31. TREE IMPROVEMENT ACTIVITIES AT THE ALABAMA POLYTECHNIC INSTITUTE

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In reviewing forest tree improvement work at Auburn, it will be necessary to mention briefly two old projects. You probably know that the Alabama Polytechnic Institute pioneered in planting slash pine north of its natural range. As early as 1927, experimental slash pine plantations were established at Auburn, a location about 100 miles north of the natural range of this important tree species. Since 1927, and in no small measure due to the success of these early plantations, slash pine has been extensively planted in many parts of the South north of its natural range.

Another project was started in 1940. Arizona cypress was successfully introduced to Alabama and, later, to other areas in the South. This is a tree well adapted for Christmas tree production. Experimental work with Arizona cypress is continuing at Auburn. It is directed mainly toward developing better and more economical methods of producing high quality Christmas trees. For a number of years grafting and rooting of Arizona cypress cuttings have been tried at Auburn. Like many other conifers, Arizona cypress is difficult to graft or root, but a certain amount of success has been achieved. Arizona cypress apparently is one of the most genetically variable trees. Trees of excellent quality have been produced from outstanding parent material. Only the trees of best form, of course, are useful in Christmas tree production. A typical Arizona cypress plantation provides a good example of wide variability in trees. The differences between individual trees probably are due to inheritance.

Several crosses of loblolly and shortleaf pines, furnished by the Institute of Forest Genetics in California, are being tested at Auburn. These crosses were planted, according to a specific experimental design, in competition and comparison with pure loblolly and shortleaf pines.

Auburn is participating in the southwide study of geographic seed sources that is directed and coordinated by a subcommittee of the Southern Forest Tree Improvement Committee. Six lots of shortleaf pine and nine lots of loblolly pine have been planted on an outlying experimental forest in Coosa county. Good survival was obtained and the plantations can be included among those established elsewhere, and classed as the successful.

In addition to the standard seed source plantations, stock of known geographic origin was used to replicate the experiment in part on another experimental forest in Autauga county. The seedlings came from surplus stock raised in the Auburn Nursery. Shortleaf, loblolly, and longleaf pine were planted.

Our most important undertaking in forest tree improvement work is just being started. It is basic research in physiology of small seedlings. Early in 1954 the Association of Southern Directors of the Agricultural Experiment Stations approved a regional project in forest tree improvement. The title of the project is "The application of genetics and cytology to the improvement of southern pines". Under the general scope and objectives of this project, a contributing state project was initiated by the Alabama Agricultural Experiment Station under the title: "Some physiological characteristics of the progeny of selected southern pines and their interrelation with nursery practices, survival, and early growth". The project was approved by all committees concerned and by the Office of Experiment Stations in Washington on November 15, 1954.

This project is broad in scope. It was necessary to divide the work into several phases. The work now under way is concerned with "The food reserves of genetically selected southern pine seedlings". A. R. Gilmore and J. T. May are co-project leaders. Because the work is so new, there are no accomplishments to report. Next year, a report can be made on progress of this work and, perhaps, on other phases of the project.

The Auburn study is a cooperative one and supports regional work in tree improvement sponsored by the state agricultural experiment station. It is designed to go one step further in the genetics program. It proposes to evaluate the effects, if any, of nursery management on inherited superior characteristics and to compare superior stock with average stock. The work at Auburn is dependent on obtaining materials from geneticists working at other centers. Such cooperation is already being received from Georgia and additional materials may be supplied by the Texas Station. In our search for small supplies of genetically distinct strains of pines, we undoubtedly will be making contacts with other agencies. Cooperation is one of the cornerstones of tree improvement work in the South, and, fortunately, everybody is imbued with a spirit of generosity and is sharing what he has.

You can see that work in forest tree improvement at Auburn is slanted toward physiology and is related to research in nursery management. Further work is planned to test stock of superior pines on various planting sites. Hence, the third segment of the tree improvement program will be covered and problems of landowners wishing to plant this stock will be evaluated and, it it hoped, solved.

In Alabama we have not received large grants for research work in forest genetics. Money made available for this work has been channelled into basic research as previously outlined. We feel that selection of superior trees and establishment of seed orchards and seed producing areas is being adequately studied elsewhere at present. This type of work is highly important to the planting programs of the immediate future. We think, nevertheless, that our work will make its contribution to the overall tree improvement program in the South and will add to work already under way.