

REPORT

Rome,
Italy,
9-11 September
1997

FAO Panel of Experts on Forest Gene Resources

Tenth session



**Food
and
Agriculture
Organization
of
the
United
Nations**

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**Report of the Tenth Session of the
FAO PANEL OF EXPERTS ON FOREST GENE RESOURCES**

Rome, Italy

9-11 September 1997

including Forest Genetic Resources Priorities

**FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
Rome, 1997**

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ACRONYMS¹

CBD	Convention on Biological Diversity (Canada)
CGIAR	Consultative Group on International Agricultural Research (USA)
CIFOR	Centre for International Forestry Research of the CGIAR (Indonesia)
CIRAD-Forêt	Centre de Coopération Internationale en Recherche Agronomique pour le Développement (France)
CSIRO	Commonwealth Scientific and Industrial Research Organization (Australia)
DFSC	DANIDA Forest Seed Centre (Denmark)
FAO	Food and Agriculture Organization of the United Nations (Italy)
IPGRI	International Plant Genetic Resources Institute of the CGIAR (Italy)
ICRAF	International Centre for Research in Agroforestry of the CGIAR (Kenya)
IPF	Inter-Governmental Panel on Forests (USA)
IUCN	World Conservation Union (Switzerland)
IUFRO	International Union of Forestry Research Organizations (Austria)
UNCED	United Nations Conference on Environment and Development (Rio de Janeiro, Brazil 3-14 June 1992)
UNDP	United Nations Development Programme (USA)
UNEP	United Nations Environment Programme (Kenya)
Unesco	United Nations Educational, Scientific and Cultural Organization (France)
WCMC	World Conservation Monitoring Centre (U.K.)
WWF	World Wide Fund for Nature (Switzerland)

¹ Location of Headquarters is given in brackets.

SUMMARY OF RECOMMENDATIONS

The Panel:

- ▶ recommended that increased efforts be made to help raise awareness and inform decision makers, the general public, and professionals within and outside the forestry sector, of issues related to the conservation, management, sustainable utilization and enhancement of forest genetic resources, based on sound scientific and technical understanding, and drawing special attention to potential consequences of in-action or neglect;
- ▶ recommended that FAO, in collaboration with relevant Centres of the CGIAR and other interested institutes, continue to play an active role in assisting member countries to carry out exploration, evaluation and domestication of fruit and food bearing forest trees, and help raise awareness of the important, direct role that these species play in food security and rural development.
- ▶ recommended that FAO continue to provide strong international leadership and a point of reference for the world community in the field of forest genetic resources, in which the competence of the Organization was widely recognized;
- ▶ recommended that the traditional major focus on collaboration with national institutes and the active promotion of partnerships and networks be maintained, to facilitate transfer of technologies and information, to ensure complementarity of action, and to help avoid wasteful duplication of effort;
- ▶ recommended that close cooperation be maintained at international, regional, sub-regional and eco-regional levels between FAO and other international governmental and non-governmental institutes and action frameworks; and that collaboration continue to be fostered for mutual benefit with mechanisms such as the Convention on Biological Diversity and the UN Convention to Combat Desertification;
- ▶ requested that efforts be made to sustain present levels of funding for FAO's forest genetic resources programme in order to allow activities to continue in line with recommendations by concerned Statutory and Governing Bodies;
- ▶ recommended that close linkages, at appropriate levels and using pertinent mechanisms, continue to be maintained between FAO Headquarters, its Regional and Sub-Regional Offices and FAO coordinated field programmes in forest genetic resources, and that the need for close synergy between normative and field activities be adequately reflected in the Forestry Strategy presently under preparation;
- ▶ recommended that FAO, in collaboration with international and national partners, help promote the development, adoption and implementation of sound forest genetic resources strategies as part of overall, national and regional development plans, with due consideration to the complementarity of conservation, management and enhancement of genetic resources on the one hand, and the management and sustainable utilization of forest resources on the other;
- ▶ recommended that a balance be maintained between support to forest genetic resources activities in dry and moist tropical forest ecosystems, and that due attention be given also to Mediterranean, temperate and boreal forests, taking advantage of networking and twinning opportunities, whenever possible;

- ▶ recommended that FAO and IUFRO, in collaboration with other relevant institutes, review and help revise and update existing terminology in the forest genetic resources field, concentrating initially on a core set of basic terms and concepts;
- ▶ recommended that FAO's Forestry Department continue to keep itself closely informed about developments at national and international levels related to access to plant and forest germplasm, and to inform member countries and collaborating institutes of new developments of relevance to forest genetic resources activities;
- ▶ recommended that FAO and IPGRI continue to pursue the organization of workshops on the Safe Movement of Forest Germplasm, in close collaboration with other concerned national and international institutes;
- ▶ recommended that increased attention be paid to efforts to quantify costs and benefits of genetic conservation and of the management, enhancement and wise utilization of forest genetic resources; and that attention be drawn at policy and decision-making levels to potential risks and economic, social and environmental costs of neglect or mismanagement of these resources, possibly through the elaboration of case studies;
- ▶ recommended that FAO play an active role in helping to raise awareness of the place and role of new biotechnologies within overall tree improvement strategies and in dynamic *in situ* conservation and gene management programmes, with special reference to the need for balance in resource allocation between traditional and new technologies;
- ▶ requested that early attention be given to the recommendations of the Thirteenth Session of the Committee on Forestry related to the convening of regional, country-driven and action-oriented forest genetic resources workshops, to be organized in collaboration with countries and regions that wished to pursue the issue, under the overall umbrella of the Regional Forestry Commissions and with the technical and scientific guidance and support of the present Panel;
- ▶ recommended that full use be made of existing networks of institutes and experts in the regions and at international level to help ensure that relevant and scientifically sound information be available in support of the decision-making process in the regional workshops;
- ▶ recommended that in discussing forest genetic resources priorities, countries pay attention to those key elements in genetic management strategies which can be considered common to all regions, placing these within the context of prevailing ecological, social and economic needs and priorities of the regions and countries concerned;
- ▶ recommended that the know-how, experience and expertise available in countries and regions, and expertise available in IUFRO and other relevant organizations, be drawn upon in the development of a flexible, easy-to-apply, technically and scientifically sound matrix for determination of priority species and genetic resources activities, for adaptation and use as a common framework in the regional forest genetic resources workshops, taking into due consideration the format of the priority lists by region, species and activity regularly elaborated by the present Panel;
- ▶ recommended that development of the FAO World Wide Information System on Forest Genetic Resources, REFORGEN, be vigorously pursued, with due consideration to the need to ensure timely up-dating and verification of the information by countries concerned; and that, where possible, efforts be made to link the system directly with other related information systems for maximum benefit to users;

- ▶ recommended that FAO in collaboration with other relevant organizations continue to inform users of existing international and regional forest genetic resources data bases and information systems, providing information on their respective characteristics and focus; and that coordination of efforts be actively pursued;
- ▶ recommended that FAO and its international partners continue to provide leadership and support to activities of the International Neem Network;
- ▶ recommended that efforts be made to generate outside support and finance for priority activities to be carried out within the framework of the proposed Mahogany Network, based on the documentation and the project document prepared for the Neotropical species of the Meliaceae following the recommendations of the Ninth Session of the Panel;
- ▶ recommended that early action within the Mahogany Network focus on coordination and support to national and regional institutes in research underlying sound conservation and utilization of mahogany genetic resources, aimed notably at increasing the knowledge of the status, variation and biology of target species, and issues related to regeneration biology, silvicultural management, and disease resistance.
- ▶ recommended that FAO help support inter-regional collaboration and linkages between the three tropical regions within the overall framework of the Mahogany Network;
- ▶ recommended that publication in English, French and Spanish of the annual newsbulletin, *Forest Genetic Resources*, be continued; and that FAO pursue its policy of publishing well-focused guides, manuals and handbooks for use by technical staff, policy makers and the general public, covering various aspects of conservation, management, collection, testing, breeding and enhancement of forest genetic resources.

FAO PANEL OF EXPERTS ON FOREST GENE RESOURCES

REPORT ON THE TENTH SESSION

Rome, Italy 9-11 September 1997

I. INTRODUCTION

The FAO Panel of Experts on Forest Gene Resources was established in accordance with the directives of the Fourteenth Session of the FAO Conference (November 1967), which read as follows:

"244. Forest Tree Genetic Resources. The Conference requested the Director-General to take into account Recommendation N° 62 of document C67/AG/FO/1 in formulating the Programme of Work and Budget 1970-71. It recognized that, as development proceeds in the less as well as in the more advanced areas of the world, the reserves of genetic variation stored in the natural forests have been or are being displaced on an increasing scale. Moreover, efforts to explore and collect forest genetic resources were, on a world scale, inadequate and inadequately concerted.

245. The Conference requested the Director-General to establish a Panel of Experts on Forest Gene Resources to help plan and coordinate FAO's efforts to explore, utilize and conserve the gene resources of forest trees and, in particular, help prepare a detailed short-term programme and draft long-term programme for FAO's action in this field and to provide information to Member Governments."

The Director-General established the Panel in 1968. A list of current members of the Panel is shown in Appendix I.

The Panel held its First Session in Rome, Italy in October 1968, its Second in Macon, Georgia (USA) in March 1971, its Third in Rome (Italy) in May 1974, its Fourth in Canberra (Australia) in March 1977, its Fifth in Rome (Italy) in December 1981, its Sixth in Rome (Italy) in December 1985, its Seventh in Rome (Italy) in December 1989, its Eighth in Rome in June 1993, and its Ninth Session in Rome (Italy) in October 1995. Reports of these Sessions have been published (FAO, Rome 1969, 1972, 1974, 1977, 1984, 1988, 1990, 1994, 1996).

The Tenth Session of the Panel was held at FAO Headquarters, Rome, Italy from 9 to 11 September 1997.

Members attending the Tenth Session of the FAO Panel of Experts on Forest Gene Resources were:

Mr. S.J. Midgley	(Australia) - Vice-Chairman
Mr. P.Y. Kageyama	(Brazil)
Mr. Wang Houran	(China)
Mr. F. Mesén	(Costa Rica)
Mr. B.A. Ditlevsen	(Denmark)
Mr. V. Koski	(Finland)
Ms. H.I. Joly	(France)
Mr. B.N. Gupta	(India)
Mr. R. Morandini	(Italy)
Mr. D. Baskaran K.	(Malaysia)
Mr. F. Patiño Valera	(Mexico) - Chairman
Mr. R.D. Barnes	(U.K.)
Mr. Gene Namkoong	(Canada/USA)
Mr. D.P. Gwaze	(Zimbabwe).

Mr. A. Issa (Burkina Faso/Mali), was unable to attend due to last-minute visa problems.

The following observers/resource persons attended the meeting:

Mr. A.S. Ouedraogo	(IPGRI) ²
Mr. J. Turok	(IPGRI) ³
Mr. T. Boyle	(CIFOR)
Mr. E. Teissier du Cros	(IUFRO)

Ms. Christel Palmberg-Lerche, Chief Forest Resources Development Service (FORM) acted as Secretary of the Panel, assisted by Mr. Pierre Sigaud, Forestry Officer (Forest Genetic Resources) and Mr. Christian Hansen (Associate Professional Officer, Plantation Forestry and Forest Genetic Resources), FORM. Mr. D.A. Harcharik, Assistant Director-General, Forestry Department; and Mr. H. El Lakany, Director Forest Resources Division (FORD), attended parts of the Session, further joined occasionally by colleagues from the Agriculture and Sustainable Development Departments.

The Panel unanimously re-elected Mr. Fernando Patiño Valera of Mexico Chairman, and Dr. Steven Midgley of Australia Vice-Chairman. The Agenda adopted is shown in [Appendix 2](#).

A list of Secretariat Notes discussed by the Panel, is given in [Appendix 3](#). In addition, each Panel member made a brief presentation and submitted information on the region or sub-region covered by him or her. Observers also made brief statements. Such information usefully supplemented the information provided in the Secretariat Notes on the present state of forest genetic resources in the world, programmes, priorities and desirable action. A presentation on the Draft Forestry Department Strategy, presented by the ADG, helped place the discussion into the overall context of FAO's work in support of priorities of Member Nations.

² Joined, during part of the meeting, by other colleagues from IPGRI, including Mr. M. Iwanaga, Deputy Director-General (Programmes), who made a statement on behalf of IPGRI during the Opening Session.

³ Coordinator of the European Forest Genetic Resources Network, EUFORGEN.

