IDENTIFYING SEED RESEARCH NEEDS

by

William I. Stein
Pacific Northwest Forest and Range Experiment Station
Forest Service, U.S. Department of Agriculture
Portland, Oregon

Knowledge about the storage, testing, stratification, and sowing of seed is an important part of every nurseryman's professional qualifications. Nurserymen are keenly aware of the many unexplained events and inconsistent results related to seed which occur while attempting to produce miles of seedbeds filled with even stands of newly germinated seedlings.

Proceedings of the Western Forest Nursery Council chronicle the continuing desire of nurserymen for more information on forest tree seed. A number of formal papers presented at previous meetings and many informal discussions have been directed toward obtaining good seed and using it more effectively. The continuing demand for more information on tree seed has triggered recent efforts to identify high-priority needs. Your Chairman has asked me to highlight those activities.

At the request of the Pacific Northwest Forest and Range Experiment Station's Forestry Research Advisory Committee, Director Philip A. Briegleb convened an Ad Hoc Tree Seed Research Committee to formulate a research program for tree and shrub seed. This Committee first met in September 1966, and an expanded Committee met again in May 1967.

The scope of the seed research field and the priority needs therein were discussed at length by the Committee. The Committee agreed that the field of seed research extends from seed formation to utilization, encompassing field development and all stages of collection, handling, storage, treatment, and dissemination. Two considerations received pointed emphasis and recognition in the Committee's discussion: (1) that quality and growth capability as well as the number of resulting germinants should be determined in evaluating the effects of collection, handling, storage, treatment, and dissemination on seed; and (2) that economic as well as biological information is needed for all major steps in seed procurement, processing, and use.

Recommendations made to Director Briegleb and the Station's Advisory Committee were as follows:

> The Ad Hoc Committee recommends that primary research attention be given to seed of conifers commercially important in the Pacific Northwest. This emphasis will also serve west-wide needs, since many of the commercial conifers have nearly west-wide distribution. In descending order of priority, research is also needed on seed of commercially important broad-leaved species, major browse and shrub species, and introduced species.
>
> The Ad Hoc Committee urges that a comprehensive literature review be the first activity undertaken in launching a program of seed research on conifers commercially important in the Pacific Northwest. Such a review would serve two purposes:

(1) provide a useful summary for all those seeking information on seed; and (2) help pinpoint the most promising avenues for additional research.

Improved and more inclusive means to evaluate seed quality MRS a central need repeatedly recognized in the Committee's deliberations. Purity, size, and germination are the seed attributes now commonly evaluated in laboratory tests. Faster and cheaper ways to make valid germination tests would benefit all those who use or study seed. Methods for determining such additional qualities as storability, vigor, origin, type of dormancy, etc., need to be developed. An easy, standard method for determining such an important item as seed moisture content is sorely needed. Thus, the Seed Committee places high priority on the further development of quality evaluation techniques to facilitate the efficient, knowledgeable use of seed and to provide methodology basic to all other seed research.

Within the seed research field, priority needs of seedsmen and seed growers and users differ slightly -- the seedsmen are primarily concerned about production of higher quality seed at more frequent intervals; the seed users are equally concerned about efficient use of available seed. Seedsmen identified fertilization, cone protection, maturity indices, cone storage, and new extraction technology as topics of major concern. Seed growers and users placed first priority on seed treatments followed closely by demands for more information on production, extraction, and storage of seed.

In summary, the Ad Hoc Committee recommends that research be aimed at achieving more efficient production and use of seed, with initial efforts concentrated on developing better means of determining and maintaining overall seed quality. Commercial conifer species should receive first priority. V

By resolution, the scope and direction of the recommended seed research program has been endorsed by the Station's Forestry Research Advisory Committee.2/ by the Western Forest Tree Seed Counci,3/ / by the Western Reforestation Coordinating Committee-4/ and by the Western Forestry and Conservation Association.5/

1/ Quoted from "Recommended Research Program for Tree and Shrub Seed," second report by the Ad Hoc Tree Seed Research Committee, on file, Pacific Northwest Forest and Range Experiment Station, Portland, Oregon 97208. October 31, 1967.

2/ Resolution 15, Report and Recommendations of the Pacific Northwest Forestry Research Advisory Committee, Fifteenth Meeting, November 1-2, 1967, on file, Pacific Northwest Forest and Range Experiment Station, Portland, Oregon 97208.

3/ Supplement E, Minutes of the November 22, 1967, Meeting, Western Forest Tree Seed Council, Portland, Oregon

4/ Page 30, column 2, in Western Reforestation. 1967 Western Reforestation Coordinating Committee Annual Meeting Proceedings.

5/ Page 86, Resolution 2, In Western Forests for All. Western Forestry and Conservation Association, 1967.

Since nurserymen have a vital interest in seed matters, I believe your organization may wish to formally consider the recommended research program and take appropriate action. I believe your Chairman anticipates some consideration of this topic during the business sessions.