Pruning

The ultimate goal of timber production in a silvopasture system is the production of high-quality sawtimber. Widely spaced trees delay canopy closure which benefit forage crops by allowing more sunlight to reach the ground. However, open grown trees tend to develop a greater taper and larger side branches that can reduce wood quality (through larger knots) if trees are not pruned.

Pruning is a necessary part of a profitable silvopasture system. The object of pruning is to confine the knots produced by these branches to a small diameter—thereby producing higher quality, knot-free wood on the outer diameter of the tree stem. An 8x8x40 stocking would likely produce knots that are slightly larger (on average) than a more dense square spacing (i.e. 10 by 10 foot). However, at a given stocking, rectangular spacing might not affect other traits of loblolly pine (Sharma et al. 2002). Pruning has the added benefit of raising the tree canopy which allows more light to hit the ground; thus providing higher production potential for the pasture element of the system and producing an aesthetic open environment.

The following guidelines provide steps for pruning in a silvopasture system.

- Pruning should be initiated when the trees reach 15-20 feet tall and/or the diameter of the tree reaches five inches at a height of six inches above the ground.

- Pruning should remove all of the branches where the trunk diameter is greater than four inches but **never more than 1/3 to 1/2** of the total crown. Maintain a live crown equal to 1/3 of the tree height.

- This is repeated as the tree grows until you have the desired height of 18-32 ft While prunings have traditionally been carried out to a bole height of 16 feet, it has been shown that remaining branches tend to create larger knots in the remainder of the tree stem. If pruning equipment is available, it is recommended to continue pruning to a height of 32 feet—thereby producing high quality, knot free wood on the outer diameter of the tree stem with only a 4-5 inch defect core.
The best time to prune living branches is late in the dormant season (winter) or very early spring before active tree growth begins.

The fastest and most economical way to prune trees for maximum quality is by using a lopper or lopping shears. Most loppers can effectively prune branches that are 2 inches or less in diameter.

NEVER PRUNE WITH A MACHETE. Using a machete, while quicker, can cause irregular breakage of limbs and create excessive wounds to the tree.

Where to prune:

- Following diagram below, locate the branch bark ridge which is easy to see on pines.
- Locate point A just outside branch bark ridge.
- Locate point B where branch meets collar.
- Set the lopper along line AB and prune the branch without injuring/cutting the branch collar.
**Canopy Management**

The tree canopy is managed for between 25 to 45% canopy for warm season grasses and 40 to 60% canopy for cool season grasses. This management scheme will require thinning at intervals of approximately every 5-7 years depending upon site productivity to keep the canopy within the desired range. If canopy begins to exceed the desired amount, forage production will begin to decline. If the plantation has been in forest for a significant time there will probably be a plethora of vegetation besides the desired grasses that begin to grow. Vegetative management of the understory vegetation is a must using chemical or biological control to favor the desired forage species. If the plantation never had a forage grass established on the acreage, grass and or legumes may have to be established to get the desired vegetation.

In most cases individuals like to use an ocular estimate to determine the percent canopy. It is very hard to prove whether the ocular estimate is right or wrong but it can be shown it is difficult for two people to get often a similar answer. One tool that helps maintain consistence in the canopy estimate is the spherical densiometer. Hold the instrument level, 12"-18+ in front of body and at elbow height so that the operator's head is outside the mirror grid area.
Depending upon the model the densiometer will contain a concave or convex mirror with a grid on it.

While there are no dots on the grid assume four equally spaced dots in each square on the grid.

Systematically count the dots that are covered by leaves, stems or branches. Multiply the total count by .96 to obtain the percentage occupied by vegetation or percent canopy. (Assuming each dot represents one percent is generally considered accurate enough.)