

Rooted in the Past

E.A. Hauss Demonstration Forest

Highlights Future Options for Landowners

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As a landowner, you may have wondered how you can increase the productivity of your family farm or forest. Landowners often believe that loblolly pine plantations are their only choice when it comes to Southern forest management, but in light of current events, some landowners have started to look at other options. Pine timber prices are down. Recent outbreaks of loblolly pine sawflies have caused wide-spread damage to pine plantations in north Alabama. And for many, Conservation Reserve Program (CRP) contracts will soon run out. What is a landowner to do?

History tells us that we have more opportunities than we might think, and silvopasture is one of them. With the creation of the E.A. Hauss Demonstration Forest, the state's working silvopasture field laboratory, we can learn more about establishing and managing longleaf pine as part of this alternative forest system.

A history of woodland grazing

Early descriptions of the Southeast were documented in the late 1700s by William Bartram, an early explorer and botanist. He described the Southeast at that time in this way,

"This plain is mostly a forest of the great long-leaved pine (P. palustris Linn.), the earth covered with grass, interspersed with an infinite variety of herbaceous plants, and embellished with extensive savannahs, always green, sparkling with ponds of water . . ."

During this period, loblolly pine was never mentioned as occurring in pure stands, but instead was noted along stream

margins and taking over abandoned fields. Shortleaf pine occurred in pure stands west of the Mississippi River, and was found in mixed stands of hardwood in north Alabama and other Southern states. Slash pine occurred in pure stands along the Gulf Coast and into central and southern Florida. Longleaf occurred in pure stands over its entire range which included much of Alabama. Fire was an important part of Southern forest systems and greatly influenced pre-settlement forest compositions.

As the Southeast was settled by the Scotch-Irish, they brought with them a tradition of grazing. As a result of frequent natural (and sometimes man-caused) fire, the Southern woods were open with a grassy understory that was ideal for grazing livestock. Piney-woods cattle were managed at a rate of about 5-10 acres per head, depending on time of year and forage type. This history is noted in W.G. Wahlenberg's 1946 book, *Longleaf Pine*:

"In accordance with age-old custom, southern landowners usually tolerate grazing on their forest lands by the livestock of numerous small farmers. The typical forest range is open, no permits are required, no fees are charged, and usually no attempt is made to control fires set by stock owners."

Fencing laws were enacted, and eventually cattle and other livestock could no longer roam forests. Much of the South's longleaf pine timber was harvested, in part due to the need for more intensive grazing on smaller parcels of land. The practice of woodland grazing, as well as burning, largely disappeared from the Southern landscape. By the middle of the last century,

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the South's forests had transitioned to intensive loblolly pine plantation management.

As happens so often, things come full circle. History has shown that Southern forests can be ideally suited for woodland grazing, and while free-range grazing is not a viable option for today's landowner, the practice of silvopasture is.

Silvopasture as a contemporary land management option

As a modern agroforestry technique, silvopasture takes us beyond free-ranging cattle to a science-based land management system. One of the five typically-recognized agroforestry systems – which also includes alley cropping, shelterbelts or windbreaks, riparian buffer strips, and forest farming – silvopasture is the practice of managing property for livestock, forage, and timber on the same parcel of land. Recognized benefits of this system include the production of high-quality timber, while also having improved cash flow opportunities from livestock and forage production. Additional benefits of wildlife habitat, native grass production, and improved soil and water quality may also be achieved with proper management. Silvopasture is the most common form of agroforestry in the Southeastern U.S. In the most recent USDA Census of Agriculture, Alabama ranks fifth in the nation with an estimated 119 farms across the state reporting that they practice alley cropping or silvopasture.

Southern pines are well suited for use in silvopasture systems because of their relative ease of establishment and shorter rotation length. Considerable work has been completed to examine the suitability of Southern pines such as loblolly and slash for use in agroforestry systems; however, few studies have included longleaf pine. Through work done on the E.A. Hauss Demonstration Forest, we hope to better understand what is needed for the successful establishment and growth of longleaf and loblolly pine silvopastures in Alabama.