II. CONCLUSIONS AND RECOMMENDATIONS

1. The Panel noted the steadily increased attention which had over the past years been given to the state, functions and management options for forests and forest ecosystems in international and national debate. It further noted the increased diversity of a growing number of organizations and agencies concerned with forest-related issues. Institutions involved in decision-making, opinion-building and on-the-ground action varied greatly among them in philosophy, focus, objectives and operations. Ensuring concerted, technically and scientifically sound action in the forest genetic resources field within this overall, highly diversified scenario posed an unprecedented challenge to the forestry community in general and to forest geneticists in particular.
2. While there was a need to further forcefully promote overall understanding and to increase trust and coordination between sectors and among actors concerned, this situation also provided a potential for developing and making use of innovative mechanisms for collaboration and funding support. This was especially welcome at a time when priorities of many traditional partners and funding agencies were undergoing changes in emphasis and scope. The Panel stressed that new mechanisms should be considered complementary to already existing ones, and underlined the need to ensure the sustainability of such new mechanisms prior to discarding already proven ways of action.
3. Similarly, while institutional renewal was welcomed as a means for stimulating and reinvigorating action, the Panel stressed the need for countries to carefully consider and analyze the possible longer-term implications of changes proposed. There was a need for forest geneticists to closely monitor effects of decentralization, privatisation of forest resources and other institutional and macro-economic shifts, and to raise the awareness of national policy and decision makers of their actual or potential effects on forest genetic resources programmes which, by definition, were long-term in nature. The Panel highlighted the role that national forest action programmes and similar coordination mechanisms could play in this regard.
4. While, in many countries, constructive dialogue was developing between institutes focused on various sectoral issues and between e.g. Ministries of Environment and Ministries in charge of forestry development; and while there was an increasingly informed public debate at both national and international levels, much still needed to be done to increase awareness and understanding, from policy to grass-roots levels, of forest genetic resources issues and their linkages to the protection of nature and conservation on the one hand, and sustainable forest management, silviculture, plantation forestry and tree improvement on the other.
5. The Panel noted that the forest genetic resources community, FAO's Forestry Department, and the members of the Panel of Experts on Forest Gene Resources, individually and collectively, faced a major challenge in this regard.
6. The Panel recommended that increased efforts be made to help raise awareness and inform decision makers, the general public, and professionals within and outside the forestry sector, of issues related to the conservation, management, sustainable utilization and enhancement of forest genetic resources, based on sound scientific and technical understanding, and drawing special attention to potential consequences of in-action or neglect.
7. The Panel made special mention of the need to raise awareness of the importance of forests in the provision of environmental services, such as protection of soil and water, provision of shade and shelter; and of the role of trees and shrubs in supplying a range of "non-traditional" goods and products in addition to timber, wood and fuel, such as food, fodder and medicines.

8. The contribution of forests to food security was especially highlighted. The Panel stressed the need to raise awareness both of direct contributions of forests in this regard (provision of food and vitamins, and the role of forests as a provider of emergency food in times of drought and other calamities); and of indirect contributions, such as the provision of fuelwood, fodder, medicines, shade and shelter, and the generation of income and revenue.

9. The Panel recommended that FAO, in collaboration with relevant Centres of the CGIAR and other interested institutes, continue to play an active role in assisting member countries to carry out exploration, evaluation and domestication of fruit and food bearing forest trees, and help raise awareness of the important, direct role that these species play in food security and rural development.

10. The Panel took note of the fact that new forestry decrees and legislation, and legislation dealing with the conservation of the environment and nature had, in some countries, recently been developed concurrently. In other cases, legislation in these fields was not harmonized, and was at times contradictory. This latter situation was detrimental for all sectors concerned. Raising of awareness about complementarity of action was a first step towards harmonization of legislation and its implementation in support of sustainable development at national level.

11. The Panel welcomed information on collaboration between FAO and other international, governmental and non-governmental organizations. It acknowledged the value of collaboration with national institutes and of promotion of partnerships and networking to facilitate transfer of technologies, knowhow and information, and to ensure complementarity of action and avoidance of wasteful duplication of effort in the forest genetic resources field.

12. The Panel recommended that FAO continue to provide strong international leadership and a point of reference for the world community in the field of forest genetic resources, in which the competence of the Organization was widely recognized;

13. The Panel recommended that the traditional major focus on collaboration with national institutes and the active promotion of partnerships and networks be maintained, to facilitate transfer of technologies and information, to ensure complementarity of action, and to help avoid wasteful duplication of effort

14. The Panel further recommended that close cooperation be maintained at international, regional, sub-regional and eco-regional levels between FAO and other international, governmental and non-governmental agencies, institutes and action frameworks; and that collaboration continue to be fostered, for mutual benefit, with mechanisms such as the Convention on Biological Diversity and the UN Convention to Combat Desertification.

15. The Panel welcomed the support to the work of FAO in the forest genetic resources field by the Thirteenth Session of the Committee on Forestry (COFO); and by the Seventh Session of the Commission on Genetic Resources for Food and Agriculture. The overall importance given by member nations to the programme was reflected in the fact that the level of resources available to it within the overall Regular Programme budget of FAO, had been maintained practically un-changed over the past years.

16. The Panel recommended that efforts be made to sustain present levels of funding for FAO's forest genetic resources programme in order to allow activities to continue in line with recommendations by concerned Statutory and Governing Bodies.

17. Maintaining funding levels for the normative programme of FAO in the forest genetic resources field (financed by the Regular Programme) was especially important in view of the decrease over the past years in the field programme, caused largely by factors outside of FAO's control. The Panel noted with concern the decrease in field projects coordinated by FAO in general, including projects focused on forest genetic resources and those with important forest genetic resources components.

18. The Panel took note of recent organizational changes in FAO and of the transfer of responsibilities for overall administration and backstopping of field projects from FAO Headquarters to the Regional and Sub-Regional Offices. The Panel highlighted the complementarity of technical work carried out as part of normative and field programme activities, and the proven mutual benefits which had been derived from closely integrating work in these two programmes in the past.

19. The Panel recommended that close linkages, at appropriate levels and using pertinent mechanisms, continue to be maintained between FAO Headquarters, its Regional and Sub-Regional Offices and FAO coordinated field programmes in forest genetic resources, and that the need for close synergy between normative and field activities be adequately reflected in the Forestry Strategy presently under preparation.

20. To counteract recent, decreased attention and priority by countries and donors to sectoral or more narrowly focused projects, the Panel suggested that integrated approaches be pursued more vigorously, increasingly and explicitly incorporating forest genetic resources components into overall rural and national development plans and programmes. Increased reliance on complementary support from the private sector and NGOs in project execution was likely to enhance the success and sustainability of forest genetic resources projects and programmes in many countries.

21. The Panel took note of recently published, up-dated information on the state of the world's forests (FAO 1997), and noted with concern the continually high levels of deforestation and degradation of forest ecosystems. The problems were most acute in the tropics, where the largest proportion of forest biological diversity was found.

22. The Panel noted that calls to intensify action in sustainable forest management at UNCED had resulted in world-wide efforts to define criteria for sustainable forest management and to identify corresponding indicators for monitoring of trends in sustainability. On-going work highlighted the need to sustain a range of social, economic and environmental values of forests in a balanced manner, paying due attention to the various functions of forests and forest ecosystems.

23. The Panel noted that the conservation of biological diversity at the levels of ecosystems, species and intra-specific variation had been identified as one of the criteria of sustainability in all of the on-going international processes. These developments afforded a possibility to strengthen conservation and genetic management within the overall framework of sustainable forest management. In this regard the Panel forcefully stressed that management of resources, in which due consideration was given to genetic aspects, was a key to conservation.

24. The Panel stressed the complementarity between conservation and genetic improvement on the one hand, and management and sustainable utilization of forest resources on the other. It noted that it was essential that genetic resources activities were closely integrated with on-going efforts at international and national levels aimed at the sustainable management of forests and woodlands and at increased plantation establishment.

25. The Panel recommended that FAO, in collaboration with international and national partners, help promote the development, adoption and implementation of sound forest genetic resources strategies as part of overall, national and regional development plans, with due consideration to the complementarity of conservation, management and enhancement of genetic resources on the one hand, and the management and sustainable utilization of forest resources on the other.

26. In this regard, the Panel recommended that a balance be maintained between support to forest genetic resources activities in dry and moist tropical forest ecosystems, and that due attention be given also to Mediterranean, temperate and boreal forests, taking advantage of networking and twinning opportunities, whenever possible.

27. The Panel stressed the importance of conserving not only ecosystems, species and genetic variation, but also information on traditional systems of management. The use of *Acacia* seeds as a source of food among local communities was mentioned as an example of such uses. The Panel noted that Australia is presently promoting exchange of community level information on such use between Australia and Dry-Zone African countries.

28. The Panel noted recent research work, *i.a.* work coordinated by IPGRI and CIFOR, on various aspects of effects of human impacts on genetic resources and forest biological diversity. It stressed the need to further pursue these and other studies which would contribute to the overall understanding of ecosystem functions, species and genetic diversity, and of processes underpinning the maintenance of variation at different levels.

29. The Panel drew the attention to the need to agree on basic concepts and to streamline terminology in the forest genetic resources field to facilitate international dialogue and understanding within and among professional and popular groups. It recommended that FAO and IUFRO, in collaboration with other relevant institutes, review and help revise and update existing terminology in the forest genetic resources field, concentrating initially on a core set of basic terms and concepts.

30. In regard to ownership and access to genetic resources, the Panel noted that debate on the issue had matured over the past years, and that it was presently more factual and better informed than had been the case at the time of the previous, Ninth Session of the Panel in 1995. Attention was drawn to on-going work in Australia and New Zealand, where reviews of policies of access to forest genetic resources had been explicitly discussed in connection with the debate on access to plant genetic resources in general. The preliminary outcome of the discussions in these countries had forcefully stressed that there were advantages, as well as some drawbacks, in allowing free, unregulated access.

31. The Panel noted that preliminary discussions on access had taken place also in a number of other countries, including Brazil, India, Malaysia, Papua New Guinea, resulting in a number of new rules and regulations in this regard.

32. While, at the present time, access to small quantities of germplasm for traditional forestry research remained largely unimpeded, restrictions were in some cases being placed on access to genetic resources used as pharmaceuticals and in horticulture. It was noted that the issue of access was linked patents and patenting, presently under discussion in many countries.

33. The Panel recommended that FAO's Forestry Department continue to keep itself closely informed about developments at national and international levels related to access to plant and forest germplasm, and to inform member countries and collaborating institutes of new developments of relevance to forest genetic resources activities.

34. Regarding safe movement of forest germplasm from a forest health point of view, the Panel noted that relatively large quantities of forest tree seed were exported from countries like Australia; the issue of germplasm health was an important issue for both exporter and importer.

35. The Panel recommended that FAO and IPGRI continue to pursue the organization of workshops on the *Safe Movement of Forest Germplasm*, in close collaboration with other concerned national and international institutes. It stressed the need to ensure the wide dissemination of the *Technical Guidelines* which these Workshops produced (to date published on eucalypt and pine germplasm, planned for *Acacia* germplasm, 1998).

36. The Panel noted a recently finalized revision of the *OECD Scheme on Forest Reproductive Materials Moving in International Trade*.

37. The Panel noted that the Economic and Social Department of FAO was working on the quantification of the economic value of genetic resources for food and agriculture, and that the Forestry Department was planning to collaborate more actively in this work in the future. It took note of the FAO/DFSC documentation on *in situ* and *ex situ* conservation of forest genetic resources presently *in press* which would, to some degree, address the issue of costs and benefits of conservation. The Panel stressed the need to widely disseminate available information on the subject through refereed and technically credible journals and through other channels, placing the issue of economics within a larger context of social, ecological, aesthetic, ethical and spiritual values provided by forest ecosystems and the resources they housed.

38. The Panel recommended that increased attention be paid to efforts to quantify costs and benefits of genetic conservation and of the management, enhancement and wise utilization of forest genetic resources; and that attention be drawn at policy and decision-making levels to potential risks and economic, social and environmental costs of neglect or mismanagement of these resources, possibly through the elaboration of case studies.

39. The Panel recognized that the most secure route to conservation of a species was its sustainable use. It emphasized the importance of developing and implementing forest management and tree breeding strategies which incorporated provisions for conservation of genetic resources and which helped maintain a broad genetic base in target species. Information on available, flexible approaches such as the multiple breeding population strategy, needed to be further disseminated and their use promoted.

40. The Panel discussed developments in the application of biotechnologies in forest tree improvement and the potential of new developments in this rapidly advancing field. While acknowledging that biotechnologies placed in the hands of the breeder new and powerful tools which could have major, beneficial impacts, it noted the need to balance the allocation of resources for research underpinning tree improvement and classical tree breeding on the one hand, and for new biotechnologies on the other. The former included, notably, botanical and genecological exploration; research on breeding systems, variation and variation patterns, and processes maintaining and enhancing genetic variation; and the collection and exchange of seed and other reproductive materials followed by systematic field testing and evaluation at the levels of provenance and progeny.

41. The Panel stressed that the application of new biotechnologies was a tool which had to be used within the framework of already on-going genetic improvement programmes, rather than implying a switch of effort away from classical tree breeding measures. It was noted that meaningful results for practical application, regardless of methods used, required adequate field testing, and that tree improvement and breeding therefore always implied a continuing and long-term commitment. The Panel warned that temporary or more permanent cut-backs in resources for established tree improvement programmes would jeopardize benefits which would accrue from earlier investments.

42. The Panel recommended that FAO play an active role in helping to raise awareness of the place and role of new biotechnologies within overall tree improvement strategies and in dynamic *in situ* conservation and gene management programmes, with special reference to the need for balance in resource allocation between traditional and new technologies.

