A SHORT REVIEW OF THE R-8 TREE IMPROVEMENT PROGRAM

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One of the first decisions necessary for planning the R7-8 tree improvement program was the scope of the program essential for gaining the objective. The objective is to provide sufficient seed for reforestation needs from the best geographic and parental sources. This All be accomplished by improving seed source to produce more volume and better quality trees upon the National Forests.

The tree improvement program logically falls into three phases: seed production area establishment, seed orchard establishment, and incorporation of tree improvement principles in silvicultural practices. Although all three phases started at the same time, the seed production areas will take less time to establish and will be completed first. In determining the scope of this phase, three considerations define the limits. First, seed production area seed, while unproven but certainly better quality than present wild collections, is a temporary source until the proven orchard seed is available. This is estimated to be 20 to 25 years. Second, with the cessation of wild collections, seed production areas will be our only source of seed for 25 years after which they will be abandoned. Third, seed needs during the next 25 years determine the acreage of the seed production areas.

Seed production area seed will be used for reforestation of open land, stands below a satisfactory level, and areas occupied by low value or worthless species. It is estimated that approximately 750,000 pounds of seed are needed for the job. The seed production acreage needed to produce this seed during the next 25 years is 2,970 acres. All of these areas will be completely established this year.

The second phase of the tree improvement program is the selection of superior trees and their propagation in seed orchards. The estimate of 20 to 25 years before the mass production of seed from the orchards eliminates the need to consider this type of seed in the current reforestation job. At the present reforestation rate, this job will be completed in 20 years. The superior qualities of the trees grown from seed produced by the plus trees in the orchard will make the retention of present stands undesirable. The progeny tested seed producing trees of exceptionally better growth, form, and wood qualities will force the liquidation of present stands at rotation age and their replacement with super trees in the interests of good forest management. This is the basis for estimating the orchard acreage needed.

The acreage of pine seed orchard needed to replace the present stands in one rotation is 1,210. All pine orchards will be completely established by 1967. A breakdown of geographic sources is as follows:

Seed orchard acreages by seed sources

Orchard		Acres
1. Mississippi Seed Orchard		
Mississippi seed source		120
Alabama seed source		90
Florida seed source		170
	Total	380
2. Stuart Seed Orchard		
Texas seed source		100
Louisiana seed source		90
	Total	190
3. South Carolina Seed Orchard		
Uwharrie and Croatan seed source		10
South Carolina seed source		90
Georgia seed source		50
	Total	150
4. North Carolina Seed Orchard		
Tennessee seed source		60
North Carolina seed source (Less Croatan and Uwharrie)		100
Georgia seed source		20
	Total	180
5. Arkansas Seed Orchard		
Ouachita seed source		210
Ozark seed source		100
	Total	310

Since the goal of the National Forest Administration is the production of high quality sawtimber, the tree characteristics important in achieving this goal are considered in superior tree selection.

The following items are considered in superior pine tree selection:

1. Volume
2. Height
3. Pruning ability
4. Form class
5. Straightness
6. Branch diameter
7. Crown diameter
8. Age
9. Branch angle

In addition to these qualities, the specific gravity of the candidate tree must be within the middle two-thirds of the specific gravity range for that species and source (except sand pine which is used for pulpwood). The tree must also demonstrate its ability to flower. If there are no cones on the tree, a complete release is given and cones must be produced within 3 years or the candidate is rejected.

