LOBLOLLY SEED COLLECTION PROJECT

Terrell Brooks
Georgia Forestry Commission, Macon, Georgia

The Georgia Forestry Commission conducted a Loblolly seed collection project at Arrowhead Seed Orchard in November 1971.

Arrowhead is located approximately ten miles West of Cochran, Georgia, and seven miles North of Hawkinsville, Georgia, on Georgia Highway 126.

The area involved in the project was approximately 2.5 acres of the Loblolly seed orchard. The trees were first established in 1957, although interplanting has been performed as late as 1966. The height of the ramets vary from several feet to approximately 55 feet. Presently, most of the cone producers are listed in the 30 to 50 foot height class. A block is 20 clones composed of 20 spaces long and 20 spaces wide or 400 plantable spaces, planted in a 16 x 16 foot spacing.

During the first few years of cone collections (1965-68), adjustable ladders mounted on farm wagons were used in the harvesting of the Loblolly cones. Day labor crews picked up the cones and loaded them for transportation to the processing plant. As the ramets grew taller (1969-71), more elaborate ladder systems had to be devised so personnel could reach the cones for harvest. The cones were harvested by using forked tip 12 foot aluminum poles. Later two Skyworker cherry pickers were leased for $1,900.00 for four weeks. The hydraulic booms were 45 foot models. Even with these heights, we were unable to collect all the cones from the taller trees.

This type of cone collection has damaged most of the lower cone bearing limbs causing probably 75% of the cones to be produced in the top 25% of the crown. This type of collection also reduces the number of first year conelets by the breakage of limbs collecting the mature cones.

The cone collection costs have steadily increased from $4.97 per bushel in 1968 to $9.78 per bushel in 1971. This cost only involves collection and transporting of the cones to our processing plant.

The project first began with the selection of the seed catching material with a high ultraviolet resistant fabric, Polypropylene. This fabric is manfactured by Patchogue Plymouth Company, 445 Great Southeast Parkway, Atlanta, Georgia, 30336. We ordered 2, 700 linear yards of 16 foot wide fabric. Material was shipped in approximately 400 linear yard rools.

The test area was selected on the basis of the area being isolated on one end of the Loblolly orchard bordered by a road to the East, Slash orchard block on the North, isolation area on the Western side and other Loblolly blocks to the South.

On October 12 and 13, 1971, the fabric was laid in 320 foot lengths in a North-South direction. This was acccomplished by building a frame on a four wheel wagon to hold one roll of material. A farm tractor was used to pull the wagon into position between two rows of trees. Three men were required to pull the material length (320 feet) of the rows.

To determine the effect of wind on the movement of the fabric, the following method was used: One-third of the material was staked at regular intervals using a large wire stake, one-third was staked randomly using the same type wire stakes, the remaining one-third was not staked. The portion of the material not staked had a tendency to roll up toward the center due to the direction of the wind. Orchard personnel had to straighten out this area several times.

The test area was mowed with the rotary mower one day prior to the laying of the material. Due to the warm weather conditions, grass and weeds grew rapidly. Orchard personnel had to pull the material over most of this area pulling loose the grass and broadleaf weeds growing through the material. This operation had to be performed once.

A close check was kept on the ripening of the cones. On November 8, 1971, the majority of the cones were beginning to open. On November 11, 1971, a cone production survey was made of the test area. The following information was noted:

1. There were 168 cones producing ramets.

2. The cones producers were subdivided into three categories with the age class.

    a. 140 ramets containing 0 cones.

    b. 91 ramets containing 1 to 99 cones.

    c. 29 ramets containing 100 to 199 cones.

    d. 48 ramets containing 200+ cones.

3. Two clones consisting of 33 cone producers contained cones closed or partially opened.

On November 11, 1971, a survey established the area had a good natural seed fall. Due to the birds and rodents, we decided it would be desirable to harvest the area as soon as possible. On the same date using a shock wave shaker, all cone producers were shaken. The shaker process removed all dead pine needles and debris along with the pine seed.

An estimate was made of the number of bushels of cones in the test area. The estimate was 62 bushels. Following the process of the harvest of seed, 48 pounds of seed were obtained from the final harvest.

It was discovered several days later some seed were still falling from trees were the cones were supposedly fully opened earlier. Of course, this indicated the trees were shaken prematurely.

After the seed had fallen from the shaking operations, each end of the material was pulled toward the center creating a wind row condition in the middle of the test area of pine straw and pine seed. the roll of pine straw and pine seed was then covered by the material and left until November 15. For the next three days, several methods were tried in establishing a way to separate the pine straw from the seed.

The material used in the test area was taken up on November 18, 1971, and stored on a farm wagon. Most of the material was folded in 8 foot folds, although two sections were rolled up on the same core as received. Folding the material was easier than rolling, when using only manpower. In the future, a power roller will be used to speed up the operation.

A small section of the material was laid in the field on December 22, 1971, to determine what effects various weather conditions would have on the lasting quality of the material. As of the first day of August 1972, no significant deterioration has been noted.

The following specifications were used in ordering the Polypropylene fabric in 1971 at a cost of $626.59 per acre.

PLASTIC FABRIC POLYPROPYLENE, OR EQUAL WITH THE FOLLOWING SPECIFICATIONS:

Width - 16 ft. wide
Weave Count - Minimum 6x6 (12x6, each warp has 2 ends)
Weight - Not less than 2 ounces per sq. yd.
Tensile - Minimum 65 lbs. per sq. inch, both directions
Yarn Stability - 250 grams per inch
Put-Up - 16 foot wide rools in multiples of 108 lin. yds.
Outdoor Wearing - Minimum of 70% retention after 400 hours in weather-o-meter.

MFG. NAME: _____

The following changes were made on the specifications for 1972, which increased the cost to $698.00 per acre.

Width - 17 ft. wide rolls
Weight - Not less than .854375 pound per lin. yd.
Package - 17 foot wide rolls in multiples of 214 lin. yds.
Selvage Edge - Minimum of 1 1/4" selvage area each edge

To facilitate the seed collection, the following changes will be made:

A power roller mounted on bearings will be used to help unroll and then reroll the material upon completion of the seed harvest.

A power operated screening machine will be used to scalp the seed.

Before the fabric is laid, we hope to remove most of the dead needles and debris from the ramets.

Grass will be mowed as close as practical before laying the fabric.

Closer observations will be made to determine the ripening of the cones. The shaking of the ramets to remove the seed will probably be limited to the afternoon.

Fasten the fabric at regular intervals to prevent the rolling up action caused by air movements.

Additional drying of seed before storage may be necessary.