

A TIME TO PLANT

BY BILLY RYE



The third chapter of Ecclesiastes reminds us that there is a time and place for everything. The second item listed by the author is “a time to plant.” While there are many different methods of establishing a new forest, this article will focus specifically on planting pine seedlings. The decision to plant pines should be based on the objectives of the landowner, the ability of the soils present to grow the pines in a suitable manner, the projected future markets for pine, and the landowner’s risk tolerance.

As with any venture, there are several risks and rewards associated with planting pines. The method in which the seedlings are transported, handled on site, and are planted can impact the survival and growth of planted pines. Insects, diseases, and animals can also damage and kill newly planted pine seedlings. Both a hard freeze and wildfire can cause mortality. However, the most significant threat to newly planted seedlings is drought. The good news is that the risk is low relative to the potential return on investment. Even with all-time low prices for pine pulpwood and sawtimber, genetically improved loblolly pine is likely

to outperform the financial return of natural pine and hardwood. In addition, habitat improvements for most game species can easily be incorporated into existing timber management.

The native species of pine which are most planted in Alabama all belong to the Southern Yellow Pine group. Below is a brief description of each of the four species in this group:

- **Loblolly pine.** This is the most common species in Alabama and may be found in all 67 counties.¹ Loblolly grows fast and is versatile as it can grow on almost every soil condition present in Alabama. Due to the economic value of this species, it has also received the most genetic research and improvement of all the Southern Yellow Pines.
- **Shortleaf pine.** This species has been identified in all the counties of Alabama except for Baldwin.² The slow growth rate of shortleaf pine produces excellent lumber. The fact that shortleaf pine stands may be burned earlier than other species of pine makes it preferred for game habitat management. Unfortu-

nately, the slower growth rate yields a lower return on investment when compared to loblolly pine on similar sites.

- **Longleaf pine.** This species is found in most regions of Alabama except for the Tennessee Valley, west Alabama, and the Black Belt.³ Longleaf pine produces quality lumber and is preferred for high value poles. It is also fire tolerant and can produce excellent habitat for most game species. The amount of resin produced by longleaf pine makes it more resistant to bark beetles than other species in the group. However, longleaf pine is susceptible to brown spot needle blight and its slower growth rates often yield a lower return on investment than that of loblolly pine.
- **Slash pine.** The natural range for this species is the southern 1/3 of Alabama.⁴ However, it has been widely planted throughout much of the of the state. It has an exceptional growth rate when planted on the proper site and can produce a large volume of wood in a short time. For this reason, it is typically grown on a short rotation for pulpwood. This species tends to stagnate if not thinned early and will rarely respond if the first thin occurs after age 25. The amount of slash pine planted in Alabama has declined significantly over the past several decades

due to the superior return on investment of loblolly and the closure of multiple paper mills across the South.

Once the decision to plant has been made, the landowner will need to consider the type, amount, and cost of preparing the site for planting. Proper site preparation increases the survival rate of the planted pines and improves growth of the seedlings which survive.⁵ There are many forms of site preparation but in general they include: chemical, fire-lanes/burning, and mechanical (drum chopping, shearing, root raking, and bedding). Some sites may require multiple methods of preparation to reach the landowner's objectives.

One of the benefits of conducting forest management for 35 years is the lessons that I have learned from the education, experience, and expertise of others regarding the planting of pine seedlings. To help you avoid some of the mistakes that I have made and benefit from some of the successes that I experienced during my career, I have listed some suggestions for planting pine seedlings:

- **Order seedlings early.** Sometimes the demand for seedlings is greater than the number of seedlings



There are many risks to planting pine seedlings. Arguably, the most significant risk is dry weather during late spring and early summer. Pictured here is a dead bareroot loblolly pine seedling. A fatality of the drought of 2016.



This is an example of a containerized loblolly pine seedling. While containerized seedlings tend to have higher survival than their bareroot counterparts, research indicates that the bareroots produce more volume. (Photo courtesy of IFCO Seedlings.)



Cut-over sites quickly re-vegetate and can significantly slow the production of the tree planters. This landowner had to incorporate drum chopping into his site preparation efforts to allow access for planters before they would agree to plant.

planted by the nurseries. Therefore, I recommend that landowners order their seedlings for the upcoming planting season as soon as possible. Some cost-share programs do not notify applicants of their approval until May. This may be too late to secure seedlings during some seasons, particularly containerized shortleaf pine.

