

## NEW DEVELOPMENTS IN SOUTHEASTERN AREA NURSERIES

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Reforestation in the Southeast is big business. During the 1974-75 planting season more than one million, 200 thousand acres were planted in the Southeast. This total acreage amounts to 1,875 square miles which is almost as large as the State of Delaware!

In order to produce the 930 million seedlings for this planting job, large nurseries are essential. For example, the States of Georgia, Florida and Alabama, had over 1,500 acres of nursery space available for production in 1974-75 and produced more than 364 million seedlings which amounted to 28% of the U.S. production for that year.

In addition to large nurseries, other factors which favor large production figures in the Southeast are: Few species (over 90% of the seedlings are southern pines), a long-growing season, and fast-growing species which seldom require transplanting in the nursery. Almost all of our seedlings are shipped as 1-0 stock. Eastern white pine (Pinus strobus) is an exception--it is usually grown as 2-0 stock.

### TREE IMPROVEMENT IN THE SOUTHEAST

Tree improvement in the Southeast is an integral part of the reforestation program. The only way that the goal of the "South's Third Forest" (doubled wood production by the year 2000) can be met is by an increase in the quality of seedlings as well as the quantity of seedlings. Genetically-improved seedlings are currently producing 15-20% more volume growth than nursery-run seedlings and we expect an equal amount of improvement from our second generation selections.

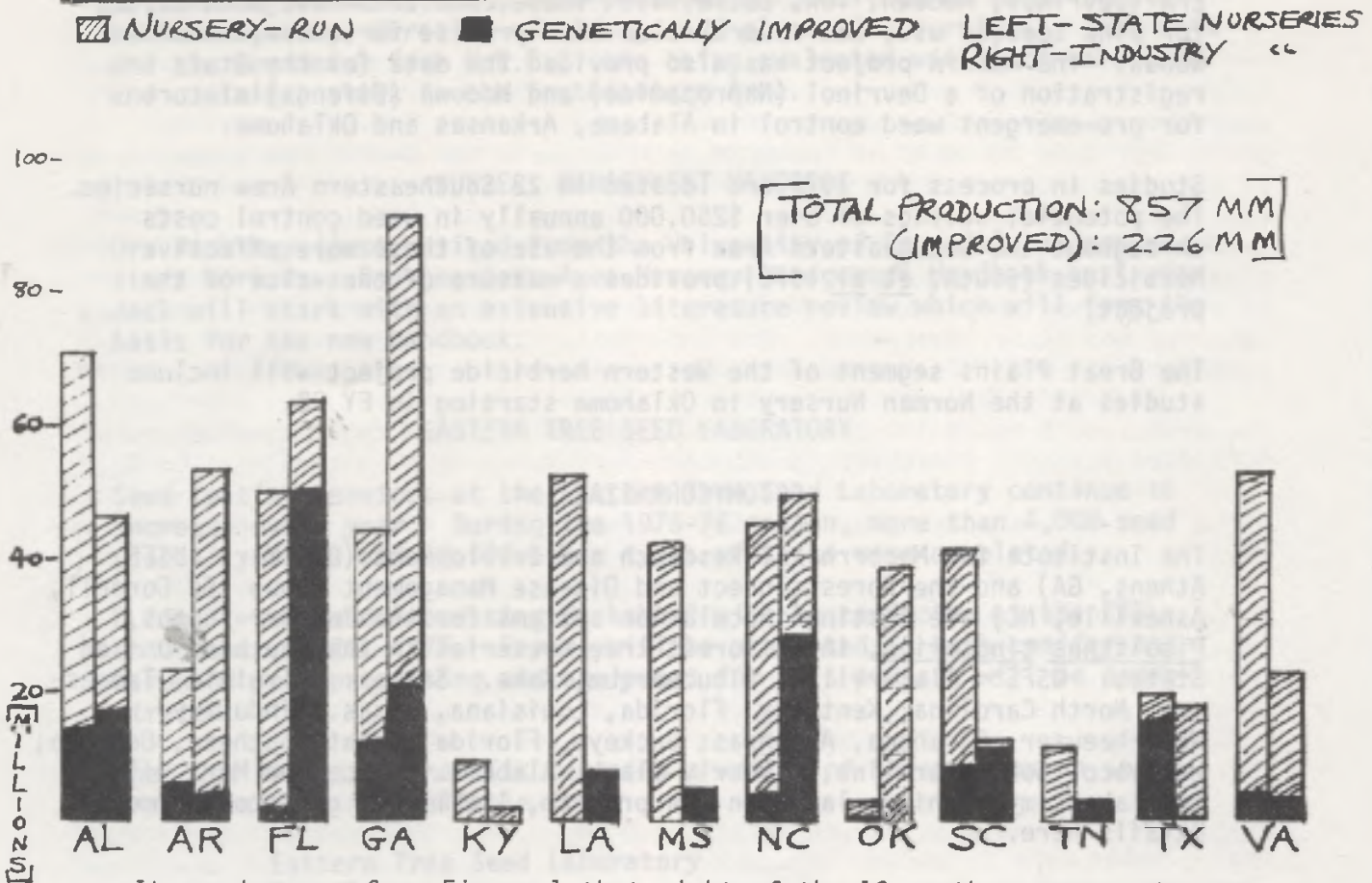
All of the Southeastern State Forestry organizations have active tree improvement programs. In addition, several of the States and most of the larger forest industries are active in one or more of the three tree improvement cooperative programs (North Carolina State, University of Florida, Western Gulf). Region 8 of the U.S. Forest Service has an active tree improvement program, as does TVA.

