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FOREST BIOLOGY DIVISION



**Introduction of Exotic Trees
to
British Columbia**

by

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Introduction of Exotic Trees to British Columbia



This experimental planting of pines was made on an old logging grade at Alouette River 15 years before the photo. Scots pine beside the man is 18 feet tall, 4.6 inches in diameter. Tree behind him is a red pine.

When the photo was taken, survival of both species was more than 90%; but subsequently the trees were badly damaged by animals and are now a complete loss.



Fifteen-year-old red oaks here on the Alouette River, between Pitt and Stave lakes, survived a severe fire five years after planting. The large tree is 12 feet tall. Both pictures courtesy of the B C Forest Service.

RECENTLY there has been an increasing interest in the importation of non-indigenous trees for test purposes, particularly by the forest industry. Up to date approximately 38 different species in some 70 test plantations throughout the province have been brought to the attention of the writers. Most of these are very young, however, and any assessment of their performance, aside from early growth and survival, is premature.

It is not the purpose of this article to attempt such an assessment, but rather, in view of the rapidly increasing volume of introductions, to point out some of the implications and problems inherent in a programme of exotic tree testing and of the danger of introducing foreign diseases or disease-susceptible species.

Exotics, except those used for ornamentals, shade trees, or arboreta, are introduced in the hope that they will fulfill a definite forestry need not met by native species. The desired quality may be rapid rate of growth, some silvicultural characteristic desirable on particular sites, or some special quality of the wood not found in native species. Thus, fast growth might be a desirable feature for fibre production; a species growing naturally on extreme sites might be suitable for reforestation similar sites here; and, in a region such as the Pacific Northwest, hardwoods might be tested to fill a need or potential need in the veneer and furniture industries.

CONSIDER FACTORS

The agency engaged in or planning to embark on a programme of testing exotic tree species, with a view to finding a species more desirable for a specific purpose than any native species, should consider a number of facts.

The chances of finding an exotic species which in the long run will prove superior to indigenous species is remote. There are, of course, exceptions, such as the classic example of Monterey pine in South Africa, New

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Zealand, and Australia; these, however, are rare indeed.

Early favorable performance by test trees is no guarantee of success and should not be taken as a signal for large scale plantation. Predictions as to the success of an exotic species cannot be made until the end of the first rotation and even then are not conclusive. This does not imply that all exotics are foredoomed to failure, but it is necessary to recognize that the chances of failure are great.

These observations are not intended to discourage the introduction of test material, but only to urge a realistic approach to the enterprise. Since the possibilities of determining accurately the ecological requirements of trees prior to their introduction are prohibitive by their cost and the limitations of known research methods, the selection of the introduction as well as the test site must be made largely on an empirical basis. It follows then, that since neither the ecological requirements of the test plant nor the diversity of the climatic, edaphic, and biotic components of the test site can be accurately measured, evaluation of the performance of test trees must also follow trial and error methods. This fact would imply that an accurate record of progress and a wide replication of tests are desirable. The replication seems to exist now in that there is much duplication of species among the various agencies carrying on programmes of exotic tree testing. The degree to which progress records are maintained and exchanged by the various agencies concerned is not known by the writers. Conscious effort in this direction would in the long run prove to be of benefit to all agencies concerned.

DISEASE PROBLEM

One of the most important problems facing introduced trees is the effect of native diseases which, while innocuous to indigenous tree species as a result of many years of natural selection, may prove to be limiting to the economic success of an introduced tree. Introduced trees will tend to be less resistant by virtue of their new environment, as well as the fact that they will nearly always be planted and thus less vigorous, at least at first,

than natural stands. Because different diseases take their toll at different stages in the life history of a stand, the process of evaluating a test tree for disease resistance is of necessity a long one.

Further, individual diseases which may prove damaging to a new host may take a long period of time to build up to the point where their significance is recognized. Replication would also be desirable to avoid misleading conclusions resulting from the chance escape from a disease by individual test sites.

There is another consideration with regard to disease which cannot be passed off lightly; this is the possibility of introducing foreign diseases on test material. Space does not permit a lengthy discourse on this subject and the numerous examples and possibilities are well treated by Boyce¹. One has only to consider the economic implications of such diseases as chestnut blight and white pine blister rust to find food for sobering thought. A close record of all introductions and a regular examination of test plantations, while not a guarantee, would go a long way toward reducing the danger of a serious disease getting out of control before detection.

INTRODUCTION REGULATIONS

Federal government regulations relative to the introduction of plants and plant products into Canada are covered by the Destructive Insect and Pest Act². This act was designed to guard against the introduction of damaging insects and diseases, including those affecting forests. Certain regulations under this act should be particularly noted by persons wishing to import nursery stock into Canada. A permit is required for the importation of nursery stock, including forest tree seed. This permit may be obtained on application to the Chief, Division of Plant Protection, Production Service, Department of Agriculture, Ottawa. The application must be signed by the importer and he must submit certain information as outlined under the regulations of the act.

There are specified under the act a list of prohibited imports, some of which are of particular interest to foresters:

"Plants, except seeds, of five-needled species of the genus *Pinus* and their horticultural varieties, from all countries. Plants, except seeds, of all species and varieties of the genus *Larix* from countries other than the United States of America. Plants, except seeds, of all species and varieties of the genera *Ulmus* and *Zelkova* including logs, burls, or wood with bark attached whether in a raw or manufactured state, from all countries."

Further, there are specific restrictions imposed on the importation of certain other plants from certain geographical areas, as noted under the

regulations of the act. Agencies and individuals wishing to import test material from abroad are directed to the afore-mentioned publication for details of the regulations governing the importations of plants into Canada and their movement between regions in Canada. A general review of the plant protection organization in Canada was recently published by McKeen and McGugan³.

INTRODUCTION REGISTRY

In view of the problems and dangers involved in introducing exotic species into British Columbia, the Forest Biology Laboratory, Victoria, and the B C Forest Service are endeavoring to provide a central registry for all introduced trees and test plantations in the Province. This project has the following aims:

- 1) The regular examination of test plantations to assess disease conditions and to assist in the eventual over-all assessment of species suitability.
- 2) To guard against the damaging spread of introduced foreign diseases.
- 3) To record important information that is frequently lost over the years as to species, source of seed, and location of plantation, and to assess periodically the adaptability of the species in terms of survival and general vigor.

It should be clearly understood that data gathered in test plantations will be held in the strictest confidence by both the Forest Biology Laboratory and the B C Forest Service. No detailed investigations or publication of specific data gained from these examinations will be made without the agreement of the companies concerned. In the same way, specific information sought by other interested organizations must be obtained directly from the company on whose holdings the data originated.

The service outlined, undertaken by the two government agencies mentioned, is new to this province and the co-operation of all concerned is urged. Notification, to the Forest Biology Laboratory, 409 Federal Building, Victoria, or the Research Division of the B C Forest Service, of any new introductions and plantations would greatly facilitate maintaining an up-to-date registry.

REFERENCES

- 1 Boyce, J. S. Exotic trees and disease. *Journal of Forestry* 39: 907-913. 1941.
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- 3 McKeen, D C and McGugan, B M. A general review of plant protection organization in Canada. *Can. Dept. Agr. (Paper presented at Seventh British Commonwealth Forestry Conference, Australia and New Zealand, 1957)*. 1957. *