43. The Panel noted that the *Fourth Technical Conference on the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture* (Leipzig, June 1996) had adopted a costed, global plan of action which excluded forest genetic resources. The Leipzig Plan of Action, in its introduction, stated that the need for action in the forest genetic resources field should be reviewed in the light of the outcome of the work of the Inter-Governmental Panel on Forests of the Commission on Sustainable Development (IPF). The IPF did not discuss this issue in any of its four sessions.

44. The issue of forest genetic resources had been included as a substantial issue for discussion at the Thirteenth Session of the Committee on Forestry, COFO (March 1997). The Panel noted that COFO had recommended that "*FAO, in conjunction with Regional Forestry Commissions and countries that requested it, could convene regional and sub-regional forest genetic resources workshops*".

45. The Panel noted that action was to be pursued in a step-by-step manner. Regional proposals were to be defined building on national priorities and programmes. Regional responsibilities for coordination and follow-up action would be decided upon by countries concerned based on national capacities and wishes to take the lead in given areas of work, or in given species-based activities.

46. The Panel welcomed early steps taken by FAO to seek funding for the planned workshops, and noted that contacts had been established with a number of international and bilateral agencies for support and collaboration in follow-up to the above recommendation, including IPGRI and ICRAF.

47. The Panel requested that early attention be given to the recommendations of the Thirteenth Session of the Committee on Forestry related to the convening of regional, country-driven and action-oriented forest genetic resources workshops, to be organized in collaboration with countries and regions that wished to pursue the issue, under the overall umbrella of the Regional Forestry Commissions and with the technical and scientific guidance and support of the present Panel.

48. The Panel recalled that a number of forest genetic resources workshops had been held in 1995 in preparation for the Leipzig Conference, including those covering boreal forests; temperate North America; and Europe. In addition, a number of countries had organized forest genetic resources workshops at the national level, aimed at developing participatory, scientifically and technically sound and economically feasible national forest genetic resources programmes.

49. The Panel recommended that full use be made of existing networks of institutes and experts in the regions and at international level to help ensure that relevant and scientifically sound information be available in support of the decision-making process in the forthcoming regional and sub-regional forest genetic resources workshops.

50. The Panel recognized that action plans for the management of genetic resources would differ between countries and between regions according to the biological characteristics of target species and that these would need to be further adjusted in accordance with prevailing social, economic and environmental conditions, national priorities and institutional capacities of countries concerned. This being the case, the Panel however noted that there was a need to harmonize overall approaches and to agree on mechanisms for priority-setting between the various regions, to facilitate international dialogue and understanding.

51. The Panel recommended that in discussing forest genetic resources priorities, countries pay attention to those key elements in genetic management strategies which can be considered common to all regions, placing these within the context of prevailing ecological, social and economic needs and priorities of the regions and countries concerned;

52. The Panel recommended that the know-how, experience and expertise available in countries and regions, and expertise available in IUFRO and other relevant organizations, be drawn upon in the development of a flexible, easy-to-apply, technically and scientifically sound matrix for determination of priority species and genetic resources activities, for adaptation and use as a common framework in the regional forest genetic resources workshops, taking into due consideration the format of the priority lists by region, species and activity regularly elaborated by the present Panel.

53. The Panel noted that the outcome of the regional and sub-regional workshops could, if countries so wished, be used for the elaboration of a country-driven, action-oriented global framework, established in support of the conservation and sustainable utilization of forest genetic resources.

54. Noting that activities related to the forest genetic resources workshops implied substantial additional work at the level of the Secretariat at FAO, the Panel suggested that provision for an overall coordinator be made in the requests for external funding to the workshops. In addition to overall coordination, a coordinator could assist countries concerned in the elaboration of requests for outside funding for the implementation of specific components of the regional action plans to be elaborated at the workshops.

55. The Panel welcomed the recommendation of COFO that action in this regard "*should proceed within the overall framework of the FAO Commission on Genetic Resources for Food and Agriculture, and with the technical and scientific advice of the Panel of Experts on Forest Gene Resources*".

56. In discussions on technical and scientific support to the workshops, it was suggested that IUFRO might establish a Task Force to further help strengthen the scientific basis for their work. Such a Task Force could, conceivably, assist in the development of a matrix for defining species priorities by country and region; in reviews of mechanisms and processes underlying the maintenance of genetic diversity; in efforts to quantify economic consequences of neglect in the management of forest genetic resources; and in the definition of optional conservation and genetic management strategies for defined groups of species.

57. The Panel welcomed information on a planned IUFRO/FAO World Consultation on Forest Tree Breeding, tentatively scheduled to be held in August 1998 in China. It noted that this Consultation would dedicate one session to discussions on the planned regional forest genetic resources workshops and to discussing the role which existing national, regional and international institutes, organizations and mechanisms could play in promoting action to ensure success in this undertaking.
58. The Panel expressed its satisfaction with advances made in the development of the *World Wide Information System on Forest Genetic Resources*, REFORGEN. It appreciated the efforts made by FAO over the past years to make the system complementary to other, existing or incipient, related data base systems, such as that of the World Conservation Monitoring Centre (Cambridge, UK) and the TREESOURCE data base of IPGRI.
59. The Panel stressed that regular updating of information was crucial to ensure reliability and usefulness of a data base system. In this regard it was noted that user-friendly electronic mechanisms were becoming available which could, in the future, facilitate the process of direct updating of data.
60. The Panel recommended that development of REFORGEN be vigorously pursued, with due consideration to the need to ensure timely up-dating and verification of the information by countries concerned; and that, where possible, efforts be made to link the system directly with related information systems for maximum benefit to users.
61. The Panel recommended that FAO in collaboration with other relevant organizations continue to inform users of existing international and regional forest genetic resources data bases and information systems, providing information on their respective characteristics and focus; and that coordination of efforts be actively promoted.
62. The Panel commended the advances made within the framework of the *International Neem Network*, coordinated at international level by FAO, in which also IPGRI, DFSC and Cirad-Forêts collaborated. It noted that action had greatly benefited from collaboration between FAO Headquarters and FAO coordinated field programmes such as FAO project RAS/91/004, "*Improved Productivity of Man-Made Forests through Tree Breeding*" (FORTIP); and that it provided a good example of a case in which the benefits of such collaboration greatly superseded the sum-total of inputs. Noting that national institutes in 22 developing countries presently collaborated in network activities.
63. The Panel recommended that FAO and its international partners continue to provide leadership and support to activities of the International Neem Network.
64. The Panel noted with appreciation advances made towards the establishment of a *Mahogany Network in the Neotropics*, including the publication of a series of papers and documents on status of the resources, on-going programmes in the region and outside of it, and proposals for coordinated action in the conservation, sustainable utilization and enhancement of mahogany genetic resources in Latin America.
65. The Panel recommended that efforts be made to generate outside support and finance for priority activities to be carried out within the framework of the proposed *Mahogany Network*, based on the documentation and the project document prepared for the Neotropical species of the Meliaceae following the recommendations of the Ninth Session of the Panel.

66. The Panel further recommended that early action within the *Mahogany Network* focus on coordination and support to national and regional institutes in research underlying sound conservation and utilization of mahogany genetic resources, aimed notably at increasing the knowledge of the status, variation and biology of target species, and issues related to regeneration biology, silvicultural management, and disease resistance.

67. The Panel emphasized that species of the genus *Meliaceae* were of high priority also in other tropical regions, including Asia, the Pacific and Africa, in which both native mahoganies and mahogany species of the main, neotropical genera were widely used in plantation establishment. It noted that countries in these regions often independently grappled with similar problems related to the conservation, sustainable management, enhancement and use of genetic resources of these species, and that coordination of research efforts would be of benefit.

68. The Panel recommended that FAO help support inter-regional collaboration and linkages between the three tropical regions within the overall framework of the Mahogany Network.

69. The Panel was informed of emerging genetic resources networks for sandalwood, already flagged as a priority species during its Ninth Session. Activities were underway in countries in Australia and the Pacific (Vanuatu, Tonga, Fiji, W. Samoa; networking supported by Australia); in New Caledonia (supported by Cirad-Forêts, France); and in India (supported by ICFRE, Dehra Dun, India; the University of Agricultural Sciences, Bangalore, India; the University of Massachusetts, USA; and IPGRI). The Panel expressed its support, in principle, to the continuation, expansion, and inter-linking of related activities.

70. The Panel acknowledged the usefulness of FAO technical documents and publications in the forest genetic resources field; these documents, usually available in several languages, were widely used both in support of practical field work and in University and vocational level teaching.

71. The Panel stressed the need for rapid publication of the step-by-step Guide to the *in situ* Conservation of Forest Genetic Resources (FAO/IPGRI/DFSC/CIFOR/IUFRO), presently being finalized; and of the need to pursue the work of FAO and DFSC in documenting experiences and drawing up guidelines for action in the *in situ* and *ex situ* conservation of forest genetic resources presently underway based on work in these fields started already in the 1970s.

72. The Panel commended the annual newsbulletin, *Forest Genetic Resources*, which was considered a useful means of communication and dissemination of information; it noted that the bulletin was widely used within and outside of the forest genetic resources community.

73. The Panel recommended that publication in English, French and Spanish of the annual newsbulletin, *Forest Genetic Resources*, be continued; and that FAO pursue its policy of publishing well-focused guides, manuals and handbooks for use by technical staff, policy makers and the general public, covering various aspects of conservation, management, collection, testing, breeding and enhancement of forest genetic resources.

74. In reviewing the priority lists regularly up-dated by the Panel, it was noted that these should be focused on a limited number of species of actual or potential socio-economic value, rather than being all-inclusive lists of species in need of attention. The Panel further noted that these lists were not meant to be a substitute for national and local lists of priority species and/or species in need of attention at these, latter levels; on the contrary, it was hoped that the lists elaborated by the Panel would help catalyze the preparation of more detailed local/national lists. The Panel lists were also no substitute for more narrowly sectoral lists, and should be seen as complementing *e.g.* the lists of agroforestry species under preparation under the overall coordination of ICRAF.

75. While fully recognizing the need for increased attention to so-called "minor" species and species of local value, it was noted that the Forest Gene Panel lists concentrated on species of regional or eco-regional interest, which could most tangibly benefit from international support and attention.

APPENDIX 1.

Membership of the
Panel of Experts on Forest Gene Resources
Period 1 July 1997 - 30 June 2000

Composition du
Groupe d'experts des ressources génétiques forestières
Période 1^{er} juillet 1997 - 30 juin 2000

Composición del
Cuadro de Expertos en Recursos Genéticos Forestales
Período 1 de julio de 1997 - 30 de junio de 2000

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Zimbabwe	Mr. D.P. Gwaze Forest Research Centre P.O. Box HG 595 Highlands, Harare

APPENDIX 2.

**FAO PANEL OF EXPERTS ON FOREST GENE RESOURCES
Tenth Session**

**Rome, Italy 9-11 September 1997
Ethiopia Room (C-285)**

AGENDA

1. Opening of the Meeting
2. Election of Chairman and Vice-Chairman
3. Adoption of the Agenda
4. Progress since the 9th Session of the Panel (October 1995):
 - (i) Brief statement by individual members (regional/sub-regional issues)
 - (ii) FAO Regular Programme
 - (iii) FAO Field Programme activities in forest genetic resources
5. Work of the FAO Commission on Genetic Resources for Food and Agriculture:
Implementation of the broadening of the mandate of the Commission
6. Towards a coherent framework for the conservation and sustainable utilization
of forest genetic resources
7. REFORGEN: The FAO world-wide information system on forest genetic resources
8. Discussion of Priorities for Future Action:
 - (i) Species priorities
 - (ii) Priority operations/activities
9. Proposals for FAO Regular Programme Activities:
 - (i) Short-term
 - (ii) Medium and long-term
10. Miscellaneous and Other Business
11. Next Session of the Panel
12. Closing of the Meeting

APPENDIX 3.

LIST OF SECRETARIAT NOTES

<u>AGENDA ITEM</u>	<u>SECR. NOTE N°</u>	<u>TITLE</u>	<u>LANGUAGES</u>
1	FORGEN/97/Inf. 1	List of Secretariat Notes	E,F,S
	FORGEN/97/Inf. 2	List of Documents Distributed at Meeting	E,F,S
	FORGEN/97/2A	List of Panel Members	Triling.
	FORGEN/97/2B	List of Participants	Triling.
2	-		
3	FORGEN/97/1A	Tentative Agenda	E,F,S
	FORGEN/97/1B	Provisional Timetable	E,F,S
4(i)	-		
4(ii)	FORGEN/97/3	Follow-up to Recommendations of the Ninth Session of the Panel	E,F,S
	FORGEN/97/4A	FAO Regular Programme Activities in Forest Genetic Resources 1995-1997	E,F,S
	FORGEN/97/4B	Financial Contributions in Forest Genetic Resources: non-staff resources. FAO's Regular Programme (RP) (Sub-programme 2412)	E*
4(iii)	FORGEN/97/5	FAO Field Programme in Forest Genetic Resources	E*
5	FORGEN/97/6	Work of the FAO Commission on Genetic Resources for Food and Agriculture: Implementation of the broadening of the mandate of the Commission	E*
6	FORGEN/97/7	Towards a coherent global framework for the conservation and sustainable utilization of forest genetic resources	E*
7	FORGEN/97/8	REFORGEN: The FAO world-wide information system on forest genetic resources	E*
8	-	Appendices 6 and 7: Forest Genetic Resources Priorities (by region, species and operation): 9th Session of the Panel (<i>for up-dating</i>)	E,F,S
9-12	-		

* Summaries available in French and Spanish.