Pine seed zones and number of superior tree selections needed

Forest		Number species or zones	Total number approved trees needed at 50 per zone	Total approved as of 8-15-64
Alabama	longleaf (2 zones), loblolly, slash	4	200	27
Cherokee	shortleaf, Virginia, white, loblolly	4	200	13
Florida	slash, longleaf, sand	4	150	82
Georgia	white, Virginia, shortleaf, loblolly	4	200	24
Kisatchie	loblolly, longleaf, slash, shortleaf	4	200	76
Mississippi	loblolly (2 zones), longleaf, slash	4	200	44
North Carolina	loblolly, shortleaf, longleaf, white	4	200	12
Ouachita	shortleaf (2 zones)	2	100	41
Ozark	shortleaf	1	50	19
South Carolina	loblolly (2 zones), longleaf, shortleaf	4	200	42
Texas	loblolly, shortleaf, longleaf	3	150	61
		Total	1,850	441

Hardwood selections and the corresponding expansion of the seed orchards are planned for the near future.

COMMENTS TO: S. P. Darby and Thomas F. Swofford

COMMENTS by Mr. Heltzel:

I don't believe there is anything more recent in Virginia than that Darby has. I would like to point out that this limitation of 140 acres is under current development at the present time and we hope to have it ready for planting by early winter.

COMMENTS by Mr. Rhody:

We are just getting started in Kentucky. We have had the cooperation of Tennessee Valley Authority for 30 years. We have a loblolly and shortleaf seed orchard started. We are going to start a white pine orchard this year. Along with the seed orchard, we are going into the seed production area because we need some seed quick. We're not going to wait for our seed orchard. We are going to continue development but we need seed now that we can depend on to be improved over seed from out-of-state and from commercial seed dealers. If anybody has some seed or orchard surplus, I'll be glad to put it to use.

COMMENTS by Mr. Antonie:

We might be interested in a little background music on this tree improvement program. It's incorporated in the Title IV Cooperative Program for State Foresters. Now in 1958, I believe, they had a 1-year program under the Title IV to help States plant trees for industrial purposes and they appropriated money; and then, they neglected to appropriate money until the last couple of years. They appropriated it again under the Title IV Purposes to Grow Trees for Industrial Purposes. The Title IV Program was originally to grow industrial wood --industrial trees for commercial purposes. Then, why not grow better trees for industrial purposes and finally they got tree improvement included in the Title IV Program. We are now cooperating with all State Foresters to some extent, to some larger extent in all of the southern states in the Title IV Program. And, do you know to what extent they have entered the program, Bill?

A. (Bland) All but Mississippi have joined the tree improvement program. Tennessee just recently entered. Mississippi is thinking about it.

Q. Has anybody here tried Thimet for insect control?
A. (Russell) We talked to our insect and disease control people about using it in our orchards and they indicate it is so deadly we're keeping hands off.
A. (Padgett) Bruce Zobel mentioned it first, about systemics. The information we have at present is that Washington sent us a letter saying we would absolutely not use Thimet except for experimental purposes. Right now, insect and disease would not recommend it.

A. (Darby) I don't know what chemicals they used, but the Southeastern Station has been running a study on the effects of chemicals with one of our orchards and some of the trees treated were killed. We couldn't get the bugs to bother the trees after they were dead; however, others they did. They are using some seedlings with this technique too.

COMMENTS by Mr. Vande Linde:

I don't think this spraying is as important as some think. I know a lot of people are spending thousands of dollars spraying their orchards and all they are doing is weakening their trees. It weakens the system, just spraying when we have to. Our trees are about 9 years old and we've sprayed one time and that was for cone rust.

COMMENTS by Dr. Foster:

I think Mr. Lehto is too bashful to say that the TVA's been using Thimet. So are a number of our industrial cooperators in the group. If you're growing shortleaf or Virginia pine, you almost have to use it unless you want to keep them down.

COMMENTS by Mr. Roberts:

We used Di-Syston for some 4 or 5 years. Until this year we used diammonium on a broadcast basis. The cost was rather high. This year we wrote one of the technical representative of Chemagro and he gave us a recommendation for an individual tree treatment which we did this year in early-March. Thus far, we haven't had any tip moth damage and very little cone set. We will apply our second application late this month. Di-Syston has given us good results. Better results on an individual tree treatment than on broadcast. So it seems to me the biggest problem is for nurseries.