



United States  
Department of  
Agriculture  
Forest Service

## COOPERATIVE FORESTRY

### *Technology Update* Southern Region, USDA Forest Service, 1720 Peachtree Rd., NW., Atlanta, GA 30367-9102

# REGENERATING LONGLEAF PINE WITH THE SHELTERWOOD METHOD

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The shelterwood method is a cheap and effective way to regenerate longleaf pine stands. However, success depends on four fundamental conditions: (1) an adequate seed supply, (2) receptive seedbed, (3) minimum vegetative competition, and (4) ample soil moisture. *When each of these essential components occurs at the same time on the same location, natural regeneration is almost always assured.*

Uncontrolled factors such as fire and livestock can prevent seedling establishment even under the best of conditions. Also, if one of the four conditions is inadequate, the entire regeneration system fails at that point. When natural regeneration is desired, your objectives should be to *control the timing and intensity of silviculture treatments to bring about the concurrence of these conditions in the earliest reasonable time.*

Research has developed the following guidelines to help you regenerate longleaf pine naturally.

### Shelterwood Guidelines for Longleaf Pine

#### Adequate Seed Supply

1. Start crown development of prospective seedtrees about 10 years before the planned harvest date. Begin by thinning the overstory to 60 to 70 square feet basal area per acre. Retain the largest, best formed and most fruitful trees in the residual stand. Stands already at or below this density may not need this preparatory cut.

2. Further reduce the stand basal area to 25 to 30 square feet per acre with a seed cut about 5 years before the planned harvest date. Leave the largest, best formed and most fruitful trees as evenly distributed as possible. Seed trees should be 30 or more years old and not less than 10 inches d.b.h. (15 inches or larger is preferred).

3. Monitor seed crops annually in the spring to predict the development of an adequate seed crop. Schedule your seedbed preparation measures accordingly. The seeds produced by 1,000 or more cones per acre should be adequate.

#### Receptive Seedbed

1. A prescribed fire no more than 1 year before seedfall will usually create a receptive seedbed. A cool winter fire, 8 to 9 months before seedfall, will do less damage to advance reproduction already on site than would a late summer or early fall burn. The seedbed prepared by a winter fire will lose some of its receptiveness because of the regrowth of some herbaceous vegetation. However, the regrowth does provide the seed some protection from predators. The late summer or early fall burn may provide a seedbed for two crops of seed.

2. Mechanical treatments that lightly scarify the soil surface may be used in lieu of burning. However, they cost more and may damage seed trees. In any case, a

high percentage of the mineral soil must be exposed for seeds to reach the seedbed, germinate, and become well established.

### **Minimum Vegetative Competition**

1. The use of prescribed fire through the rotation will prevent excessive encroachment of woody plants in the mid- or understory. However if competing, woody vegetation is present, remove it, preferably before the seedcut.

2. Removal of competing woody vegetation may be accomplished by selling and removing merchantable trees, using approved herbicides, prescribed fire, mechanical treatments or combinations of two or more of these operations.

3. Follow step 2 by keeping the competing woody vegetation in check. Periodic use of fire is the most effective means. Maintain this control until adequate numbers of longleaf pine seedling are established and have initiated height growth.

4. Seedtrees should be removed when about 6,000 well-distributed, 1-year-old seedlings are established. Generally, once 1,000 to 1,500 seedlings per acre have

started height growth and are free from overhead competition, the new stand is considered established.

### **Ample Soil Moisture**

1. Removal of competing vegetation is about all that can be done to maximize available soil moisture during the stage from seed germination through the critical first year. The rest is left to chance.

After seedtrees have been removed, the stand should be revisited periodically to monitor the presence of brown-spot disease, encroaching competition and livestock impacts. Undesirable levels of any one of these conditions should be controlled promptly.

Before applying this regeneration method, study the reference cited below.

### **Reference**

Croker, Thomas C., Jr.; Boyer, William D. 1975. Regenerating longleaf pine naturally. Research Paper SO-105. New Orleans: U.S. Department of Agriculture, Forest Service, Southern Forest Experiment Station; p. 21.