APPENDIX 4.

FOLLOW-UP TO RECOMMENDATIONS OF
THE NINTH SESSION OF THE PANEL

This note summarizes the main recommendations addressed to FAO by the Ninth Session of the Panel of Experts on Forest Gene Resources in October 1995 and action taken in response to these recommendations (1995-1997).

The Panel:

1. **Recommended that the distinctive nature of work in the forest genetic resources field, which required specialized technical and scientific knowledge, continue to be reflected in the work programme of FAO; and that the increased demands for support to global action and expansion in scope of activities, be acknowledged and adequately catered for.**

Recognizing the distinctive nature of strategies and methodologies in the conservation and sustainable utilization of genetic resources of woody perennials and forest genetic resources, the 13th Session of FAO's Committee on Forestry; and the 7th Session of the Commission on Genetic Resources for Food and Agriculture (CGRFA), recommended that the FAO Panel of Experts on Forest Gene Resources continue to provide technical and scientific advice in this field, including advice to the CGRFA. While establishment of an inter-governmental technical sectoral working group in forest genetic resources under the Commission was considered premature at the present time by some delegations, other delegations suggested that FAO "*review the institutional options and Terms of Reference of a possible inter-governmental technical working group on forest genetic resources, if established*". While such a WG would help underline the need for specialized technical and scientific know-how in the forest genetic resources field, it should be noted that there is, to date, no agreement on the general type of mandate these sectoral WGs should have, nor on timing of their establishment.

The distinctive nature of forest genetic resources activities have been recognized in discussions regarding the new functions of the Commission on Genetic Resources for Food and Agriculture⁴. It has been forcefully stressed, at top level that, in the event of moving the Secretariat of the expanded Commission from the Plant Production and Protection Division of the Agriculture Department, to the Department of Sustainable Development, the Forestry, Fisheries and Agriculture Departments "*should retain full responsibilities for genetic resources in their respective fields*".

While there has been an upsurge of manifested needs and activities in the fields of biological diversity and genetic conservation following the UNCED Conference in Rio in 1992, and while the scope of the technical work and its linkages with other fields of development have expanded greatly, available man-power and financial resources have been maintained at a *de facto* zero-growth level (see Secretariat Note FORGEN/97/4B). The scarcity of funds and manpower resources have also manifested themselves strongly in relation to the increased need and strong calls for collaboration and coordination among agencies and institutes at all levels, requiring considerable time, energy and resources.

⁴ The 28th Session of the FAO Conference (October 1995) decided to broaden the mandate of the commission on Plant Genetic Resources to cover all aspects of genetic resources of relevance to food and agriculture (including not only crop and forest genetic resources, but also domestic animal genetic resources and fish genetic resources).

2. **Recommended that FAO continue to provide strong international leadership and a point of reference for the world community in the field of forest genetic resources, in which the competence of the Organization was commonly recognized.**

See Secretariat Notes FORGEN/97/4A; and FORGEN/97/5 for an account of activities undertaken. While the level of Regular Programme, "normative" activities have been maintained at the same levels as earlier, the field programme component has seen an unfortunate downward trend over the past two years. While the effects of this are not yet seriously felt, the potential future lack of two-way dialogue and collaboration with, and through, field projects could have considerable, negative effects in the longer term, unless compensated by other mechanisms.

3. **Recommended that the collegial relations, mutual esteem and widespread goodwill which existed at all levels in the generally closely-knit forest genetic resources community, be fostered and drawn upon for the benefit of sustainable forestry development, worldwide.**

See Section III (iii) of Secretariat Note FORGEN/97/4A. FAO's direct involvement in work of national institutes; and collaboration with international partners, such as Centres of the Consultative Group on International Agricultural Research (CGIAR), IUFRO and the Secretariat of the Convention on Biological Diversity, in the promotion, establishment and management of networks, in publication of guides and handbooks, and in the organization of meetings and workshops (including notably assistance to the Government of Turkey in the Organization of the 11th World Forestry Congress in Turkey in October 1997), and its collaboration with high-level bodies such as the UN Commission on Sustainable Development and the Inter-Governmental Panel on Forests, have helped promote and foster contacts and understanding between professionals in the forestry and related fields.

4. **Recommended that FAO, supported by the global forest genetic resources community, help ensure that technically and scientifically solid information on genetic conservation aspects was made available to fora in which decisions were made on criteria and indicators for sustainable forest management and on variables to be assessed in national, regional and global resource surveys.**

FAO's Forestry Department, and more specifically the Forest Resources Development Service, which also is in charge of forest genetic resources activities, has been closely involved in all six post-UNCED international processes aimed at the development of criteria and indicators for sustainable forest management. These include: (i) The Helsinki (the Pan-European) process, dealing with European forests; (ii) the Montreal process, dealing with temperate and boreal forests outside of Europe; (iii) the Tarapoto process, dealing with forests of the Amazon Basin; (iv) the FAO/UNEP coordinated Dry-Zone Africa process, dealing with dry-zone formations in sub-Saharan Africa; (v) the FAO/UNEP coordinated Near East process, dealing with dry-zone formations in the Near East; and (vi) the FAO/CCAD Central American process of Lepaterique, dealing with forests in the seven member countries of the Central American Commission for Environment and Development. In each of these processes, the maintenance and sustainable use of biological diversity is one of the criteria which define sustainable forest management, or (in one case) have been strongly emphasised as an essential component of one of the criteria identified.

In addition to direct and continuing involvement in the above processes, FAO co-sponsored the Inter-Governmental Seminar on Criteria and Indicators for Sustainable Forest Management (ISCI), organized by the Government of Finland in August 1996; and has over the past years prepared all background and Secretariat Notes on the subject for the Secretariat of the Inter-Governmental Panel on Forests, which included this item on its work programme.

FAO/FOR has kept itself informed, and provided support as/when requested, to attempts of CIFOR; and the Secretariat of the Convention on Biological Diversity, in their efforts to review, in more detail, indicators which could be used to define and monitor the criterion of biological diversity.

FAO's Forestry Department, and more specifically the Forest Resources Development Service, which also is in charge of forest genetic resources activities and issues, is presently preparing for the development and publication of "the Global Forest Resources Assessment 2000". Projected figures, with a baseline of 1995, were published in March 1997 in the document, "*The State of the World's Forests*".

In the new round of forest resources assessments FAO has been requested, in a number of international fora, to pay added attention to qualitative information, such as conservation of biological diversity in forests managed for productive or protective purposes. The bottleneck here is, without doubt, the lack of country-level information for aggregation at international level, and the need to analyse the soundness and usefulness of such aggregation.

In relation to the issue of biological diversity, contacts and contractual arrangements have been made by FAO with *i.a.* the World Conservation Monitoring Centre in Cambridge, U.K., which will help FAO in some special studies in this regard. These will include: the generation of maps of protected areas in the world, their category and area content of forests or other wooded land (this latter information is presently not available for any region in the world); changes in protection status of forests over time, and relationship between protected status and quality and condition of forests; the organization of workshops aimed at reaching agreement among the major international actors in this field on the delineation of eco-floristic zones; the development of a global land cover and an eco-floristic map of the world; analysis of the concerns of the international community over the issue of "naturalness", and advice on possibilities to address such concerns in a global context.

5. Recommended that FAO assist countries to develop or further strengthen national strategies and action plans for the conservation, development and sustainable use of forest genetic resources.

National Forestry Action Programmes (NFAPs) are increasingly acknowledged by countries and international agencies and donors, as a mechanism which can provide a good, holistic framework for national planning. The aim of NFAPs, within the framework of FAO's activities in this regard, is to help countries that request assistance establish a workable social and political framework for forest conservation, management and sustainable development. Policy statements, strategies, programmes and action plans, are measurable milestones of the NFAPs. The role and further development of NFAPs was included in the work programme of the Inter-Governmental Panel on Forests. FAO prepared the Secretariat notes discussed by the Panel in this regard.

National strategies and plans for the conservation, development and sustainable use of forest genetic resources will need to be a part of such overall planning and programming. Early linkages in this regard are presently being forged and pursued.

6. Recommended that FAO, in collaboration with its national and international partners, and with the active assistance of members of the present Panel, help raise awareness in member countries of the need to ensure the presence at the Fourth International Technical Conference on Plant Genetic Resources of country delegations covering, or aware of, forest genetic resource considerations and priorities, and aware of the contributions that the forestry sector can, and should, make to overall development of nations.

At the extra-ordinary session of the FAO Commission on Genetic Resources for Food and Agriculture, held in Rome in May 1996 in preparation of the Leipzig Conference, countries recommended that forest genetic resources not be included in the Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture to be discussed in Leipzig.

The presence of a number of forestry colleagues in the Leipzig Conference itself contributed to the fact that the Conference recognized the importance of forest genetic resources and that it, in principle, endorsed the statement of the Commission meeting mentioned above that "[a global plan of action for forest genetic resources] could be considered in the future, in the light of the work of the Inter-Governmental Panel on Forests...".

The IPF did not discuss forest genetic resources. FAO, therefore, placed the issue on the agenda of the 13th Session of COFO (see Secretariat Note FORGEN/97/7).

7. **Recommended** that, following the Fourth International Technical Conference on Plant Genetic Resources, FAO help convene workshops to discuss tropical and sub-tropical forest genetic resources programmes and priorities, on the same lines as those held, or planned to be held, in 1995 for boreal and temperate zones and for European forest genetic resources.

Arrangements are being made in this regard, following discussions at the 13th Session of the Committee on Forestry held in Rome in March 1997. See Secretariat Note FORGEN/97/4A (Appendix 1) and FORGEN/97/7.

8. **Recommended** that support continue to be given, in a balanced manner, to forest genetic resources activities in the humid tropics, the dry tropics and the sub-tropics, and that exchange of information and genetic materials among and between these zones, as applicable, be vigorously promoted.

See Secretariat Notes FORGEN/97/4A and FORGEN/97/4B. Main focus of activities over the past two years has been on the *Azadirachta indica* network, which involves countries in three tropical regions (Asia, Africa, Latin America/Caribbean); and on preparations for the development of a *Swietenia* genetic resources network in the Neotropics. In addition, the countries collaborating within the framework of existing networks dealing with various aspects of conservation, use and enhancement of *Quercus suber* (*Silva Mediterranea*, EUFORGEN), have received some support. Support has also been given to genetic resources activities carried out in developing countries within the framework of the International Poplar Commission. Finally, activities aimed at reporting and drawing recommendations from the *Acacia/Prosopis* dry-zone genetic resources activities, started in the 1980s, are under way in collaboration with the DANIDA Forest Seed Centre.

9. **Recommended** that FAO help support networking and twinning among and between developed and developing country institutions, and actively further the sharing and transfer of experiences, technologies and know-how.

See Secretariat Notes FORGEN/97/4A, FORGEN/97/4B and FORGEN/97/5; and point (8) above.

10. **Requested** that the importance of the role played by international agencies and by mechanisms operating under the auspices of these agencies, such as the FAO Panel of Experts on Forest Gene Resources, in buffering against negative effects caused by institutional instability or turmoil in individual countries, and in providing an "early warning system" and an element of continuity over time, be fully recognized by decision makers in the international agencies concerned.

The importance of continuity of resources and funding, and consequently of action, has been systematically stressed by FAO in all international fora, including political ones like the CSD and the IPF; and technical and scientific ones, such as IUFRO. The need for capacity building and for attracting good staff as a cornerstone for development has also been the basic message in discussions with countries and national institutes.

In a few cases, e.g. in the case of the Poplar Institute at Casale Monferrato, Italy, FAO has intervened directly by expressing the great concern of the Organization over the planned abolishment of a long-standing and solid institution, which is thought to have also potential international repercussions.

11. **Recommended**, in particular, that the below activities receive continued and increased attention.

See Secretariat Note FORGEN/97/4A for overall programmes and progress.

(i) **Further development and documentation of methodologies and pilot activities in the *in situ* conservation of forest genetic resources, harmonized with sustainable forest management and wise use of the resources to meet present-day and future needs. Support to studies on *ex situ* conservation methods, as complements to *in situ* conservation.**

Development of a "Step-by-step Guide to *In Situ* Conservation of Forest Genetic Resources"; and a "risk assessment framework" related to potential loss of genetic diversity and forest genetic resources as consequences of deforestation and forest degradation (expected to be finalized within 1997). In collaboration with DFSC and national institutes in a number of countries, activities are under way to review and analyze experiences with *in situ* and *ex situ* conservation of forest genetic resources.

Modest support has been provided to institutes in Brazil and Peru for research underpinning conservation; and pilot studies in *in situ* conservation of forest genetic resources.

(ii) **Facilitation of exchange of forest reproductive materials, under mutually agreeable terms, for evaluation and conservation purposes;**

Resources have been, to a large extent, pooled and activities have been carried out within the framework of species networks mentioned in point (8) above.

