



Natural Regeneration of Southern Pines

Alabama Job Sheet No. AL 612A



Definition

The regeneration of southern pines by natural methods.

Criteria

Natural regeneration methods should be selected which are conducive to the regeneration success of the desired species. Additional practices such as precommercial thinning and tree release may be needed to obtain a good stand of the desired species.

Advantages

The advantages of natural regeneration are:

- Low establishment cost
- Less labor and equipment required
- No problem with geographical source of seed
- Good early root development
- Less visual impact
- Less soil erosion

Disadvantages

The disadvantages of natural regeneration are:

- Less control over initial stocking and spacing
- Loss of year or more of growth
- Longer rotations needed
- Risk of seed tree loss
- Generally lower yields
- No genetic improvement or use of disease resistant stock
- Possible lag in regeneration due to drought or inadequate seed fall
- Possible need for precommercial thinning
- Possible need for tree release

Species Selection

The primary species of southern pine that are usually managed by natural regeneration are loblolly, longleaf, slash, and shortleaf pine. Some stands may have more than one species of pine. It is usually desirable to favor one species. Those species, which are less desirable, should be removed prior to initiating the regeneration process.

Types of Natural Regeneration Methods

Clearcutting in Strips

Narrow strips up to 200 feet may be clearcut and allowed to seed in from the sides. This system is suited to loblolly, slash and shortleaf pine. Strips should be perpendicular to the prevailing winds to ensure good seed dispersal.

Seed Tree

Seed tree is the most frequently used system of natural regeneration for pine species. Seed trees should be at least 10 inches DBH (diameter at breast height) and preferably 12 to 16 inches. They should be dominant trees of good quality that have a history of good cone production. Seed trees should be equally distributed over the area to be regenerated. The number of seed trees depends on tree size, species, cone-bearing conditions, and site conditions.

Minimum Recommended Number of Seed Trees for the Major Pine Species. Distance between trees is listed in ().

DBH	Loblolly	Slash	Shortleaf
10	12 (60)	12 (60)	20 (47)
12	9 (69)	9 (69)	14 (56)
14	6 (85)	6 (85)	12 (60)
16+	4 (104)	4 (104)	12 (60)

*Seed Tree Method is not recommended for Longleaf. (SEE Shelterwood).

Shelterwood

The shelterwood method in simple terms is a large number of seed trees usually 20 or more per acre. It involves several steps: control of competing understory vegetation, the selection of shelterwood trees and final harvest cut. The first step in the shelterwood process is understory control. Prescribed burns every three years should keep the understory under control. Where prescribed burning is not periodically applied, burn two consecutive years before

the selection of shelterwood trees to help reduce the understory vegetation. Larger understory vegetation may have to be controlled with herbicides. The shelterwood system entails leaving many seed trees, usually about 25 to 40 square feet of basal area per acre. This is equivalent to 23 to 37, 14-inch trees (diameter at 4.5 feet) per acre. The seed trees are then removed after an adequate stand of trees is established. The shelterwood system is the best system for regenerating longleaf pine naturally.

Seed-in-Place

This method involves clearcutting the stand after the peak of seed fall, but before the start of germination. This method is best applied during the 4 to 5-month fall and winter logging period. This method can only be used when there is an ample crop of seed available.

Seedlings-in-Place

This method involves clearcutting a stand during the summer following a good seed year. With this method you can be more certain of having a suitable stand of seedlings. Reduced stand density and control of understory vegetation is essential to having successful regeneration using this method.

Seeding Characteristics of Southern Pines

Loblolly pine has good seed crops every 2 or 3 years and slash has good seed crops at about 3-year intervals. Shortleaf pine has good seed crops every 3 to 5 years. Longleaf pine, however, does not have good seed crops except every 5 to 7 years. It is important to observe flower and cone production when making plans for natural regeneration.

Site Preparation

Site preparation is essential for the successful natural

regeneration of pine species. It is important to remember that most natural regeneration in the South has resulted in too much stocking, not too little. Site preparation methods may include logging, herbicides, prescribed burning, chopping, or disking.

Evaluating Natural Regeneration

Natural regeneration usually results in too many seedlings. Natural regeneration is usually considered successful if you have 1,000 to 3,000 seedlings per acre after the first growing season. If there are less than 1,000 seedlings per acre or over 2,500 seedlings per acre, a second evaluation should be done after the second growing season. Precommercial thinning may be needed to reduce stand density. The desired stocking rate after the second growing season would be between 500 and 800 trees per acre. Tree release may be needed where there is competition from undesirable tree and plant species.

References

- Managing the Family Forest in the South. Management Bulletin R8-MB 1. USDA-Forest Service, Southern Region. September 1992.
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- Natural Regeneration of Loblolly Pine. General Technical Report SE-47. Southeastern Forest Experiment Station, USDA Forest Service. October 1987.
- Regenerating Longleaf Pine Naturally. Research Paper SO-105. Southern Forest Experiment Station, USDA Forest Service. 1975.

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