GEORGIA FORESTRY COMMISSION LOBLOLLY SEED COLLECTION TECHNIQUE

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The Georgia Forestry Commission successfully collected Loblolly seed from approximately 50% of its Loblolly seed orchards in 1973 using polypropylene fabric. Conventional cone collection methods were used as a check on the other 50 percent.

The Georgia Forestry Commission Loblolly seed were first harvested by means of a high ultraviolet resistant fabric, polypropylene, in 1971. This pilot project involved laying the fabric completely over two acres of seed orchard to catch the Loblolly seed after being dislodged by the tree shaker. Due to the poor cone crop in 1972, sufficient seed were not available to work out the various techniques needed for a normal operation. However, we determined the project was successful enough for operational scale. By the Spring of 1973, enough fabric had been acquired to cover 48 acres for 1973 harvest.

We have passed through two seed collection seasons. The steps involved in our seed collection has changed very little, although modifications have been made in various degrees.

There are several phases to consider in this method of seed collection:

1. Specification of material
2. Types of equipment
3. Preparation of orchard
4. Time, starting date, weather conditions
5. Seed collecting procedure
6. Labor
7. Cost

There are two primary changes in the specifications since 1972. One, a wider selvage edge is required. Second, we ordered 16.5 feet wide material rather than 16 or 17 feet. This width has been necessary for sufficient overlap to fasten the fabric. Our older orchards are planted on a 16' x 16' spacing.

The following specifications were used in ordering the polypropylene material in 1973. The cost was $726.40 per acre or $.80 per linear yard. Approximately 28 linear yards are lost to the overlap procedure or $22.40 per acre. (See attached specification sheet).

A small section of the material was laid in the field and staked on December 22, 1971, to determine what effects various weather conditions would have on the lasting quality of the material. The material was tested recently and no significant deterioration was noted.

The following is equipment suggested for Loblolly seed harvest:

1. Farm tractor
2. An attachment to fit three point hitch of tractor to help distribute and retrieve fabric.
3. Powered roller to help in districution and retrieving process of the fabric.
4. Machine to separate seed from debris (mainly pine straw).
5. A scalper to further separate the debris from the seed.

Preparation of the orchard for seed collection begins by the first of October. All grass should be mowed. Larger weeds around base of ramets and empty spaces should be removed so the fabric will lay flat. This helps to prevent any air currents from moving under the fabric.

Long range and current weather forecast is desirable since weather plays a major part in seed collection. Moisture is one of the most important factors influencing the opening and closing of cones. All plans to begin or continue the shaking operation, which removes the seed from the cones, can be interrupted by rainfall. The moisture closes the cone and prevents seed drop. Several surveys are made to determine the starting date. This decision is made by noting the number of clones and ramets having sufficient opened cones to justify shaking operations.

The fabric is laid at the first sign of seed drop. A farm tractor is used to roll out and retrieve the fabric. This is accomplished by fastening a wooden 2 x 6, equipped with spikes to the three point hitch. The tractor with this attachment, hooks the fabric and with its forward motion, pulls the material from the roll that is mounted on a free wheeling axle, thus distributing the fabric through the orchard.

Several methods of fastening down fabric was used. Presently, we are using a staple gun with an anvil and small staples to fasten the fabric together. These staples do not have to be removed prior to roll up of the fabric. They will pull out with no apparent damage to the fabric. However, employees guiding the fabric on the roll up machine and card-board core must wear gloves to prevent cuts.

A P.T.O. power roller mounted on a-farm wagon is used to roll the fabric on a 4" diameter cardboard core upon completion of the seed harvest.

Our clones have varying cone ripening dates. There is approximately four to five weeks difference between the early and late ripeners. Because of this, it is necessary to shake at two different intervals. The first, shake only ramets having mature open or partial open cones. Second,shake every cone producer (usually 10-14 days later) since some seed will be left from the first operation. After the first shaking operation, it is necessary to collect the seed by pulling the fabric in and redistributing it for the next shaking operation. This prevents any loss of seed to birds and rodents.

The tractor pulls in the fabric emptying the seed and debris on a previous laid section of fabric. This gives a wind row effect for easy accessibility for the combine to separate the seed. The roll of pine straw and pine seed is then covered and left until all fabric has been collected.

Separation of the seed from pine straw and other debris has caused some concern. Different types of machines were checked and discussed. A peanut combine was decided on and purchased. It was modified and now readily separates the seed from the straw. The seed and straw are forked into the combine at a slow enough pace to prevent a buildup of straw. Feeding the machine too fast causes the straw to break down into small parts, making further separation difficult.

A bag is used to catch the seed as it is combined. It has previously been made from Saran cloth but other material is being investigated since Saran has not been satisfactory.

The seed is then transferred to our Macon Processing Plant for the final cleaning process.

Labor is always a critical situation. Our procedure usually takes between 11 and 15 men for the period of time necessary to distribute and collect the fabric.

We believe, the yield per acre by seed collection is as good as cone collection. The following 1973 cone and net collection results indicate this to be true. It should be noted, the net fabric was distributed under the most productive areas.

1973 GFC LOBLOLLY

Seed Orchard	Bushels	Lbs. Per Bus.	Total Lbs. of Seed	Acres	Lbs. Per Acres	Cost Per Pound
Arrowhead	310	.55	171	14	12.2	$18.51
	Net Fabric	--	1,115	32	34.8	8.75
Horseshoe	737	.94	699	28	25.0	6.09
	Net Fabric	--	437	14	31.2	4.55

The difference in cost per acre between Horseshoe and Arrowhead Seed Orchard is the labor at Horseshoe is mostly from the prison system. All labor performed at Arrowhead was by GFC unit personnel causing the increase labor cost. All costs were taken into consideration including personnel, mileage, equipment and fabric depreciation.

To facilitate the seed collection, the following changes are desired:

1. A new type core to roll fabric on. The cardboard core is very easily damaged to the extent it is beyond use. Also, outside storage is impossible as long as cardboard cores are used.

2. An improved collecting material for use during the combining procedure.

e. To prevent the distribution of the fabric twice during the seed collection period, a machine is needed to collect the seed as they are shaken from the cones.

SPECIFICATIONS FOR PLASTIC FABRIC, POLYPROPYLENE

15,050 lin. yds. Patchogue Plymouth seed collection net or Equal

Ship - 67 rolls, 223 lin. yds. each, 16.5 ft. wide
1 roll, 109 lin. yds. each, 16.5 ft. wide

Weave Count - Minimum 6x6 (12x6, each warp has 2 ends)

Weight - Not less than .829246 pound per lin. yd.

Tensile - Minimum 75 lbs. per sq. inch, both directions

Yarn Stability - 250 grams per inch

Package - 16.5 foot wide rolls in multiples of 223 lin. yds.

Outdoor Wearing - Minimum of 70% retention after 400 hours in weather-o-meter

Selvage Edge - Minimum of 1 1/4" selvage area for each edge.

ALL CORES TO BE CONTINUOUS IN 17' LENGTHS.