(iii) **International coordination, and the provision of up-to-date information on the state of forest genetic resources, notably through continued development and regular up-dating of the FAO's Global Information System on Forest Genetic Resources;**

Major efforts have been made over the past two years in software development, and in the inputting of country-derived information into the REFORGEN system. Despatch of available information to countries for verification and up-dating has been started.

In collaboration with CIRAD-Forêt, France a database system for seed stock management has been developed and distributed to a number of countries (GESSEM: Logiciel de gestion d'un stock de semences forestières et agro-forestières). It is planned to develop an English version of the system as well.

(iv) **Raising of awareness through the dissemination of information by traditional and electronic means, focused on different levels of readership and a range of target audiences;**

A number of papers for technical and scientific meetings have been prepared, presented and widely disseminated, in addition to regular publications (see 11(i) above, Secretariat Note FORGEN/97/4A, and list of publications and documents on forest genetic resources available to Panel Members).

The annual bulletin, "*Forest Genetic Resources*", and other relevant information, have recently been placed on the Internet. Action in this regard has been further supported by the development of a FAO Home Page on forest genetic resources:

<http://www.fao.org/waicent/faoinfo/forestry/fogenres/homepage/content.htm>

(v) **Collaboration in international efforts to quantify the value of forest genetic resources and of conserving and developing such resources for their sustainable use.**

No action taken due to lack of resources.

12. **Recommended that FAO continue to coordinate activities within the framework of the "International Neem Network".**

See point (8) above. The International Neem Network has been one of the major points of concentration of resources over the past two years. Main activities of the network in recent years are summarized in FORGEN/97/4A.

13. **Recommended that FAO take steps to catalyze further action and to coordinate already ongoing work in the conservation and sustainable use of mahogany species, initially focusing attention on species of neotropical genera of the Meliaceae. Activities should, in subsequent phases of the work, be expanded to cover also the Asia-Pacific and the African regions.**

See point (8) above. In addition to the International Neem Network, development of activities in the conservation and sustainable utilization of *Swietenia* and *Cedrela* genetic resources has been among the top priorities over the past two years.

APPENDIX 5.

**FINANCIAL CONTRIBUTIONS IN FOREST GENETIC RESOURCES:
NON-STAFF RESOURCES. FAO'S REGULAR PROGRAMME (RP)
(SUB-PROGRAMME 2412)**

The attached tables show RP expenditure in the forest genetic resources field in 1996 and 1997. Information on RP expenditure in previous years was published in Appendix 4 of the Report of the 9th Session of the Panel.

The figures include:

- (i) Collaboration with national institutes, through **direct financial support** to exploration and to seed collection, despatch; *in situ* and *ex situ* conservation; and establishment and evaluation of field trials;
- (ii) Expenditure for consultancies; or contractual services in support of specific studies related to forest genetic resources;
- (iii) Expenditure for the dissemination of information;
- (iv) Meeting costs and expenditure related to fellowships.

A summary sheet is also provided, showing sub-totals for the above items.

The tables contain details on expenditures which bear direct relation to the work and the recommendations of the FAO Panel of Experts on Forest Gene Resources. They do not include staff time and related travel; nor funding related to the FAO Field Programme, administrated by the TCO5 (the former Forestry Operations Service) and technically backstopped by the technical divisions of the Forestry Department.

RP expenditure for staff time for the biennium 1996/97 included one P4 Forestry Officer (Post occupied by Mr. O. Souvannavong until May 1996; at present vacant; in the interim period the RP activities have been assisted by short-term consultants), and part-time secretarial assistance; it further included a proportion of the time of Chief FORM (presently, Ms. C. Palmberg-Lerche, D1) who, according to programming, spent an estimated 10-15% of her time on support to RP forest genetic resources activities. A small percentage is spent by the Senior Forestry Officer (Plantations), P5 and the Forestry Officer (Forest Management), P4. In addition, the activities were supported, through Extra Budgetary (Danish) funding, by the services of an Associate Professional Officer (presently C. Pilegaard Hansen, P2).

FINANCIAL CONTRIBUTIONS IN FOREST GENETIC RESOURCES: NON-STAFF RESOURCES: FAO'S REGULAR PROGRAMME (RP), SUB-PROGRAMME 2412
(excludes time and travel of FAO staff; and activities carried out under FAO's field programme)

(I) CONTRACTS AND CONSULTANCIES		1996	1997	OBSERVATIONS
(i) Direct support to national, regional, international institutes				
Australia (CSIRO-DFR)	2 000			<i>Toona ciliata</i> collection/distribution
Denmark (DFSC)	5 000*			<i>In situ, ex situ</i> activities
Kenya (DEFRI)	5 000*			Reviewing <i>Populus ilicifolia</i> (IPC)
Mexico (INIFAP)	3 500			Twinning (travel to FO Biology Workshop, Canada)
SUB-TOTAL (i):	15 500		25 000 TBA (est)	
(ii) Networking activities: support to national institutes and coordination				
<i>Azadirachta indica</i> , neem				
Denmark (DFSC)	3 500			
Ghana (FD)	500*			Seed invoice
Myanmar (FD)	2 000			Support to organization of network meeting
China			1 000	}}
India			1 250	}}
Pakistan			1 700	}}
Senegal			1 450	}}
Sri Lanka			3 900	}}
			1 400	}}
<i>Swietenia, Cedrela</i> , mahoganies				
CATIE, Costa Rica (C. Navarro)	3 000* +			
P. Y. Kageyama, Brazil	1 300			
	2 000* +			
C. Linares, Peru	2 500			Background studies on status and priorities of mahoganies in the Neotropics + travel to Mahogany meeting, Puerto Rico
F. Patiño, Mexico	2 000*			}}
	2 000* +			}}
Int. Inst. Trop. Forestry (ITTF), Puerto Rico	1 400			}}
CATIE, Costa Rica	3 500*			}}
INIFAP, Mexico			5 000*	}}
ITTF, Puerto Rico			2 500*	}}
F. Patiño, Mexico			2 000*	}}
			11 500*	}}
<i>Quercus suber</i> , cork oak				
Algeria (FD)	1 900*			Support to Int. Mahogany meeting
Morocco (FD)	3 000* +			(incl. travel in Region)
	2 000			Synthesis Doc + Development of Project Document
SUB-TOTAL (ii):	30 600		2 600	}}
			34 300 +	}}
			14 000 TBA (est)	}}

*Previous years' commitment

FINANCIAL CONTRIBUTIONS IN FOREST GENETIC RESOURCES: NON-STAFF RESOURCES.
FAO'S REGULAR PROGRAMME (RP), SUB-PROGRAMME 2412

(excludes time and travel of FAO staff; and activities carried out under FAO's field programme)

(I) CONTRACTS AND CONSULTANCIES (continued)	1996	1997	OBSERVATIONS
<p>(iii) <u>FAO/HQ Based Consultancies/Contracts</u></p> <p>- <u>Data Base REFORGEN</u> US Forest Service US Forest Service G. Man, USA M. Bozzano, Italy T. Niemann, Canada</p> <p>- <u>Preparation of Documents, Publications</u> P. Kageyama & collaborators, Brazil L. Thomson, Australia B.A. Wilcox, USA</p>	<p>2 500 3 600</p>	<p>10 000* 3 000* 6 000*</p>	<p>Travel to Rome for discussions re development of data base</p> <p>} Practical guide to <i>in situ</i> conservation } Deforestation and forest genetic resources</p>
SUB-TOTAL (iii):	18 000	19 000	

FINANCIAL CONTRIBUTIONS IN FOREST GENETIC RESOURCES: NON-STAFF RESOURCES.
FAO'S REGULAR PROGRAMME (RP), SUB-PROGRAMME 2412

(excludes time and travel of FAO staff; and activities carried out under FAO's field programme)

(2) MEETING COSTS (direct costs, excl. reporting costs)	1996	1997	OBSERVATIONS
10th Session of FAO Panel of Experts on Forest Gene Resources		70 000	Travel of participants paid by FAO. Interpretation provided English/French/Spanish
Direct support to FAO/IPGRI Workshops on Safe Movement of Germplasm of forest tree species	3 500 3 000	3 000	
- eucalypt germplasm	1 000***		
- pine germplasm	1 000***		
- acacia germplasm	1 000***		
"Global Plan of Action on PGR" - Regional Workshops: preparations for the Leipzig Conference	1 000***		
Gwaze (Southern Africa)	1 000***		
Kageyama (Latin America)	1 000***		
Morandini (North Africa)	1 000***		
Tewari (South Asia)	1 000***		
Wang Houran (China)	1 000***		
SUB-TOTAL:	11 500	73 000 + 15 000 TBA(est)	

*** N.B. Figures thus marked indicate FAO Regular Programme funding from other sub-programmes and/or Divisions in support of forest genetic resources activities in RP 2312; these amounts are included in Totals of RP expenditure at the bottom of the table.

FINANCIAL CONTRIBUTIONS IN FOREST GENETIC RESOURCES: NON-STAFF RESOURCES.
FAO'S REGULAR PROGRAMME (RP), SUB-PROGRAMME 2412

(excludes time and travel of FAO staff; and activities carried out under FAO's field programme)

(3) DISSEMINATION OF INFORMATION	1996	1997	OBSERVATIONS
- <u>Translation costs</u>			
Forest Genetic Resources Annual Bulletin	8 700	8 700	
Gene Panel Background Notes and Report		8 000	
- <u>Publication costs</u>			
FGR Annual Bulletin	8 000	8 000	
<i>In situ</i> guide	7 000	17 000	(Part cost, E,F,S; shared with IPGRI)
Deforestation and forest genetic resources		15 000	
Gene Panel Report (E,F,S)	6 000	9 000	
SUB-TOTAL:	29 700	65 700	N.B. Deficit in publication allocation 97 will have to be charged to contracts (= 1 above) (TBA) or Extra Budgetary funds

ACTIVITIES AND EXPENDITURE OF FAO'S FIELD PROGRAMME
IN FOREST GENETIC RESOURCES

Secretariat Note FORGEN/97/5 briefly reviewed and summarized activities of FAO's field programme in forest genetic resources. It was noted that due to recent decentralization of field operations to FAO Regional and Sub-Regional Offices and temporarily insufficiently developed channels of communication between these offices and FAO HQ, the information at hand was incomplete and should only be considered indicative of the type of activities which were presently on-going. In spite of acknowledged incompleteness of the document, a clear trend of decrease in field activities was noted. This decrease was evident not only in projects dealing directly or indirectly with forest genetic resources (shown in Table 2), but also in projects in the field of agriculture in general, in the broad sense (agriculture, fisheries and forestry).

As of 1 December 1996, there were 179 on-going and approved forestry projects with a total budget in 1996 of about \$US60.5 million. The number of projects and the annual budget for the forestry field programme had declined in recent years; over the years 1990-91, the mean annual expenditure for FAO field programme amounted to \$US 77.3 million divided to 273 projects, while in 1995 there were 219 projects with a budget of some \$US 67 million. It was noted that the size of the field programme was likely to be reduced further in the coming years as more projects would come to a conclusion, and new projects were being developed/approved at a slower pace, many donors shifting to country execution or direct, bilateral arrangements.

Approximately two thirds of the forestry field programme (in both funding terms and in terms of number of projects), in 1995/96 was related to forest resources management, utilization and conservation, followed by projects dealing with institutional and policy matters (approx 25% of projects); the remaining projects being focused on forest products.

In general, it was noted that projects in the fields of "development and management of forests", "national forest action programmes", "non-wood forest products" and "forest policies and information" had, in contrast to general trends in the field programme, increased in absolute terms, while especially projects in "forest conservation and wildlife" had declined in number and size.

The largest number of projects and highest expenditures was in the Asia-Pacific region, followed by Africa, and Latin America and the Caribbean. Compared with figures from previous years, a rather sharp decrease could be observed both in number of projects and in monetary terms for projects in the Near East region, whereas programmes in Asia-Pacific, Africa and Latin America regions had decreased to a lesser extent (Table 1).

Table 1 Regional distribution of the forestry field programme in 1996 by categories of the Programme of Work and Budget

REGION	Forest Resources and Environment		Forest Products		Forest Institutions		TOTAL by region		
	No of projects	000 \$	No of projects	000 \$	No of projects	000 \$	No of projects	000 \$	% of total expenditure/budget for 94-95
AFRICA	37	10 583	4	1 360	10	4 202	51	16 145	26.8
ASIA-PACIFIC	53	15 536	5	2 353	10	2 789	68	20 677	34.3
EUROPE	1	105	1	20	3	103	5	228	0.4
INTERREGIONAL	6	3 096	1	51	7	3 165	14	6 312	10.4
LATIN AMERICA AND CARIBBEAN	15	7 137	1	192	11	5 795	27	13 124	21.7
NEAR EAST	12	2 850	-	-	2	1 027	14	3 877	6.4

Table 2. Number of projects in forest genetic resources by region and by main activities

MAIN ACTIVITY	Africa	Asia and Pacific	Latin America and Caribbean	Near East	TOTAL
Seed collection, production, storage and exchange	1	5	2	4	12
Testing/breeding	1	7	-	2	10
<i>In situ</i> conservation of FGR and forest management	10	7	6	5	28
Nature conservation, protected areas and national parks	2	5	1	4	12

**FOREST GENETIC RESOURCES PRIORITIES
(BY REGION, SPECIES AND OPERATION)**

**SPECIES IDENTIFIED AS TOP PRIORITY
FOR FAO COORDINATED ACTIVITIES**

NOTES

(i) General Observations

The present Appendix, complemented by Appendix 8, represents an up-dated and revised version of the earlier tables which appeared as Appendix 6 in the Report on the 8th Session of FAO Panel of Experts on Forest Gene Resources (FAO 1994).

