GENERAL SESSION, JUNE 8

THEME: FOREST TREE IMPROVEMENT—PROGRESS AND OUTLOOK
WHERE WE STAND ON PROGRAMS:

Cooperative University and Industry Programs

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It is not possible to talk about cooperative programs without including the participation of public agencies, which are an integral part of the cooperative effort. The North Carolina State Cooperative includes twenty pulp and paper industries and three state organizations. State agencies also participate in the Florida and Texas cooperative programs. Our supporting industries were eager to have state participation, for improved trees obtained from state nurseries benefit us just as much as improved trees from our own nurseries.

The objective of the cooperative programs is to get as much production from each acre as soon as possible. The urgency is great--at no previous time in history have the pressures for land and timber been so great. Until recently, foresters and industrialists have recked along, quite complacent about the adequacy of the raw material. Published figures showed growth greater than drain, and the main job of many procurement men was to keep too much timber from coming into the woodyards. Several years ago, one person from our own university published an item in a local paper entitled "Let's Plant Trees-- but--Who Will Use Them?"

This complacency has been thoroughly shattered. No longer do we hear about the timber surplus. Periodically, the companies in the Southeast find themselves scrambling frantically to keep a supply on the woodyard. Lack of labor, lack of rail transport, and good prices for agricultural products contribute but availability of timber at a reasonable price is a major consideration. Land is more expensive, competition for wood keener, stumpage prices higher, reluctance for the farmer to sell greater. No longer are the great reserves for emergency such as Alabama available. No longer can a company have its and partially productive and buy more land to keep up with mill expansion. High value of forest land and high taxation make it necessary for every acre to produce the maximum. During the past several years, several organizations have been operating nearly full-scale on their timberland areas reserved for emergencies—some are cutting five years ahead of their management plans. Some have satisfied their administrative people by juggling rotation ages so it looks as if their timber supply is adequate. But none of this helps produce more timber.

Here is where tree improvement programs come into the picture. The need is great for both pine and hardwood, but unfortunately we have too little and it comes too late. Seed orchards in our cooperative produced enough seed to plant 20,000 acres this year, only about ten per cent of our needs. If we had started just five years earlier the situation would be much improved. The problem is getting particularly critical for hardwoods.

The cooperatives are booming' We no longer say what gains we hope to achieve; we talk about what we have achieved. We know disease resistance is strongly inherited, there are families nearly completely resistant to fusiform rust and others nearly 100 per cent susceptible. We know straightness of stem and specific gravity of wood can be changed significantly. We have families that produce 300 more pounds of dry wood per cord than others and some where nearly every tree is straight enough to make a pole.

We have one family that has high specific gravity, grows about three cords per acre per year, and produces three tons of dry wood substance per year. In seven and a half years this family grew about four tons more dry wood substance per acre than one of the other selected families under test.

Volume growth improvements have been much greater than anticipated. Fifteen per cent improvement is not unusual and an occasional specific combination has 50 per cent improvement. An open-pollinated progeny test on a poor site, now 15 years old, grew 106 cubic feet per acre per year in check plots while the average yield of the select progenies was 126 cubic feet per acre per year. One family grew 160 cubic feet per acre per year.

There is considerable interest in supplemental sources of fiber from crops such as kenaf or from short-rotation, fast-growing hardwoods. It seems inevitable that these sources will play a part in solving the raw material problems of the industries.

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Anotner source of interest is imported fiber from places such as Brazil or Chile. Growth rates are fantastically high, land costs and labor costs are low. Transportation costs are not too high. As more stability of South American governments is achieved it is nearly certain that members of the cooperatives will draw from these countries more fiber than they are drawing at present. Tree improvement will play a dominant role in such activities.

Nearly every major pulp and paper industry in the Southeast is a member of a cooperative program. They need improved seed, but they also want information and research to help in their management practices. What spacings will be used, what rotation ages followed? Many have studies under wqy to help in these decisions and in such problems as when to save a log for sawtimber rather than cut it for pulpwood. Nearly every industry is now involved to some degree in fertilization. They need to obtain strains of trees that will respond best and make maximum use of the fertilizers applied. There is a desperate need for strains, hybrids or species of trees that will grow better on poor or marginal sites.

The tree improvement cooperative programs, combining the resources of the universities, industries, and public agencies are unique in the world of business, Where else can you find competitors willingly exchanging ideas, plant materials, equipment, and aid? Where else are research findings made immediately available to all concerned? Where else are frequent meetings held at which free exchange of information is given?

In summary, I classify the cooperative industry tree improvement programs as unqualified successes. They have been too late to meet the present acute need, but not too late to make a major contribution, Their secondary effects on forest management and wood utilization have been strong, and forestry ,n the South feels their influence. Despite all this, they need strengthening.

Research is lagging and more students are needed. Problems such as graft incompatibility, efficient cone harvesting, and proper use of systemic insecticides need attention. Emphasis has been on the more applied phases of forest research, but better liaison must be established with other research organizations. Most importantly, effort needs to be placed on second- and third-cycle breeding for much greater improvement than has been obtained from our current seed orchards. And finally, the supporting organizations have to keep those of us involved in the cooperative programs on the ball. Accomplishments in a short time are good, but the main benefits lie ahead.