Genetically-improved seedlings from federal, state and industrial sources in the Southeast amounted to 226 million in the 1975-76 season (Figure 1). This was about 26% of the total production of 857 million for the Southeastern Area.

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FIGURE 1.

1975-6 SEEDLING PRODUCTION - SOUTHEASTERN AREA



It can be seen from Figure 1 that eight of the 13 southeastern states are producing some improved seedlings. It is also apparent that industrial nurseries in Alabama, Florida, Georgia, North Carolina and South Carolina are all producing substantial quantities of improved seedlings. Several companies are producing all of their planting stock from improved seed and all of the loblolly and slash pine seedlings from the State nurseries in Georgia will be from improved sources this year.

WEED CONTROL IN NURSERY SEEDBEDS

With the implementation of the National Pesticide Control Act of 1972, all herbicides must be approved by EPA and labeled for use by the manufacturer. Registration by EPA usually requires three years of research data followed by one year of analysis. In addition, manufacturers are often reluctant to label these chemicals for forest nursery use due to the high liability involved with a limited market and very high value crop.

The Cooperative Forest Tree Nursery Weed Control Project at Auburn University has been active in the screening, field testing and registration of nursery herbicides for the past several years. The Southeastern Area of State and Private Forestry has provided financial support which has been supplemented by industrial funds this year. The project has been instrumental in providing the data for four pre-emergent herbicides to



EPA (Devrinol, Modown, Tok, Butralin). These chemicals have been tested for pine seedbed use, and several also show promise for use with hardwoods. The Auburn project has also provided the data for the State registration of a Devrinol (Napropamide) and Modown (Bifenox) mixture for pre-emergent weed control in Alabama, Arkansas and Oklahoma.

Studies in process for 1977 are located in 23 Southeastern Area nurseries. The potential savings of over \$250,000 annually in weed control costs throughout the Southeastern Area from the use of these more effective herbicides (South, et al 1976) provides a measure of the value of the project.

The Great Plains segment of the Western herbicide project will include studies at the Norman Nursery in Oklahoma starting in FY 78.

#### ECTOMYCORRHIZAE

The Institute for Mycorrhizal Research and Development (Don Marx, USFS, Athens, GA) and the Forest Insect and Disease Management Group (Ed Cordell, Asheville, NC) are testing inoculation systems for the "wonder-fungus," Pisolithus tinctorius, in 16 forest tree nurseries in the Southern United States: USFS: Placerville, Albuquerque, Ashe. States: Virginia, Tennessee, North Carolina, Kentucky, Florida, Louisiana, Texas. Industry: Weyerhaeuser, Oklahoma, Arkansas; Buckeye, Florida; Great Southern, Georgia; Westvaco, South Carolina; Kimberly-Clark, Alabama. Since Don Marx will talk about mycorrhizae later in the program, I will not go into any more details here.

#### ØYJORD SEEDER

After screening a number of promising nursery seeders, the USFS Missoula Equipment Development Center has identified the Øyjord seeder as the unit with the highest potential for U.S. nursery use.

Trials of this seeder at Ashe Nursery (Schowalter and Martin, 1977) indicated that there are many good features of the unit. Among these are ease of calibration and ability to effectively sow small seed lots. In addition, when the seed are drilled they are covered with a thin layer of soil which appears to improve germination. It was also noted that there are several mechanical modifications which would improve the operation of the unit.

The seeder is manufactured in Austria and has been difficult to purchase from the U. S. Negotiations are currently underway with a west coast corporation for the manufacture of the seeder in this country.

#### RYKERSCOPE

The portable oscilloscope developed by Russ Ryker (Intermountain Forest and Range Experiment Station) appears to have a great potential for

determining dormancy and growth patterns in seedlings as these relate to lifting time, duration of storage and plantation survival. This unit and the new model from M.E.D.C. are being evaluated with both bareroot and container stock in the Southeastern Area.

#### NURSERY MANAGEMENT HANDBOOK

Dr. Jack May (just retired from the University of Georgia) has agreed to start work on a Southeastern Area Nursery Management Handbook next year. Jack will start with an extensive literature review which will form the basis for the new handbook.

#### EASTERN TREE SEED LABORATORY

Seed testing services at the Eastern Tree Seed Laboratory continue to increase every year. During the 1975-76 season, more than 4,000 seed viability tests and 10,500 other types of tests were completed.

A "Small-Lot Seed Processing Workshop" will be conducted at the ETSL on October 18-20, 1977. Papers will be presented on both conifer and hardwood seed processing and equipment for this purpose will be demonstrated.

The 20th Report of the ETSL contains a wealth of information on seed processing and is available from:

Eastern Tree Seed Laboratory  
Box B19  
Macon, GA 31202

#### RESEARCH NEEDED

As in the rest of the country, more research on nursery management is urgently needed in the Southeast. We need more knowledge of seedling physiology and nutrition, soil management, mechanized grading and hardwood seedling management. Unfortunately, we see almost no new research in these areas.

#### LITERATURE CITED

Schowalter, W. and C. Martin 1977. Notes on the Øyjord Seeder. Pollen Grain 11(1):13-14, USFS, S&PF, Atlanta, GA.

South, D., R. H. Crowley and D. H. Gjerstad 1976. Herbicide weed control results in pine seedbeds. Proceedings of the Southeastern Area Forest Tree Nurserymen's Conference, August, 1976.