FAO's mandate, and that of the present Expert Panel, relates to genetic resources of species of socio-economic value for agricultural and forestry development, with special reference to intra-specific genetic variation found in these species. Endangered and vulnerable species, and species under threat of depletion listed *i.a.* in documentation published by the World Conservation Union (IUCN), are included only if they meet these basic development criteria. Similarly, although in exceptional cases referring to genera, the list does not refer to ecosystems or biota.

The Appendix does not present an exhaustive list of woody perennial species in need of attention at regional, ecoregional and global levels. The present list aims at providing information on those species and provenances which the FAO Panel of Experts on Forest Gene Resources, during its 9th Session in October 1995, considered should be given highest, relative priority in the forest genetic resources programme of FAO's Forestry Department. The list, arranged by regions and sub-regions, indicates priority on a scale from 1 to 3 (see below), for the various operational steps identified: exploration, evaluation, conservation and utilization of germplasm (including selection and breeding).

The Panel of Experts recognized that many of the priority ratings must be considered tentative; the list will need continuing up-dating and must be modified in the light of new information, knowledge and needs.

While not underrating the fundamental importance of locally occurring species and the need to gain more information and to ensure the conservation and wise use of this category of woody perennials, the present list focuses on those species which, in addition to their local importance, are of **actual or potential value also in other countries or areas; or which may be of immediate importance in improvement and breeding programmes of related species in their country of origin and in other countries**.

The present list should be reviewed in conjunction with the more detailed and complete lists of national, regional and global priority species and activities, shown in Appendix 8. There is, furthermore, a need to **supplement** both lists drawn up by the Panel (Appendices 7 and 8), with more detailed, **national lists** of priorities at local and national level.

(ii) **"End Use of Species" (columns 1-4)**

Only species of highest priority in one (or at times, several) of the four, general end use categories identified, are included. The present list includes those species/provenances which the Panel of Experts considered should receive maximum priority **in the forest genetic resources programme of FAO** (See Appendix 8 for a complete list of priority species and operations).

Column 1, "*Industrial Wood*", includes those species whose main use is for sawn logs, timber, heavy construction wood, plywood, chip and particle board, wood pulp etc.

Column 2, "*Industrial Non-Wood Products*", includes those species which are mainly used for the production of gums, resins, oils, tannins or other products used in small, medium and large-scale local and non-local industries.

Column 3, "*Fuelwood, Posts, Poles*", includes those species producing mainly firewood and wood used for the production of charcoal and energy; and those used for the production of roundwood used on-farm.

Column 4, "*Other Uses (goods, services)*", is a category which includes species grown mainly for the production of food, fodder, and for land stabilization, soil amelioration, for shade, shelter and other environmental values.

Complementary information is given in the "Remarks"-column.

(iii) **Operations/Activities**

Three priority ratings are used, as follows:

- (1) Highest priority;
- (2) Prompt action recommended;
- (3) Action is important, but of less urgency than that for species listed as priority (1) and (2).

Complementary information is given in the "Remarks"-column.

(E) in the "Remarks"- column, signifies endangered with extinction or severe depletion of the gene pool (see also paragraph 2 of "*General Observations*" above).

**LIST OF SPECIES IDENTIFIED AS TOP PRIORITY
FOR FAO COORDINATED ACTIVITIES**

1. Western USA/Canada	34
2. Eastern USA/Canada	34
3. Mexico	34
4. Caribbean, Central America, Colombia, Venezuela and Ecuador	34
5. South America (except Colombia, Venezuela and Ecuador)	35
6. Northern and Central Europe	35
7. Mediterranean Region, Southern Europe and Near East	35
8. South and East Asia (excl. China and India)	35
9. North, North-East and Central Asia (incl. China and India)	36
10. Africa	37
11. Australia and New Zealand	38
12. Pacific Islands	38

SPECIES	End use of species				Operations/ Activities								REMARKS	
					Exploration & collection		Evaluation		Conservation		Germplasm use			
	1	2	3	4	5	6	7	8	9	10	11	12		
1. WESTERN USA/CANADA														
No species were identified as top priority species for FAO coordinated activities														
2. EASTERN USA/CANADA														
No species were identified as top priority species for FAO coordinated activities														
3. MEXICO														
<i>Astronium graveolens</i>	✓				1	1	1	1	1	1	1	1	(E). National interest	
<i>Cedrela odorata</i>	✓				1	1	1	1	1	1		1	PVT and PGT	
<i>Cupressus lindleyi</i>	✓				1	1	1	1	1	1		1		
<i>Dendropanax arboreus</i>	✓				1	1	1	1	2	2		1	PVT in progress	
<i>Pinus chiapensis</i>	✓				2		1		1			1	PVT and PGT	
<i>P. patula</i>	✓				2		1		1			1	PVT (Int.)	
<i>Swietenia macrophylla</i>	✓				1	1	1	1	1	1		1	PVT, PGT, SO. (E) certain populations	
4. CARRIBEAN, CENTRAL AMERICA, COLOMBIA, VENEZUELA AND ECUADOR														
<i>Bombacopsis quinata</i>	✓				1	1	1	1	1	1	2	1	PVT, PGT in progress. SO established. (E) in most parts of range	
<i>Cedrela odorata</i>	✓				1	1	1	1	1	1	3	1	PVT, PGT in progress. (E) in most parts of range	
<i>Cordia alliodora</i>	✓			✓		2			2	2		1	1	PVT, PGT, CLT in progress. SO established. Breeding systems studies completed
<i>Gliricidia sepium</i>			✓	✓		2		2	2	2		2		PVT in progress. <i>In situ</i> and <i>ex situ</i> stands, SO established
<i>Leucaena leucocephala</i>			✓	✓	1	1		1	1	1		1	1	PVT in progress. SO
<i>Pinus caribaea</i> var. <i>hondurensis</i>	✓	✓				2			2	2		1	1	PVT, PGT in progress. <i>In situ</i> and <i>ex situ</i> stands established
<i>P. tecunumanii</i>	✓	✓				1			1	1		1	1	PVT and PGT in progress. <i>In situ</i> and <i>ex situ</i> stands established
<i>Swietenia macrophylla</i>	✓				1	1	1	1	1	1	3	1		PVT and genetic variability studies in progress. (E) in most parts of range. Resistance trials established

SPECIES	End use of species				Operations/ Activities								REMARKS
					Exploration & collection		Evaluation		Conservation		Germplasm use		
	1	2	3	4	5	6	7	8	9	10	11	12	
5. SOUTH AMERICA (EXCEPT COLOMBIA, VENEZUELA AND ECUADOR)													
<i>Aniba duckei</i>		✓			2	1	1	1	1	1	1	1	(E) all range. Medicinal products
<i>Cedrela odorata</i>	✓					1	1	1	1	1	1	1	(E) all range. Overexploitation
<i>Dalbergia nigra</i>	✓				2	1	1	1	1	1	1	1	(E) all range
<i>Maytenus ilicifolia</i>		✓		✓	2	1	1	1	1	1	1	1	(E) all range. Medicinal use
<i>Micropholis meloniana</i>	✓				1	1	1	1	1	1	1	1	(E) in parts of range
<i>Nothofagus alessandrii</i>	✓				1	1	1	1	1	1	1	1	(E) all range
<i>Swietenia macrophylla</i>	✓					1	1	1	1	1	1	1	(E) in parts of range
6. NORTHERN AND CENTRAL EUROPE													
No species were identified as top priority species for FAO coordinated activities													
7. MEDITERRANEAN REGION, SOUTHERN EUROPE AND NEAR EAST													
<i>Acacia nilotica</i>			✓	✓	1	1	1	1			1		Int. PVT in progress
<i>A. saligna</i>			✓	✓		1	1	1			1	1	Network Sylva Mediterranea
<i>A. senegal</i>			✓	✓	1	1	1	1			1	1	
<i>A. tortilis</i> (incl. ssp. <i>raddiana</i>)			✓	✓	1	1	1	1			1		Int. PVT in progress
<i>Cedrus atlantica</i>	✓			✓	2	2	2	2			2	2	Int. testing in progress
<i>C. libani</i>	✓			✓	2	1	2	2	1	1	2	2	Int. testing. National stands in Lebanon (E). Conservation priority activities apply to Lebanon
<i>Ceratonia siliqua</i>				✓	1	1	1	1					Network Sylva Mediterranea
<i>Gleditsia triacanthos</i>				✓	1	1	1	1					Network Sylva Mediterranea
<i>Prosopis cineraria</i>			✓	✓	1	1	1	1	1	1	2	2	
<i>Quercus suber</i>		✓			2	2	2	2			2	2	
<i>Tetraclinis articulata</i>				✓	1	1	1	1	2	2			
8. SOUTH AND EAST ASIA EXCL. CHINA AND INDIA													
<i>Azadirachta indica</i> (incl. var. <i>excelsa</i>)	✓	✓	✓	✓	2	1	3	3	2	1	1	1	Int. PVT in progress
<i>Dipterocarpus alatus</i>	✓		✓	✓	1	1	1	1	1	1	1	1	Excellent wood for construction and veneer purposes

SPECIES	End use of species				Operations/ Activities								REMARKS
					Exploration & collection		Evaluation		Conservation		Germplasm use		
	1	2	3	4	5	6	7	8	9	10	11	12	
<i>E. urophylla</i>	✓	✓	✓	✓	3	2	2	2	2	2	1	1	Int. PVT in progress. Work on hybridization required
<i>Hopea odorata</i>	✓		✓	✓	1	1	1	1	1	1	1	1	Priority species for ASEAN. Excellent wood for furniture
<i>P. macrocarpus</i>	✓		✓		1	1	1	1	1	1	1	1	Excellent for construction purposes. Priority species for ASEAN
<i>Tectona grandis</i>	✓		✓		1	1	1	1	1	1	1	1	Very important species
9. NORTH, NORTH-EAST AND CENTRAL ASIA INCL. CHINA AND INDIA													
<i>Acacia auriculiformis</i>	✓		✓	✓	1	1	1	3	1	1	1	1	Exotic, PVT in China
<i>Acacia confusa</i>	✓		✓	✓	1	1	2	2	3	3	2	2	Taiwan acacia
<i>Acacia crassicarpa</i>	✓	✓	✓		2	2	2	2	2	2	2	2	Exotic, PVT in China
<i>Acacia mangium</i>	✓		✓	✓	1	1	1	1	1	1	1	1	Exotic, PVT in China
<i>Acacia mearnsii</i>	✓		✓	✓	1	1	1	1	1	1	1	1	Exotic, PVT and PGT in China
<i>Albizia procera</i>	✓		✓	✓	1	1	1	1	1	1	1	1	China, India
<i>Azadirachta indica</i>		✓	✓	✓	1	1	1	1	1	1	1	1	Int. PVT initiated
<i>Bamboo (Bambusa, Dendrocalamus, Phyllostachys spp.)</i>	✓	✓		✓	2	1	1	1	1	1	1	1	Important for SE Asia, China and India
<i>Calamus platyacanthoides</i>	✓		✓				2	2	2	2	2	2	Overexploited, poor regeneration, recalcitrant seeds
<i>C. tetradactylus</i>	✓		✓				2	2	2	2	2	2	Overexploited, poor regeneration, recalcitrant seeds
<i>Camellia japonica var. japonica</i>	✓	✓	✓	✓	1	1	1	1	1	1	1	1	Oil and timber, China, Korea and Japan
<i>Casuarina equisetifolia (exotic)</i>	✓	✓	✓	✓			1	1	1	1	1	1	PVT, PGT and vegetative propagation in China
<i>C. glauca</i>	✓	✓	✓	✓			1	1	1	1	1	1	Exotic
<i>C. junghuhniana (exotic)</i>	✓			✓	1	1	1	1	1	1	1	1	
<i>Cedrus deodara</i>	✓		✓	✓				2				1	(E) in parts of range
<i>Chamaecyparis obtusa</i>	✓	✓	✓	✓	1	1	1	1	1	1	1	1	PGT/SO in Japan, exotic in China and Korea
<i>Cryptomeria japonica</i>	✓	✓	✓	✓	1	1	1	1	1	1	1	1	PGT/SO in Japan, exotic in China and Korea
<i>Dalbergia sissoo</i>	✓	✓	✓	✓			2	2	2	1		1	Wide genetic variation
<i>Fokienia hodginsi</i>	✓						1	1	1	1	1	1	Monogenous, endemic to China
<i>Fraxinus mandshurica</i>	✓	✓	✓	✓	1			1		1		1	Important for this region