A new direction for Hauss Nursery that is rooted in the past

Located near Atmore, Alabama, the E.A. Hauss Nursery was first established as a tree seedling nursery in 1952, which produced millions of loblolly, slash, and longleaf seedlings in addition to many hardwood and wildlife specialty seedlings for almost 55 years. In 2006, seedling production ceased and the mission of Hauss Nursery was re-aligned, in part to help meet the demand for longleaf pine and silvopasture research and demonstration in Alabama. Renamed the Hauss Demonstration Forest in 2007, the site now boasts a 75-acre demonstration of the establishment and growth of old field longleaf pine and loblolly pine silvopastures. This project is a result of a partnership of the Alabama Forestry Commission, the USDA Forest Service National Agroforestry Center, the Alabama Cooperative Extension System, Auburn University, and Alabama A&M University.



Measuring the loblolly pine on EA Hauss in 2009 first half of year

In the winter of 2008, a total of 12 approximately 6-acre blocks (four loblolly and eight longleaf) were hand-planted in double-row sets on an 8-by-6-by-40-foot spacing. Planting rows were established in an east/west orientation with 8 feet between the double rows, and 1-year-old loblolly or longleaf pine seedlings were spaced 6 feet apart within the scalped double rows for an 8-by-6-foot spacing that averaged approximately 300 trees per acre. A 40-foot “alley” between double rows of trees was left for forage production (Figure 1). All 40-foot alleys within a block contained pasture forages such as Bermuda or Bahia grasses and broomsedge bluestem grass. Silvopasture blocks were sampled by Auburn University for seedling survival, trees per acre, and seedling height after planting, and again in 2009, 2011, and 2013.

What Hauss Demonstration Forest has taught us

First-year survival was low for both loblolly (53 percent) and longleaf (39 percent) plantings. This was partly due to heavy competition from grasses. When implementing a silvopasture on

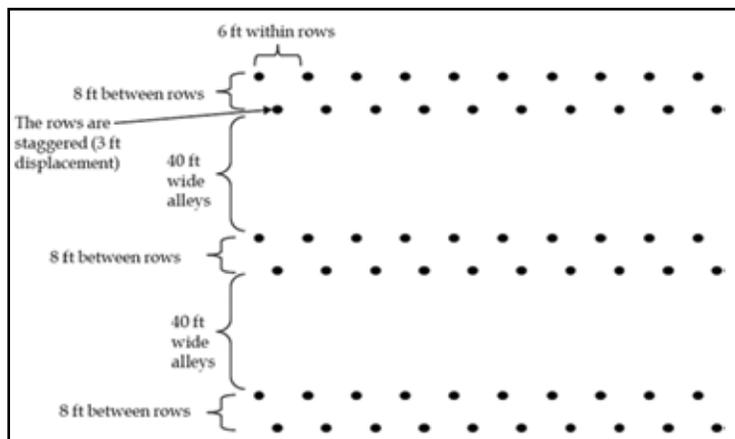


Figure 1. Example of loblolly and longleaf tree planting spacing on the E.A. Hauss Demonstration Forest near Atmore, Alabama.



LOBLOLLY on Hauss in 2012

an old field site, landowners should plan for early herbicide treatments to control vegetation around seedlings. Another reason for low survival was the accidental cutting of seedlings with mowing equipment. Since cattle or other livestock should not be introduced into a silvopasture until trees are approximately 8-10 feet tall, cutting hay in the alleys during the early years of a silvopasture can provide an additional source of income for landowners. But small seedlings can be difficult to see in the field, and the grass stage of longleaf can make it particularly difficult. It is important that equipment operators are aware of seedling locations and that alleys be the proper size to easily move machines between rows of trees. To help mitigate low survival on Hauss Forest, longleaf blocks were replanted in 2008 to achieve a 51 percent stocking rate, so that all blocks of loblolly and longleaf averaged around 150 trees per acre.

