23. TREE IMPROVEMENT ACTIVITIES AT PLACERVILLE, CALIFORNIA, AFFECTING SOUTHERN SPECIES

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In recent years, the Institute of Forest Genetics has sent out for testing about 85,000 sound seed of southern pine hybrids. They went to four companies, one Chamber of Commerce, five educational institutions, four departments, and five Forest Service experiment stations. Of these agencies 10 are located in your region, five are in the Central States region, two are in the Northeastern region, and one is in Puerto Rico. We will send some seed this month to Iowa where the shortleaf-loblolly F_2 has evidently found favor because of its survival and vigor.

Iowa was not the last place we had in mind when we made the shortleaf-loblolly cross; we didn't even have Iowa in mind at the time: A request by the Forestry School for the seed surprised me, and I shall continue to be surprised, albeit pleasantly, if the hybrids continue to prosper there. We had no particular region in mind when we made the cross. The sole purpose was to test the field performance of shortleaf x loblolly against the performance of shortleaf from the same seed-tree at the Institute. As the hybrids were beginning to suppress the shortleaf trees at 10 years, Jack Duffield removed the latter. Now, we have a very productive seed-orchard of 15-year-old hybrids. We have on hand about 120,000 seed from them.

I mention this example because it illustrates our policy respecting the use of exotics as seed-parents in breeding for the production of F_1 hybrids. Our interest is solely in reconnaisance or exploratory work. We want to find out whether or not two species will cross, what in general may be expected if they do, whether or not the hybrids are fertile, the character of their progenies, and finally the affinity of the hybrids for species other than their parental species. Since your southern species usually do not cross with our western pines, we cannot do anything very practical with the southern pines. They range over so much territory that we would need a good deal more land than we have to accommodate the sizeable samples of all the proveniences of the various species which we would need. In any case in which a species native to the South will cross with a California species, and there is at least one such case, we could, of course, be useful in a practical way.

We usually include pines native to the South in our annual pollination programs. As a result we have obtained, over the years, 9 F1 hybrids in which at least one of your pines is represented. They are:

1/ Maintained in cooperation with the University of California.

P. caribaea x P. palustris
P. echinata x P. caribaea
P. echinata x P. glabra
P. echinata x P. rigida
P. echinata x P. serotina
P. echinata x P. taeda
P. rigida x P. serotina
P. serotina x P. taeda
P. taeda x P. caribaea

Progenies of hybrids have been produced as follows:

(P. echinata x P. caribaea) x P. caribaea
(P. echinata x P. taeda) F_2
(P. echinata x P. taeda) x P. taeda
(P. echinata x P. taeda) x (P. taeda x P. caribaea)
P. echinata x (P. echinata x P. taeda)
(P. rigida x P. taeda) F_2
P. taeda x (P. echinata x P. taeda)

We are currently testing a form which apparently is the progeny of a longleaf hybrid.

We have a number of hybrids between longleaf and slash pines, produced. by Wakeley many years ago.

Our pollination program for 1954 included the following combinations:

P. echinata x P. caribaea
P. echinata x P. rigida
P. echinata x (P. rigida x P. taeda)
(P. rigida x P. taeda) F_2
(P. rigida x P. taeda) x P. echinata
P. taeda x (P. echinata x P. caribaea)
P. virginiana x P. banksiana

This year's nursery will contain materials obtained from crossings involving southern species.The crosses attempted and the number of sound seed obtained follow:

Cross	No. Seed
(P. echinata x P. taeda) x (P. rigida x P. taeda)	953
(P. echinata x P. taeda) x (P. echinata x P. caribaea)	742
(P. rigida x P. taeda) x (P. echinata x P. taeda)	385
(P. rigida x P. taeda) F_2	405
P. taeda x P. clausa	12
P. virginiana x P. clausa	366

No sound seed were obtained from the following attempted hybridizations:

P. pungens x P. clausa
(P. rigida x P. taeda) x P. pungens

Our pollination program for 1955 will probably include some work on southern species.

Possibly we can be of help to you from time to time by making suggestions based on the results of our work with your species.