

Pine Trees and Cattle—Can They Work Together?

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Introduction

Native forages of the southern United States are frequently low in nutrients and poorly digestible, while improved pastures (grass and legumes) are the opposite. The soils of northwest Florida produce rapid growth of pines, which is a major use of our land. The integration of pines, pastures, and cattle seems to offer an efficient and economical form of management for our land. Limited land resources are forcing us to either shift land uses to meet changing demands, or to manage the land to produce more than one kind of crop. Also, the high cost of land, higher taxes, and increased production costs are forcing land owners to consider methods for increasing net returns from their land. This is the impetus from which I have developed a program that incorporates pines, pastures, and cattle on my operation.

Long-Range Planning

Initially soil samples were taken and other land factors were examined to determine which sites were suitable for conventional tree plantings (8'×10' solid set) or wide row spacing (4'×8'×40'). The appropriate species of pine trees and grass had to be considered. Improved slash pines were chosen for their fast growth and suitability to northwest Florida. Slash pines have fewer limbs and prune better than loblolly pines. Due to fast growth, slash pine plantings may be stocked with cattle sooner than loblolly plantings. Pensacola bahiagrass was chosen because it is a highly drought-tolerant grass that persists under low fertilization and close grazing. It has proven itself to be the most shade-tolerant grass species and is well suited to tree-covered pastures (Lewis et al., 1983).

Operation Description and Management

Step 1. Originally the cow herd was mostly ¼- to ½-Brahman cross cows. This enabled me to take advantage of increased hybrid vigor and foraging ability over straight English cross cows. In recent years the cow herd has been changed to mostly Longhorn cattle. This change was made due to the increased need for roping and dogging steers in the Florida panhandle. The calf crops are presently sold at about one year of age, for recreational use.

The breeding season lasts from April 1 through July 28. Calving begins about the second week of January to take advantage of ryegrass and crimson clover production. Cattle are wintered on whole cottonseed and bahiagrass hay. Excess dormant bahiagrass is grazed in the late fall and early winter. During this time cattle are fed a 30% CP supplement to encourage the cattle to eat this “standing hay.” Stocking rates for solid set timber are about 10 head per 40 acres and, for rotational grazing (wide row spacing), about 1 head per acre.

Step 2. The operation includes both solid set timber (8'×10' spacing) and wide-row set timber (4'×8'×40' spacing). Trees are planted in an east–west row alignment for maximum sunlight exposure on grass. One should consider planting on the contour if erosion is a factor. The wide-row spacing area includes 50 acres, consisting of 30 acres Pensacola bahiagrass, 15 acres slash pines, and 5 acres of ramps, cow pens, water area, and shade.

Recent research has shown that a tree spacing of 4'×8'×40' (4' between trees within rows, 8' between rows, and 40' between pairs of rows) is an optimum spacing for wood yield and forage yield

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(Lewis, 1988). Thirteen years after planting, a tree volume of 1086 ft³ per acre and a forage yield of 1264 lb per acre was obtained from native forage species (Tanner and Lewis, 1984). Higher yields would be expected for fertilized bahiagrass. The 4'×8'×40' spacing allows for 454 trees per acre. Past studies on pulpwood yields document that a stand planted at 400 trees per acre will yield 85% as much as a stand planted at 1000 trees per acre (Tyree and Kunkle, 1995). The 40-ft spacing is ideal because closer row spacing may create access problems for fertilizer spreaders and mowers; in addition, tree crowns tend to close too rapidly.

(Note: Timber production from the 4'×8'×40' spacing has been equal to, or maybe greater than, the 8'×12' spacing on my operation.)

Step 3. Timber management has included using prescribed burning every three years to hold down accumulation of pine straw. The first year of burning should be 6 to 7 years after planting. Thinning occurred first at 10 to 12 years post-planting, and every five years thereafter.

Step 4. Annual fertilization includes the spreading of 300 lb 7-21-21 in late winter or early spring. This stimulates crimson clover production in the early spring. Crimson clover was planted to increase pasture quality and to provide nitrogen for both the bahiagrass and the pines. Hay production from the bahiagrass between the 40-ft-wide rows of pine trees is excellent for the first four years. Excess straw begins to cause problems at about year five. Control grazing forces the cattle to graze up to the edges of the trees.

Step 5. Facilities include portable cow pens and high-tensile electric fencing. Interior fencing is generally one wire, placed between rows of trees. Firebreaks and ramps are overseeded with ryegrass to maximize land use and forage production.

Summary

Combining the production of pines and cattle on improved pastures offers an opportunity for multiple-commodity yields. Additional timber can be produced by planting closer within the rows and planting double rows with wide spacing, to increase tree density while maintaining open stands for grass production between rows. Cutting hay from the land while waiting for the trees to reach an animal-resistant and pest-resistant height offers an opportunity that needs to be used in an agroforestry management system. Since this approach to agroforestry is not trouble-free, good management is required. Landowners, especially those with small holdings, should consider integrating pines, pastures and cattle as an alternative to single-commodity management of their land.

References

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