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From the earliest days of European settlement in Georgia and Florida, cattle have been raised among the trees. The wiregrass region is notable for this, particularly the cracker cattle that were run on vast wiregrass and pine ranges. “Pickin’s” were slim, of course, and it’s hard to put weight on calves or get cows to breed back on a diet of wiregrass and saw palmetto. Nowadays, we can improve upon that poor quality range. There are reasonably good options for forages that, with good management, will grow well in combination with trees.

Cattlemen in the Southeast have a growing interest in the concept of silvopasture, a term derived from the Latin word for forest (*silva*), for growing pasture and trees in combination. In this month’s article, we’ll give some of those reasons and give tips on how to get a silvopasture started.

Benefits

Silvopasture is more than just having trees in your pasture. The true goal of a silvopasture system is to ensure that both the tree and the pasture productivity are managed for optimal production. You should note the key words of “both” and “optimal”. For a silvopasture system to be successful, both the trees and the pasture need to be managed so that they are each as productive as possible. But, one must realize that neither the pasture nor the

trees will produce the maximum that each is capable of producing. When each species is managed to its optimal within the system, the total productivity and profitability per acre can be higher than either grown alone.

Silvopasture is also a great way to strategically reduce risks. Over the long-term, the cattle cycle and timber prices are often counter cyclical. When cattle prices are low, timber prices are often high and vice versa. But, over the near term, silvopasture systems provide multiple benefits for the cattle and the pastures.

Shade creates a great shelter from the weather, but of course it's greatest benefit here in the Deep South is its heat abatement for livestock. Temperatures under natural shade may be 5-10°F cooler than the equivalent amount of shade cast by a man-made, constructed shade. This is partly because these constructed shades usually trap some of the heat under them, but largely because of the evaporative cooling from trees that occurs as the plant life above transpires. Shade also tends to keep the soil surface cooler and minimizes moisture loss directly from the soil.

Additionally, silvopasture systems have shade distributed across the whole or majority of the landscape. Typically, pastures have only shade near streams or other riparian areas. Consequently, cattle spend a lot of time loafing and dropping nutrients in those areas. Those areas are often left without ground cover, with nutrients sitting on bare soil. These areas are often down slope enough that runoff from rain events flow right through that area. Consequently, if natural shade is poorly distributed across the whole pasture, it can contribute to nutrient runoff, erosion, and major water quality concerns.

Challenges

Like all things, there are benefits and challenges to silvopasture. The largest challenge with silvopasture production is trying to grow grass under trees. Being in the South, our forage base is warm season perennial grass species. These species do not grow well in the shade. For example, bermudagrass is almost completely intolerant to growing conditions with more than 10% shade. In South Georgia, bahiagrass is the best option. Bahiagrass will be reasonably productive in pastures receiving less than 30% shade. In North Georgia, tall fescue is the best option. Fescue will remain reasonably productive up to approximately 40% shade. In either location, winter annual forages can be used extensively.

Establishing trees within an existing pasture can be done, but it is challenging because of the competition with existing vegetation. If livestock are present in the pastures where planted trees are being fostered, they will often damage seedlings and/or the exclusions meant to protect the young seedlings. In addition, trees require more time to fully establish sufficient shade to reap the full benefit of a silvopasture. During this time, the productivity of the pasture component will not be maximized. There are alternatives to this, such as cropping or haying the areas destined to be forage lanes. But, one should consider the total establishment costs and returns from such enterprises during the entire grow-in phase to better understand if it is profitable for your operation.

Thinning stands of planted pines and establishing bahiagrass or tall fescue in the forage lanes is the most common way silvopastures are established in the Southeast. In either case, existing forests will usually need to be thinned considerably in order to reduce the shade to the respective aforementioned levels that will sustain reasonable grass growth. In general, the recommendation is to create forage lanes that are at least 30-40 ft wide. Tree rows generally are single or double rows with 8-12 ft between trees within the row and 8-12 ft between tree rows if in double rows.

When thinning the trees, be sure to choose a consultant and/or logger that understands the end goal and is willing to harvest the trees in accordance with your plan. Have a clear plan for dealing with tops and debris and work it into the contract with the logger if possible. If you are not able to be present to monitor the tree harvest and clean up, you should seriously consider hiring a consultant who will supervise the thinning operations.

Shearing and chopping systems that shred remaining debris need to be explored. The productivity of the pasture is directly related to how quickly it can get fully established, so take care to examine the economic feasibility of removing the timber harvest debris. Trees should be felled in a way that leaves a minimal amount of a stump height. It is likely not going to be economical to stump the forage lanes. So, the height of the stumps need to be such that the site can be driven over and mowed using a rotary mower. An older, heavy-built rotary mower that is cost-effective to operate and maintain should be used to mow any woody species that may attempt to grow in the forage lanes. When clearing the forage lanes, be sure to set the mower high enough to go over the stumps, operate the machinery slowly, wear a seat belt, and use a tractor with roll over protection and that guards the operator from flying debris.

Also, one should expect broadleaf weeds (e.g., thistles, briars, etc.) and woody species (e.g., sweet gum, privet, etc.) to emerge once the forage lanes have been cleared and planted to grass (Fig. 1). At least one herbicide application (e.g., Remedy, Crossbow, PastureGard, etc.) will be required to control these challenging weeds. Alternatively, co-grazing with goats will also eliminate these challenges with little or no herbicide applications.

Equipment operation within the forage lanes can also be challenging. These areas will remain rough for several years, and stumps will likely last for 3-5 years. Consequently, fertilizer, lime, and herbicide applications will be limited, especially if the work is to be custom-hired. There are no easy or cheap solutions to this, but the rough areas will improve over time.



Fig. 1. Woody and broadleaf weed species are very likely to emerge once trees have been cleared. It is crucial to have a plan to deal with these challenges. Control options include herbicides, mowing, and co-grazing with goats.

More Information

For more information about how to manage both the trees and the pasture to their optimal potential, check out the handbook entitled “Silvopasture: Establishment & Management Principles for Pine Forests in the Southeastern United States,” which was written by experts and cattlemen using silvopasture in their operations. This publication is available on www.silvopasture.org and linked off of our website (www.georgiaforages.com).