SEEDING

We obtain our seed from commercial suppliers and industry seed orchards. We use the best quality seed, both genetically and physically, that is available.

Our seeding operation begins in mid-April for longleaf and mid-June for the loblolly. The longleaf is grown about 18 weeks and the loblolly about 14 weeks before outplanting in the field.

We use a pre-mixed peat moss (3 parts) and vermiculite (1 part), with no additives, from a commercial supplier. Water is added to the media utilizing a ribbon blender. The containers are filled by hand and then seeded with a vacuum seeder. The longleaf is double seeded, and the loblolly is single seeded. The containers are then placed on the tables by hand.

SEEDLING DEVELOPMENT PERIOD

Initial fertilizer and fungicide applications are made at 21 days At this time we also transplant excess longleaf seedlings into empty cells ideally before the radicle grows over 1 1/2 inches long. We are seeking methods to minimize or eliminate the transplanting because it is labor intensive and very expensive. We also suspect some development problems with transplanted seedlings. After a 28-day germination period, the crop is thinned. We remove the shade as soon as the seedlings are established, usually about 6 to 7 weeks. We have found that the trees develop much better in full sunlight. Fertilizer and fungicides are applied through the irrigation system utilizing an injector. After 18-20 weeks, root collar diameter usually averages about one-quarter inch.

SITE PREPARATION

Site preparation is accomplished by herbicide application and burning in July or August. On longleaf sites, generally Hexazinone is aerially applied in liquid or granular form, or by hand with a spotgun. We prefer a broadcast method for more effective herbaceous control. Hand application is predominantly used where we have a local ban on aerial application of herbicides. Burning is usually done with the aid of a helicopter.

PLANTING

In Alabama, container planting season is mid-September to mid-November. Starting time will vary due to soil moisture conditions. A three-day supply of trees is delivered to the district office from the nursery. The day prior to a shipment, the seedlings will be fertilized and well watered. Logistics has been a real challenge. Initially, we sought to pull seedlings and transport them to the field in some type of container for direct planting. Our primary motivation was to conserve the life of the styrofoam container, as it is a major investment. When these first efforts failed, we designed and constructed a trailer for

transporting the styrofoam containers, and provided aluminum trays in which to carry the containers. These worked reasonably well, but the problem was to keep the planterman supplied with sufficient trees. We have changed to plastic containers and returned to extracting and packing at the nursery, which solves most logistics and planting production problems. We take to the field only what will be planted for that day. This enables us to keep the trees on the nursery tables in their containers, where it is much easier to maintain them, or at the office where they can be protected and watered as necessary. My crew and I prefer planting from the boxes rather than the containers. Each box has approximately 250 seedlings. All our container seedling planting is done by hand with our company crew and contract labor. The average number planted per man day is about the same as bareroot planting.

Hand planting seems to work best for us due to the terrain, as does planting longleaf and loblolly on the same tract based on the most desirable site. We have used a cone-shaped plugger, but prefer a dibble or hoedad. Our crew size will vary from 8-12 men with one man transporting trees from the truck to plantermen. Planting depth is critical as the peat plug must be completely covered to prevent wicking, and the bud position must be exposed. We have tried spring planting and found that early spring is satisfactory, but fall planting is preferable. Our nursery is not equipped to over winter the seedlings. Past spacing has been 7' X 10' with a survival potential of 95+%. We are considering some reduction in trees planted per acre as a result of this good survival rate.

VEGETATION CONTROL

Herbaceous vegetation control is used on every tract in the spring following planting. Herbicide combinations used to date include 3 oz. Oust with 1 quart of Velpar in 5 gallons total aerially applied mix, or 3 oz. Oust and 16-20 oz. Roundup in 10 gallons total mix. Hand application has also been successfully employed with the Roundup/Oust mixture by backpack sprayer. While it uses much less herbicide and a lot more labor, it is not preferable to a broadcast method. Especially on spotgun treated tracts, it is difficult to find all the seedlings due to heavy herbaceous growth. We only apply herbaceous control one time and seem to get most of our trees out of the grass stage in the second growing season.

CONCLUSION

Our years of effort and experimentation at Gulf States Paper Corporation have resulted in a very satisfactory and successful containerized seedling operation. By using high quality seed and carefully monitoring the development of the seedlings in the nursery, we achieve hardy seedlings which, properly planted, have a 95% survival potential.

LITERATURE CITED

Sasnett, H. P., D. R. Larson, J. W. Foster, Jr. 1989. Establishment of Longleaf Pine at Gulf States Paper Corporation. In: Proceedings of the Symposium on the Management of Longleaf Pine. April 4-6, 1989. Long Beach, Mississippi. Robert M. Farrah, Jr., (Ed.). USDA For. Serv. Gen. Tech. Rep. SO - 75. pp. 232-236.