

## PROSPECTIVES OF FOREST GENETICS AND TREE BREEDING IN A CHANGING WORLD

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This publication was born during the sessions of the Subject Group 2.02.00 "*Provenances, breeding and genetic resources*", organized by Csaba Mátyás as part of the 20th IUFRO World Congress in Tampere, Finland, in 1995. Its aim is to present an overview of selected areas of forest genetics and tree breeding. It is dedicated not only to forest tree geneticists and breeders but also to scientists of related fields. The background idea of the editor is to stress that "classical" tree improvement as compared to evolutionary genetics or gene conservation using molecular markers, should deserve more attention from scientists, decision makers and funding agencies, because increased production of man-made forests remain an important goal of the developed and the developing world.

The publication addresses three main topics: (1) aspects of tree breeding, (2) new applications for provenance tests, (3) conservation of forest genetic resources. Each topic is illustrated by a series of papers, all written by international experts in forest tree genetics and improvement.

Here are a few sentences sampled in the different papers which you certainly want to know more about :

- the genetic variance is simultaneously important to protect as well as to use genetic resources;
- in conventional seed orchards, genetic diversity is often higher than in natural populations;
- whether or not molecular markers can increase the efficiency of selection for the low heritability traits remains to be determined;
- genetic engineering offers a potentially viable approach for genetic manipulation of single gene-controlled traits;
- forest tree breeding is no longer on the wave;
- is local best ?
- it has always seemed obvious that the way a tree grows

under one set of site conditions ought to be related to how it grows under somewhat different conditions;

- good silviculture brings all plots to more or less the same volume. Provenance differences primarily lie in what is removed in intermediary fellings;
- most likely, all younger stands existing today will be exposed to climate change;
- long-lived immobile organisms such as forest trees will especially need human interference to enhance gene flow and adaptation to altered conditions in spite of an impressive hereditary capacity to adjust to changes;
- conservation of genetic resources and the other objectives of forestry ought to be fulfilled on a landscape level rather than in each stand;
- a trait with special adaptive relevance is survival. The information about adaptive traits should complement that from neutral markers in the process of decision making on gene resource conservation;
- international cooperation is needed for the conservation of forest gene resources.

It is almost sure that these questions, whether controversial or not, have drawn your attention. So do not hesitate to order this publication from the:

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