Forest Stand Improvement:

Moderate Thinning of Pine Stands

Alabama Job Sheet No. AL666D

THINNING PINE STANDS FOR FOREST HEALTH: In any timber stand, trees compete with each other for light, soil moisture and nutrients. The more crowded trees are, the more intense the competition. In a very crowded stand the growth rate is reduced, and eventually the weaker trees die. Thinning improves tree vigor, growth, stand quality and wildlife habitat by removing diseased trees, trees with poor form, slow growing trees and others competing with the best trees.

The main objective of thinning is to redistribute growth potential of the stand to well-formed, high-quality sawtimber crop trees.

Most pine stands are even-aged. That is, all trees are within a few years of the same age. If all trees are about the same age, then larger trees are growing at a faster rate. On good sites, pines will grow more than 10% each year up to age 35, nearly doubling in volume every 7 years. Trees in the 6 to 8-inch diameter range are usually sold as pulpwood, OSB, chips, or low-grade lumber. Trees in the 10-inch diameter size or larger are usually sold as more valuable products, such as sawlogs, veneer, or poles.

THINNING UNDER THE FOREST HEALTH INITIATIVE: Because of the health benefits associated with thinning crowded stands, this practice is approved under the Forest Health Initiative in the Environmental Quality Incentives Program (EQIP).

To extend the years of vigorous growth, further lower the risk of pine beetle damage, and improve the wildlife habitat, a heavy thinning is recommended. In addition, the landowner MUST agree to prescribe burn once during the next 2 years.

To be eligible the stand must have a SPB hazard score of 100 or more (very high, high, or medium). Thinning will be done to reduce the basal area to 60 or lower. This will effectively lower the SPB hazard to approximately 100 or less. All stumps must be treated with Borax IF the stand is on soil that is High Hazard for Annosus Root Rot.

WHEN TO THIN: Conduct the first thinning when trees reach pulpwood size, about 6 inches in diameter. Trees will normally be between 12 and 15 years old when they reach this size. When thinning, remove the weak, diseased or damaged trees are removed.

Another thinning should be considered 5 to 10 years later before the trees become crowded again and the growth rate slows. A good way to determine when to thin is by looking at the ***live crown ratio,*** the percentage of the length of the stem that has live branches. When the live crown ratio drops to near 30% it is time for another thinning.

Another rule of thumb is to use the "D + 6" rule. Space trees equal to the average diameter, expressed in feet. The "D" represents the diameter of a tree as represented in feet. For example, 10-inch diameter trees should be spaced approximately 16 feet apart from each other (10+6=16).

METHODS: A combination of row-thinning and selective thinning is strongly recommended. This method entirely removes every third, fourth or fifth row, then selectively removes trees from between the unthinned rows. Removing rows creates corridors that make equipment use easier and helps minimize damage to crop trees. Trees between the thinned rows that are diseased, of poor form, small and slow growing, and crowding better trees are harvested.

Other methods include simple row thinning and selective thinning. Simple row thinning is removal of entire rows with no thinning between rows. This method is uncomplicated, but offers no opportunity to favor good trees over bad trees and does not effectively create free-to-grow conditions for trees that remain.

Selective thinning is marking individual trees throughout the stand for removal. This method allows full control to free up the best trees in the stand, but equipment operation can be difficult in dense stands and damage to remaining trees can be significant.

CONDUCTING THE SALE AND HARVEST:
It is strongly recommended that you use a registered consulting forester to handle your thinning. A consulting forester can inventory and mark the stand, contact and solicit bids from potential buyers, develop written harvest contracts to protect your personal interests, and oversee the thinning operation for satisfactory performance. Consulting forester fees are handled in different ways such as a percentage of the timber sale income, flat per-acre fees for marking or other arrangements suitable to both parties. Studies show that using a consulting forester often results in higher revenues to the landowner, even after consultant fees are paid.

KEY POINTS TO REMEMBER:

- Thinnings are cuttings made in immature stands to stimulate growth of remaining trees and improve the yield of the stand.
- Trees compete for light, moisture and nutrients. If they become too crowded, growth slows and they may die.
- Pines grow rapidly, and trees grown for sawlogs are worth far more than trees grown for pulpwood.
- The result of a thinning operation should be to provide more growing space for the best trees, while harvesting diseased, damaged or dying trees.
- The first thinning is usually made between ages 12 and 15, when trees reach pulpwood size.
- Subsequent thinnings should be made before the live crown ratio drops below 30%.
- In natural stands, thinning is best accomplished by individual tree selection where each tree to be cut is marked.
- In pine plantations, a modified row thinning is best. Every fourth, fifth or sixth row should be removed and intermediate rows thinned by individual selection.
- Always treat the freshly cut stumps with borax on Annosus High hazard soils for Annosus Root Rot prevention.

Photo Credit: Alabama Forestry Commission
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