seminars. In addition, the Longleaf Alliance maintains and constantly updates databases of current longleaf related information, seedling nurseries, wildlife and forestry consultants, and pertinent demonstration sites. Numerous publications are available, including conference proceedings, a landowner's guide to longleaf management, research notes, and newsletters. The Alliance conducts applied research on artificial regeneration, natural regeneration, prescribed fire, herbicides, and site preparation for longleaf establishment.

For more information on longleaf or becoming a member of the Longleaf Alliance phone us at **334-222-7779**, fax 334-222-0581, or mail us at: **Longleaf Alliance, RR 7 Box 131, Andalusia, AL 36420.**