

THE FORESTRY RESEARCH SURVEY IN RELATION TO TREE IMPROVEMENT

Frank H. Kaufert 1/ 2/

The year 1953, the 25th anniversary of the McSweeney-McNary Act of 1928, presented a suitable occasion for a re-examination of the whole structure of forestry research programs. Accordingly, the Society of American Foresters began a study of forestry and related research in North America during that year. The study was conducted by Frank H. Kaufert (University

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2/ Dr. Kaufert did not prepare his banquet address in manuscript form. The gist of his talk is presented, however, by excerpts taken by the editor from "Forestry and Related Research in North America," by Frank H. Kaufert and William H. Cummings, 280 pp., Society of American Foresters, 1955.

of Minnesota) and William H. Cummings (University of Michigan) under general supervision of a 5-man. steering committee selected jointly by the Council of the Society of American Foresters and the Division of Biology and Agriculture of the National Research Council. A grant of funds by the Rockefeller Foundation, New York, N. Y., made the project possible.

Results of the survey, published this year by the Society, cover the whole field of forestry and related activities. Here, however, we are concerned particularly with findings concerning forest tree improvement.

"In this survey, forest genetics research was considered to include all work dealing with (1) basic inheritance and cytology studies on forest trees; (2) the production of superior trees for planting through such processes as selection, hybridization, and induction of polyploidy; and (3) the development of techniques for the genetic improvement of naturally reproduced stands. Probably, the term 'forest tree improvement research' would more nearly define the field covered by this report.

"Research in forest genetics is expensive. Little progress can be expected unless more adequate financing is provided. Large immediate increases in funds could lead to waste, however, because there is a serious shortage of well-trained personnel. Doubling the funds available within the next 3 to 4 years, and a gradual increase to about 12 times the present expenditures of \$400,000 to about \$5,000,000 in 1978, should provide adequate financing for this program. The cost of breeding and improvement programs on such agricultural crop plants as cotton and corn is now in excess of \$5,000,000. Should we consider spending less than this for all of the forest genetics work needed on the more important commercial species with products valued at about \$13,000,000,000 annually?

"The nature of forest genetics research is such that public agencies will need to continue responsibility for the major part of future research. Forestry schools and other research groups associated with institutions possessing strong plant breeding staffs are logical centers for developing experimental work in forest genetics. Endowed institutions have made many contributions in fundamental forest genetics research, and should be encouraged to expand their programs for they appear to be the group in the best position to undertake some of the long-time basic studies so urgently needed.

"All agencies, including industries, should participate in the necessary expansion of provenance studies. This research should be under the direction of research workers, but it requires the cooperation and participation of practicing foresters if it is to be expanded to the extent needed. Such studies offer the greatest promise of early results of practical value, and most of the improvement in forest trees in the next century are expected to come from seed-source studies rather than from hybridization.

"Fundamental studies of hybridization, seed production, and genetic analysis should be concentrated at adequately staffed and financed research centers. Public agencies and interested industries should pool their resources in such centers rather than engage in fragmentary efforts° Too many poorly organized and underfinanced research starts have occurred in the past. The long-term nature of these studies, the fact that they are expensive, and that highly skilled and well-trained personnel are required must be recognized by everyone planning to engage in tree improvement research,

"Enthusiasm is easily developed regarding possible accomplishments through forest genetics research° Enthusiasm and optimism are essential, but they must be strongly linked with .realism., It is the obligation of research workers to inform foresters of the problems as well as potentialities of forest genetics research.

"To provide a larger number of well-trained research workers in this field, more fellowships must be made available for graduate students. Industries interested in forest genetics can make their greatest contribution by providing fellowship funds that would stimulate students to obtain training in genetics and physiology. In this field in particular, such contributions would have far more significance than attempts by industrial foresters to engage in tree breeding work as a sideline.

"Forest geneticists must work in close cooperation with wood technologists, pathologists, entomologists, physiologists, ecologists, economists, and silviculturists if the results of their work are to find eventual application."