SPECIES	End use of species				Operations/ Activities								REMARKS
					Exploration & collection		Evaluation		Conservation		Germplasm use		
	1	2	3	4	5	6	7	8	9	10	11	12	
<i>Hippophae rhamnoides</i>	✓	✓	✓	✓	1		1		1		1	1	Fruits with high vitamin content for drink and medicine, important for this region
<i>Juglans mandshurica</i>	✓	✓	✓	✓			1		1	1	1	1	Good timber in China, Japan and Korea
<i>J. regia</i>	✓	✓	✓	✓	1	1	1	1	1	1	1	1	Timber and nut
<i>Larix gmelini</i>	✓	✓	✓				1		1		1		PVT in China
<i>L. kaempferi</i>	✓	✓	✓				1		1		1	1	SO, crossed with other larches
<i>Michelia macclurei</i>	✓	✓	✓	✓	1	1	1	2	1	2	1	1	Fast growing and valuable timber, subtropical species
<i>Picea jezoensis</i>	✓	✓	✓	✓			1		1	1	1	1	China and Korea
<i>Pinus caribaea</i> var. <i>bahamensis</i>	✓	✓	✓				1			1	1	1	PVT/PGT in China
<i>P. caribaea</i> var. <i>caribaea</i>	✓	✓	✓	✓			1		1	1	1	1	PVT/PGT in China
<i>P. densiflora</i>	✓	✓	✓	✓			1		1	1	1	1	PVT/PGT in Japan
<i>P. koraiensis</i>	✓	✓	✓	✓	1	1	1	1	1	1	1	1	Important for Korea, China and Japan
<i>P. massoniana</i>	✓	✓	✓	✓	1	1	1	1	1	1	1	1	Cross breeding in Japan with <i>P. densiflora</i>
<i>P. yunnanensis</i>	✓	✓	✓	✓	1	1	1	1	1	1	1	1	PVT and SO ongoing
<i>Toona microcarpa</i>	✓	✓		✓	1	1		1			1	1	MPTS
<i>T. sinensis</i>	✓	✓		✓	1	1		1			1		MPTS
<i>T. sureni</i>	✓				1	1		1				1	
10. AFRICA													
<i>Acacia karoo</i>							1	1			2		Gum being internationally traded
<i>Acacia nilotica</i>		✓	✓	✓	2	3	1	1			1	2	Int. PVT in progress. W. Africa to be completed. Problems with natural regeneration
<i>A. senegal</i>		✓	✓	✓	1	1	1	1	1	1	3	2	(E) populations in N parts of range. Problems with natural regeneration
<i>A. seyal</i>						1	1	1					Gum being internationally traded
<i>A. tortilis</i> (incl. ssp <i>reddiana</i>)			✓	✓	2	1	2	1			3	2	Int. PVT in progress. W. Africa to be completed.
<i>Azadirachta indica</i> (exotic)		✓	✓	✓			1	1	1	1	1	1	Int. PVT in progress
<i>Daibergia melanoxydon</i>	✓				1	1		2	1	1			(E)

SPECIES	End use of species				Operations/ Activities								REMARKS
					Exploration & collection		Evaluation		Conservation		Germplasm use		
	1	2	3	4	5	6	7	8	9	10	11	12	
<i>Faidherbia albida</i>			✓	✓			3	1	2		1	1	Seed collections, PVT, PGT and population genetics studies in progress
<i>Heritiera</i> (syn. <i>Tarrietia</i>) <i>utilis</i>	✓				1	1	1	1	1	1	1	1	(E)
<i>Irvingia</i> spp.			✓	✓	1	1	1	1	1	1	1	1	Selection for resistance to shoot borer. Seed collections initiated
<i>Khaya</i> spp.	✓				1	1	1	1	1	1	1	1	Prov. collections and gene ecological studies in progress
<i>Parkia biglobosa</i>	✓			✓			1	1	1		1	1	(E). Recalcitrant seed. Field genebank
<i>Prosopis</i> spp. (exotic)			✓	✓		1		1			2	2	<i>In situ</i> cons. in progress. Problem of die-back disease
<i>Prunus africana</i>	✓	✓		✓	1	1	1	1	1	1	2		Recalcitrant seed. Field: ICRAF in SADC countries, FAO in CILSS countries
<i>Pterocarpus angolensis</i>	✓					1		2	1	1			Recalcitrant seed. Field: Tamarindus indica
<i>Sclerocarya birrea</i>				✓	1	2		2	1	1		2	Used in cocoa manufacturing
<i>Tamarindus indica</i>			✓	✓	1	1		2		1	1	1	
<i>Vitellaria paradoxa</i>		✓				1		2	1	1			
11. AUSTRALIA AND NEW ZEALAND													
<i>A. mangium</i>	✓				3							3	Biogeographic descriptions completed, sampling, PVT. Hybrids being developed with <i>A. auriculiformis</i> . Advanced breeding underway
<i>Grevillea robusta</i>				✓	3	2	2	2				2	
12. PACIFIC ISLANDS													
<i>Santalum</i> spp.		✓			2		2		1			2	SPRIG priority
<i>Swietenia macrophylla</i>	✓					2	3			2		2	SPRIG priority

**FOREST GENETIC RESOURCES PRIORITIES
(BY REGION, SPECIES AND OPERATION)**

**SPECIES IDENTIFIED AS HIGH, GLOBAL, REGIONAL
AND/OR NATIONAL PRIORITY**

NOTES

(i) General Observations

The present Appendix, which complements Appendix 7 and includes the species and provenances listed in it, represents an up-dated and revised version of the earlier tables which appeared as Appendix 7 in the Report on the 8th Session of FAO Panel of Experts on Forest Gene Resources (FAO 1994).

FAO's mandate, and that of the present Expert Panel, relates to **genetic resources of species of socio-economic value for agricultural and forestry development**, with special reference to **intra-specific genetic variation found in these species**. Endangered and vulnerable species, and species under threat of depletion listed *i.a.* in documentation published by the World Conservation Union (IUCN), are included only if they meet these basic development criteria. Similarly, although sometimes referring to genera, the list does not refer to ecosystems or biota.

The Appendix does not present an exhaustive list of woody perennial species in need of attention at national, regional, ecoregional and global levels. The list is aimed at providing information on those species and provenances which the Expert Panel during its 8th Session in June 1993 considered to should be given **highest, relative priority in the forest genetic resources programme of FAO's Forestry Department; and of other international, regional, bilateral and national institutions and agencies, including those of national and international non-governmental organizations and the private sector**. The list, arranged by regions and sub-regions indicates, whenever possible, priority on a scale from 1 to 3 (see below), for the various operational steps identified: exploration, evaluation, conservation and utilization of germplasm (including selection and breeding).

The Panel recognized that many of the priority ratings must be considered tentative. At times, basic information necessary for precise rating was lacking, and in this case the list may include only a mention of the genus in question (implying an urgent need for exploration).

While not underrating the fundamental importance of locally occurring species and the need to gain more information and to ensure the conservation and wise use of this category of woody perennials, the present list focuses mainly on those species which, in addition to local importance, **are of actual or potential value also in other countries or areas; or which may be of immediate importance in improvement and breeding programmes of related species in their country of origin and other countries**.

There is thus a need to **supplement** the present list with more detailed, **national lists** of priorities for action at a local and national level.

(ii) **"End Use of Species" (columns 1-4)**

Only species of high actual or potential priority in one (or at times, several) of the four, general end use categories identified, are included.

Column 1, "*Industrial Wood*", includes those species whose main use is for sawn logs, timber, heavy construction wood, plywood, chip and particle board, wood pulp etc.

Column 2, "*Industrial Non-Wood Products*", includes those species which are mainly used for the production of gums, resins, oils, tannins or other products used in small, medium and large-scale local and non-local industries.

Column 3, "*Fuelwood, Posts, Poles*", includes those species producing mainly firewood and wood used for the production of charcoal and energy; and those used for the production of roundwood used on-farm.

Column 4, "*Other Uses (goods, services)*", is a category which includes species grown mainly for the production of food, fodder, and for land stabilization, soil amelioration, for shade, shelter and other environmental values.

Complementary information is given in the "Remarks"-column.

(iii) **Operations/Activities**

Three priority ratings are used, as follows:

- (1) Highest priority;
- (2) Prompt action recommended;
- (3) Action is important, but of less urgency than that for species listed as priority (1) and (2).

Complementary information is given in the "Remarks"-column.

(E) in the "Remarks"- column, signifies endangered with extinction or severe depletion of the gene pool (see also paragraph 2 of "*General Observations*" above).

**LIST OF SPECIES IDENTIFIED AS HIGH, GLOBAL, REGIONAL
AND/OR NATIONAL PRIORITY**

1. Western USA/Canada	42
2. Eastern USA/Canada	44
3. Mexico	45
4. Caribbean, Central America, Colombia, Venezuela and Ecuador	46
5. South America (except Colombia, Venezuela and Ecuador)	47
6. Northern and Central Europe	50
7. Mediterranean Region, Southern Europe and Near East	50
8. South and East Asia (excl. China and India)	51
9. North, North-East and Central Asia (incl. China and India)	53
10. Africa	61
11. Australia and New Zealand	64
12. Pacific Islands	66

SPECIES	End use of species				Operations/ Activities								REMARKS
					Exploration & collection		Evaluation		Conservation		Germplasm use		
	1	2	3	4	5	6	7	8	9	10	11	12	
1. WESTERN USA/CANADA													
<i>Abies amabilis</i>	✓			✓			3						Int. PVT
<i>A. bracteata</i>	✓				2		3						
<i>A. concolor</i>	✓											3	
<i>A. grandis</i>	✓			✓								3	Int. PVT
<i>A. lasiocarpa</i>	✓												Int. PVT
<i>A. magnifica</i> var. <i>shastaensis</i>	✓								3				
<i>A. procera</i>	✓	✓					3						Int. PVT, breeding programs
<i>Acer macrophyllum</i>	✓		✓										<i>In situ</i> cons. stands
<i>Alnus rhombifolia</i>				✓									<i>In situ</i> cons. stands
<i>A. rubra</i>	✓		✓	✓	3	2		2		3		2	PVT. Seed in storage for int. PVT
<i>A. sinuata</i>				✓									<i>In situ</i> cons. stands
<i>A. tenuifolia</i>				✓									<i>In situ</i> cons. stands
<i>Arbutus menziesii</i>				✓									<i>In situ</i> cons. stands
<i>Betula fontinalis</i>			✓										<i>In situ</i> cons. stands
<i>B. papyrifera</i>			✓										<i>In situ</i> cons. stands
<i>Castanopsis chrysophylla</i>				✓									<i>In situ</i> cons. stands
<i>Celtis douglasii</i>				✓									<i>In situ</i> cons. stands
<i>Chamaecyparis lawsoniana</i>	✓												Root rot affecting species: <i>Phytophthora lateralis</i>
<i>Chamaecyparis nootkatensis</i>	✓			✓	3	2		2					Tests and collections
<i>C. macrocarpa</i>	✓				3	3		3					
<i>Cornus nuttalli</i>				✓	3								
<i>Crataegus douglasii</i>				✓						3			
<i>C. columbiana</i>				✓						3			
<i>Cupressus arizonica</i> (complex)	✓				2	3		3		2		2	
<i>C. bakeri</i>				✓						3			
<i>Fraxinus latifolia</i>				✓						3			
<i>Juniperus occidentalis</i>				✓	3								
<i>J. scopulorum</i>				✓	3								
<i>Larix laricina</i>	✓										3	2	
<i>L. lyallii</i>	✓			✓	2								
<i>L. occidentalis</i>	✓		✓		3					2			Breeding trials.
<i>Libocedrus decurrens</i>	✓									3			
<i>Lithocarpus densiflorus</i>				✓						3			

SPECIES	End use of species				Operations/ Activities								REMARKS
					Exploration & collection		Evaluation		Conservation		Germplasm use		
	1	2	3	4	5	6	7	8	9	10	11	12	
<i>Malus fusca</i>				✓						3			
<i>Picea breweriana</i>	✓									3			
<i>Picea engelmannii</i>	✓				2								
<i>P. glauca</i>	✓												
<i>P. sitchensis</i>	✓												
<i>Pinus albicaulis</i>	✓				3	3		3		3			
<i>P. arizonica</i>	✓		✓		2								
<i>P. attenuata</i>	✓				3							3	
<i>P. chihuahuana</i>	✓		✓		2								
<i>P. contorta</i>	✓		✓										
<i>P. engelmannii</i>	✓		✓		2								
<i>P. flexilis</i>	✓									3			
<i>P. jeffreyi</i>	✓				2								
<i>P. lambertiana</i>	✓												
<i>P. monticola</i>	✓												
<i>P. ponderosa</i>	✓				2								
<i>P. radiata</i>	✓												
<i>P. washoensis</i>	✓		✓		2								
<i>Populus tremuloides</i>	✓												
<i>P. trichocarpa</i>	✓				3								
<i>Pseudotsuga menziesii</i>	✓												
<i>P. macrocarpa</i>	✓				2	2		2				2	
<i>Quercus chrysolepis</i>				✓						3			
<i>Q. garryana</i>	✓		✓		2					1			
<i>Q. kelloggii</i>				✓						3			
<i>Rhamnus purshiana</i>				✓									
<i>Salix amygdaloides</i>				✓									
<i>S. hindsiana</i>				✓									
<i>S. hookeriana</i>				✓									
<i>S. lasiandra</i>				✓									
<i>S. lasiolepis</i>				✓									
<i>S. scouleriana</i>				✓									
<i>Sequoia sempervirens</i>	✓												
<i>Taxus brevifolia</i>		✓	✓	✓	1	1		2		1		1	

Int. PVT. Tests and collections

Int. PVT. Breeding.