- **Implement chemical site preparation.** Most of the chemicals used in site preparation for pine planting have been around for a while and are known to be safe for the environment. Pines need a little help with the ferocious woody and herbaceous competition on site so choose a chemical tank mix which controls both. Research indicates that pine stands which were chemically site prepared yielded a higher return on investment than those which were chemically released (sprayed after they were planted). Early season (June) treatments are great for stands that need a site preparation burn. However, research indicates that late season (Aug/Sept) treatments yield better control of competing vegetation and a higher return on investment.⁶
- **Plant on good soil.** The amount of available moisture and nutrients is arguably the most impactful factor on the return on investment of planted pines. Where possible, plant pines on soils suitable for high growth rates such as those with a site index of 80 (age 50) or above. However, always consider the “highest and best use” of your soil as agricultural leases will outperform returns from planted pine in most areas of the state.
- **Plant bareroot seedlings for loblolly pine.** Planted containerized seedlings cost more than bareroot

but tend to have a higher survival rate. However, research indicates that bareroot loblolly pine stands produce more volume than container grown loblolly if the survival rate is comparable. Unless there is a drought at the time of your planting, use bareroot seedlings when planting loblolly pine. Use containerized seedlings for both shortleaf and longleaf to bolster their survival rates.

- **Invest more in genetics.** Seedlings with the best genetics reduce the rotation length of a pine stand, produce higher quality wood, increase return on investment, and are more resistant to some forms



This picture clearly demonstrates how far genetic improvement of loblolly pine seedlings has come. The Control Mass Pollinated seedlings which are planted in rows have better form, smaller limbs, and fewer limbs when compared to the natural seedling in the center of the photo. (Photo courtesy of Arborgen.)



The payoff. This landowner chose to take the risk of planting loblolly pine in 1988. While the pine markets have been down for the past 15 years in this area, the landowner still managed to average \$87.00/acre/year on this investment.

of disease. Like most things in life, you tend to get what you pay for when it comes to the genetics of pine seedlings.

- **Use industry standards.** Use professionally accepted standards for the planting season, planting weather, seedling care, seedling quality, planting techniques, and planting audits to increase the opportunities for successful tree planting.⁷ Make sure these standards are included in the contract with vendors.
- **Know your planting window.** You should postpone planting for at least one year after the completion of harvesting if the previous stand consisted of pines. This will reduce the incidence of Pales weevil which can cause seedling mortality. However, the tree planters may require mechanical site preparation if you postpone your reforestation for more than two years after the completion of timber harvesting.
- **Use a Consulting Forester.** Reforestation requires technical knowledge, experience, and contacts with those in the industry to successfully execute. A Consulting Forester serves as an Agent of the landowner and makes a successful reforestation effort more likely. They use their knowledge to prescribe treatments for the planting site, prepare written contracts, audit the completed work, review invoices, and some are available to audit the survival a year after the trees were planted.⁸

The potential rewards of planting pines usually outweigh the risks. By clearly defining their objectives, planning the reforestation efforts, and seeking the advice of a Consulting Forester, a landowner is more likely to reap the rewards of their efforts at harvest time. 🌲

References

- 1 https://www.srs.fs.usda.gov/pubs/misc/ag_654/volume_1/pinus/taeda.htm. Accessed on 10/18/2023.
- 2 https://shortleafpine.org/growing-shortleaf-pine/site-selection-and-preparation/maps/shortleaf-pine-other-relevant-maps/shortleafRange_2.png/view?searchterm=None. Accessed on 10/18/2023.
- 3 https://www.srs.fs.usda.gov/pubs/misc/ag_654/volume_1/pinus/palustris.htm. Accessed on 10/18/2023.
- 4 https://www.srs.fs.usda.gov/pubs/misc/ag_654/volume_1/pinus/elliottii.htm. Accessed on 10/18/2023.
- 5 <https://www.aces.edu/blog/topics/forestry/forestry-herbicides-for-site-preparation-of-pine-plantations/>. Accessed on 10/18/2023.
- 6 <https://www.arborgen.com/wp-content/uploads/2020/07/guide-to-using-imazapyr-for-chemical-site-preparation.pdf>. Accessed on 10/18/23.
- 7 <https://www.ncforestservice.gov/publications/NU0116.pdf>. Accessed on 10/18/2023.
- 8 <https://alabamaacf.com/>. Accessed on 10/18/2023.