Tree height for both loblolly and longleaf silvopastures was measured and averaged across blocks by species. Early height growth estimates show that loblolly was about twice as tall as longleaf seedlings planted at the same time (Figure 2). By age 4, loblolly seedlings averaged almost 10 feet tall, while longleaf seedlings the same age were approximately 4 feet tall. By age 6, loblolly had doubled in height to almost 20 feet and longleaf averaged about 10 feet tall.

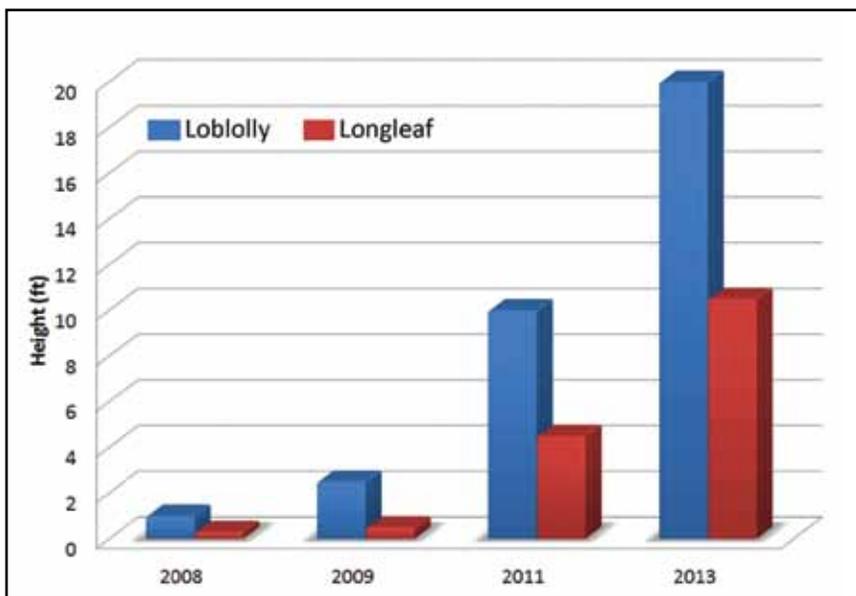


Figure 2. Average measured height of loblolly and longleaf pine seedlings in planted silvopasture sets on the E.A. Hauss Demonstration Forest near Atmore, Alabama.

Based on these findings, by age 4 the loblolly pines in this system were easily “livestock resistant” and cattle could be introduced into the system. For the longleaf blocks, however, a landowner would need to wait until about age 6 to introduce livestock into the system. To improve height growth in longleaf silvopastures, landowners should consider prescribed burning. Fire is an important part of any longleaf forest system, and based on findings at Hauss Forest there is some early evidence that it may actually improve height growth of longleaf seedlings in a silvopasture. As part of the 2013 measurements, both a burned and an unburned block of longleaf silvopasture were compared. Seedlings on the burned block averaged one foot taller than the unburned block. Based on these findings, prescribed fire may

help increase height growth and therefore allow for the earlier introduction of livestock into a silvopasture system.

Hauss helps landowners think about other options

Grazing in pine forests is an important part of Southern land management history. And while it is not appropriate for everyone, silvopasture is an option that works well for many, providing long-term income opportunities from timber as well as a source of additional income and cash flow from livestock and forage that can be important to a private landowner. Early studies on Hauss Demonstration Forest have shown that although it may not have the rapid early growth of loblolly pine, longleaf should not be dismissed as a viable option for landowners interested in silvopasture.

Future studies and demonstrations on E.A. Hauss will include tree pruning, prescribed fire, and cattle grazing. Pine straw production as an additional source of revenue will also be examined. Silvopastures are ideal for pine straw raking, because of the open understory and wide row spacing. So you can see, we still have much to learn from Hauss Demonstration Forest. And thanks to the generosity of the Alabama Forestry Commission and their partners, Alabama’s landowners will benefit from what is learned.☪



LONGLEAF on Hauss in 2012