

Low Input Breeding and Genetic Conservation of Forest Tree Species
9-13 October 2006, Antalya, Turkey

Background Points and Recommendations

I. Background points

The conference presentations and discussions, among other things, established and/or reinforced the following points leading to our recommendations:

1. Plausible predictive human population scenarios indicate a high likelihood of continued and greatly increased need for wood and other forest commodities.
2. Planted forests, including intensively managed plantations, can provide wood and other forest commodities efficiently without serious damage to the environment. High-input breeding of primary forest species contributes to increased productivity and efficiency of planted forests, especially in intensively managed plantations, and will continue to do so cumulatively in the future.
3. Low-input breeding of secondary forest species is thus far unusual, often relying on phenotypic selection of above-average trees to be parents of ongoing generations while maintaining adaptive genetic variation.
4. *Ex-situ* genetic conservation can be justified for species in danger of extinction and for important populations in danger of genetic contamination. However, major advantages of *in-situ* genetic conservation are the continuation of adaptive evolution and that all species in the community, including the important soil biota, are simultaneously conserved.
5. Most countries and regions have insufficient areas of forest land allocated to wildlands, parks and reserves.
6. In support of both breeding and *ex-situ* genetic conservation, researchers need more effective and efficient ways to transfer genetic materials across borders, while assuring the safety of such transfers.

II. Recommendations

Based on the conference presentations and discussions we, the closing panel, recommend the following actions:

1: Continue to develop and fund low input programs

- a) Low input breeding and genetic conservation programs make important contributions to social well-being and to protecting forest ecosystems. They should be supported. Such programs will make it more feasible to utilize underexploited species and to both utilize and protect endangered species.
- b) We note, however, that the term “low input” does not imply low level technology or a low interest program. Low input refers to relatively small budget programs that may, in fact, use complex and highly technical scientific knowledge, technology and methodology.

2: Link conservation, intensive management, and breeding programs

- a) Program managers need to create a strategic balance between breeding and conservation and to include a conservation component in breeding programs, whether the program’s scope is national or local.
- b) The number of hectares allocated to wildlands, parks and reserves is currently insufficient and should be increased substantially. When such reallocations are from areas that are now deforested or managed for modest commodity production, they should be reforested. Subsequent management on reserved lands should include little or no timber or other commodity harvest. Such wildlands, reserves and parks will provide *in-situ* genetic conservation of endangered tree species.
- c) Within each forest region, or country, allocation of additional land to intensively managed plantations and to wildlands, reserves and parks should be linked, using such instruments as regional accords or agreements. The social license to increase and intensively manage such plantations would include support for increased areas of wildlands, reserves and parks.
- d) To offset additional rational withdrawals of production forests to be allocated to needed wildlands, reserves and parks, alternative productive lands should be allocated to intensively managed plantations whose primary purpose is the efficient production and harvest of wood and other forest commodities. To achieve support of the owners of forests, and of those concerned about shifting resource demand to environmentally harmful substitutes for wood, rational allocation of additional lands to intensively managed plantations should be supported by members of the conservation community.

3: Plan for diversity and change

- a) Current and emerging biotic and abiotic stresses and long term climate change require a broader genetic base in breeding and conservation programs. In addition to broadening the genetic base, program managers should consider traits not directly related to

increased wood production in breeding and conservation efforts. Examples include drought tolerance and emerging disease-pest resistance.

4: Develop accords/partnerships between all stakeholders

- a) Developing accords/partnerships with farmers, industry representatives, NGO representatives and forestry owners is a key to developing successful low-cost programs and applying them in the field. Such partnerships should be encouraged and supported. Representatives of private industry, NGOs and forest owners should also be included in the IUFRO communications.
- b) Methods developed should be readily usable by the people who work the land. Programs should match local needs and local peoples, especially where high value timber species may be missing.
- c) Collaboration and cooperation should be developed and enhanced between countries working on the same species to increase the efficiency.

5: Continue discussion of these important issues

At the close of the meeting, participants suggested that we use the Antalya conference as a springboard for future discussions. Additional concepts that should be included in future discussions are:

- a) the integration of ecosystem services and biodiversity conservation with planted forests,
- b) the need for long-term program stability,
- c) the potential for agroforestry as a means to bridge the gap between forest genetics and biodiversity conservation, and
- d) the need to make international seed exchange more “user friendly”.

(Signed) The Conference Panel: Lauren Fins (panel chair), Lokendra Purush Dhakal, William Dvorak, Yousry El-Kassaby, Bruno Fady and William J. Libby, Kani Isik (local organizing coordinator) and Fikret Isik (conference chair)

Conference sponsoring organizations: International Union of Forest Research Organizations; Akdeniz University, Antalya, Turkey; North Carolina State University, Raleigh NC, USA; Turkey Ministry of Environment and Forestry; Hellenic Forest Science Society, Greece; The Scientific and Technological Research Council of Turkey; Hellenic Scientific Society for Plant Genetics and Breeding, Greece; European Forest Genetic Resources Program; and Food and Agriculture Organization of the United Nations.