Int. PVT. Tests.

Int. PVT. Recent bulk collections.

Int. PVT

Breeding progr.

Breeding progr.

Int. PVT. Gene pool stands

Collections

Int. PVT. Breeding progr.

British Columbia, USA

In situ cons. stands

In situ cons. stands

In situ cons. stands

In situ cons. stands

In situ cons. stands

In situ cons. stands

In situ cons. stands

Collections

International att. needed to ensure continued efforts in developing resistance

SPECIES	End use of species				Operations/ Activities								REMARKS	
					Exploration & collection		Evaluation		Conservation		Germplasm use			
	1	2	3	4	5	6	7	8	9	10	11	12		
<i>Thuja plicata</i>	✓			✓	3	3		3						Collection and testing
	✓				2									Collection and testing
<i>Tsuga heterophylla</i>														Collection
<i>T. mertensiana</i>	✓													<i>In situ</i> cons. stands
<i>Umbellularia californica</i>				✓										
2. EASTERN USA/CANADA														
<i>Abies balsamea</i>	✓			✓		3		3				3		Breeding progr.
<i>A. fraseri</i>	✓			✓	2	3		3	2			3		Breeding progr.
<i>Acer saccharum</i>	✓	✓	✓	✓		2		3	2	2			3	
<i>Betula alleghaniensis</i>	✓				3				2			3	3	
<i>Carya cordiformis</i>	✓				3	2		3		2				
<i>C. illinoensis</i>				✓	3	3		3						Of recent interest to China
<i>C. ovata</i>	✓					2		3		2				
<i>Castanea dentata</i>	✓	✓	✓	✓	2	1			1	1	1	1		international att. needed to ensure continued efforts in developing resistance
<i>Celtis tenuifolia</i>	✓			✓	2	3			2	3				
<i>Fraxinus americana</i>	✓								3					
<i>F. quadrangulata</i>	✓		✓		2	2			2	2				
<i>Gymnocladus dioica</i>	✓		✓			2			2	2				
<i>Juglans cinerea</i>	✓					2		2	2	2				<i>Ex situ</i> cons. required in Canada
<i>J. nigra</i>	✓			✓							2	2		
<i>Larix laricina</i>	✓					3		3			3	2		
<i>Liquidambar styraciflua</i>	✓					2		2			2	2		
<i>Liriodendron tulipifera</i>	✓								3		3	2		Collection and testing in Eastern U.S.
<i>Magnolia acuminata</i>	✓		✓			2			2	2				
<i>Picea glauca</i>	✓													Breeding progr.
<i>P. mariana</i>	✓													Breeding progr.
<i>P. rubens</i>	✓										3	2		
<i>Platanus occidentalis</i>	✓					2		2			2	2		
<i>Pinus banksiana</i>	✓													Breeding progr.
<i>P. clausa</i>	✓										3	3		
<i>P. rigida</i>	✓			✓		3		3						
<i>P. echinata</i>	✓					2		2			2			Breeding progr. in Eastern U.S.
<i>P. elliotii</i>	✓													Breeding progr. in Eastern U.S.

SPECIES	End use of species				Operations/ Activities								REMARKS	
					Exploration & collection		Evaluation		Conservation		Germplasm use			
	1	2	3	4	5	6	7	8	9	10	11	12		
<i>P. palustris</i>	✓													Breeding progr. in Eastern U.S.
<i>P. resinosa</i>	✓													Breeding progr.
<i>P. serotina</i>	✓					2		2		3		3	3	
<i>P. strobus</i>	✓													Breeding progr.
<i>P. taeda</i>	✓													Breeding progr.
<i>P. virginiana</i>	✓											2	2	
<i>Populus balsamifera</i>	✓						2		2			3	2	High potential for biomass on medium fertility soils
<i>P. deltoides</i>	✓							2						Breeding progr.
<i>P. tremuloides</i>	✓						3	2	3					Breeding progr. in U.S.
<i>Prunus serotina</i>	✓						3		3	3		3		Canadian populations at extremes of range
<i>Ptelea trifoliata</i>	✓		✓			2	2			1	2			
<i>Quercus alba</i>	✓		✓				2		2		3		3	Canadian populations at extremes of range
<i>Q. borealis</i>	✓		✓				3		3		3		3	
<i>Q. macrocarpa</i>	✓		✓			1	3		3	3				
<i>Robinia pseudoacacia</i>	✓		✓				3		3					
<i>Taxodium ascendens</i>	✓					2	3		3	3		3		
<i>T. distichum</i>	✓					2	3		3	3		3		
<i>Torreya taxifolia</i>				✓						2				
<i>Ulmus americana</i>	✓			✓		3	3		3	2	3	3		Resistance breeding progr.
3. MEXICO														
<i>Astronium graveolens</i>	✓					1	1	1	1	1	1	1	1	(E). National interest
<i>Brosimum alicastrum</i>	✓			✓		2	2		2	3	3	2	2	
<i>Bursera simaruba</i>	✓					3	3		3			3		
<i>Calophyllum brasiliense</i>	✓		✓			1	1		1	2	3	3	2	
<i>Cedrela odorata</i>	✓						1	1	1	1			1	PVT and PGT
<i>Cordia alliodora</i>	✓					3	3		3			3		
<i>C. dodecandra</i>	✓			✓		3	3		3			3		
<i>Cupressus lindleyi</i>	✓						1	1	1	1			1	
<i>Cupressus benthami</i>	✓					2	2		2	1	2			(E) some provenances
<i>Dendropanax arboreus</i>	✓					1	1	1	1	2	2		1	PVT in progress
<i>Fraxinus uhdei</i>	✓			✓		2	2		2	1	2	3		
<i>Lysitoma bahamensis</i>	✓		✓			3	3		2					
<i>Metopium brownei</i>	✓					3	3		2					
<i>Pinus ayacahuite</i>	✓					2	1		2	1	1			

SPECIES	End use of species				Operations/ Activities								REMARKS
					Exploration & collection		Evaluation		Conservation		Germplasm use		
	1	2	3	4	5	6	7	8	9	10	11	12	
<i>P. ayacahuite</i> var. <i>veitchii</i>	✓				3	3		3				2	
<i>P. chiapensis</i>	✓				2		1		1			1	PVT and PGT
<i>P. durangensis</i>	✓				3	3		3				2	
<i>P. gregii</i>	✓				2	2		2	3	3			(E) some provenances
<i>P. engelmannii</i>	✓				3	3		3				2	
<i>P. herrerae</i>	✓				3	3		3			3		
<i>P. michoacana</i>	✓				3	3		3				2	
<i>P. montezumae</i>	✓				3	3		3				2	
<i>P. oocarpa</i>	✓				3							2	
<i>P. oocarpa</i> var. <i>ochoterenai</i>	✓				2	1		2	3	1			
<i>P. patula</i>	✓				2		1		1			1	PVT (Int.)
<i>P. pseudostrobus</i>	✓				3							2	
<i>P. zedowski</i>	✓				2	2		1	1	2		2	
<i>Piscidia communis</i>	✓		✓		3	2		2				3	
<i>Pseudotsuga flahaultii</i>				✓	2	2		2	2	3		2	
<i>Prosopis</i> spp.			✓	✓	2	3		3		3		3	3
<i>Simaruba glauca</i>	✓												
<i>Spondias mombin</i>	✓				3	3		3				3	
<i>Swietenia macrophylla</i>	✓				1	1	1	1	1	1		1	PVT, PGT, SO. (E) certain populations
<i>Tabebuia rosea</i>	✓												
4. CARRIBEAN, CENTRAL AMERICA, COLOMBIA, VENEZUELA AND ECUADOR													
<i>Albizia niopoides</i>	✓		✓		2	2		2	1				PVT, SO. (E) in parts of range
<i>A. quachepele</i>	✓		✓		2	2		2	1	2		2	PVT, PGT in progress. Vegetative propagation studies
<i>Alnus acuminata</i>	✓			✓	1	1		3	1	1		1	PVT, PGT in progress. <i>In situ</i> stands established
<i>Calliandra calothyrsus</i>			✓	✓	1	1	1	1	1	1		2	1
<i>Cedrela tonduzzi</i>	✓				2	2			2	2			(E) in most parts of range
<i>Cupressus lusitanica</i>	✓				2	2		2	2				PVT and PGT. <i>Ex situ</i> stands established
<i>Diphysa robinoides</i>			✓	✓		2			2	2			
<i>Enterolubium cyclocarpum</i>			✓	✓	2	2	3	3	2	2			Seed stands established
<i>Erythrina</i> spp.			✓	✓	2	2	3	3	2	2			PVT
<i>Guazuma ulmifolia</i>			✓	✓	2	2		2					PVT

SPECIES	End use of species				Operations/ Activities								REMARKS	
					Exploration & collection		Evaluation		Conservation		Germplasm use			
	1	2	3	4	5	6	7	8	9	10	11	12		
<i>Inga</i> spp.			✓	✓	2	2	3	3	2	2				
<i>Leucaena diversifolia</i>			✓	✓	2	2	2	2		3	3	3		
<i>L. salvadorensis</i>			✓	✓	1	1		1	1	1	1	1	PVT in progress. SO	
<i>Leucaena</i> spp.			✓	✓	1	1		1	1	1	1	1	Provenances of species from Central America and Mexico available from OFI for PVT	
<i>Liquidambar styraciflua</i>	✓				1	1		1	1	2	3	3	PVT in progress	
<i>Pinus ayacahuite</i>	✓				1	1		1	1	2	2	2	PVT and PGT in progress	
<i>P. caribaea</i> var. <i>bahamensis</i>	✓			✓		1		1				1	PVT in progress. <i>Ex situ</i> stands established	
<i>P. caribaea</i> var. <i>caribaea</i>	✓			✓								1	1	PVT in progress
<i>P. chiapensis</i>	✓				1	1		1	1	1				PVT and PGT in progress
<i>P. maximinoi</i>	✓											3	3	PVT in progress
<i>P. occidentalis</i>	✓				2	2		2	2					<i>In situ</i> stands established
<i>P. oocarpa</i>	✓			✓		1			1	1	1	1	1	PVT in progress. <i>Ex situ</i> stands established
<i>P. pseudostrobus/tenuifolia</i>	✓			✓	1				1					PVT in progress. (E) in parts of range
<i>Prosopis atcamensis</i>			✓	✓	1	1		1	1					PVT in progress
<i>P. burkartii</i>			✓	✓	1	1		1	1					PVT in progress
<i>P. chilensis</i>			✓	✓	1	1		1	1	1	2	2	2	PVT in progress
<i>P. juliflora</i>			✓	✓	1	1		1	1	2	2	3	3	PVT in progress
<i>P. limensis</i>			✓	✓	1	1		1	1	2				PVT in progress
<i>P. siliquastrum</i>			✓	✓	1			1	1					PVT in progress
<i>P. tamarugo</i>			✓	✓	1	1		1	1	3	2	2	2	PVT in progress
<i>Samanea saman</i>			✓	✓	1			2	3					Not planted extensively
<i>Swietenia humilis</i>	✓			✓	2	2		2	1	2	2	1	1	SO established. Not planted extensively
<i>Tabebuia rosea</i>	✓		✓		1	1		1	1	1	3	1	1	Restricted prov. collections
<i>Vochysia quatemalensis</i>	✓				1	1		1	1	3	2	1	1	PVT, PGT established. Veg. propagation studies
5. SOUTH AMERICA (EXCEPT COLOMBIA, VENEZUELA AND ECUADOR)														
<i>Acacia bahiensis</i>			✓		1	2		2	2	3				
<i>Acharas sapota</i>				✓	2	2		2	1	2				Human food
<i>Aniba duckei</i>		✓			1	2		1	2	1	2			(E) all range. Medicinal products
<i>Araucaria angustifolia</i>	✓				1	2		1	2	1	2	1	1	

SPECIES	End use of species				Operations/ Activities								REMARKS
					Exploration & collection		Evaluation		Conservation		Germplasm use		
	1	2	3	4	5	6	7	8	9	10	11	12	
<i>A. araucana</i>	✓				2	2	2	2	1	2	2	2	
<i>Aspidosperma polyneuron</i>	✓				2	1	1	2	1	1			
<i>Austrocedrus chilensis</i>	✓		✓		2	2	2	2	2	2	2	2	
<i>Auxema oncocalyx</i>				✓	2	2	2	2	2	3			
<i>Bactris gasipaes</i>		✓			2	1	2	2	2	1		Human food. PVT	
<i>Balfourodendron riedelianum</i>	✓				2	1	2	3	1	1			
<i>Beilschmiedia berteroaana</i>													
<i>Bertholetia excelsa</i>	✓	✓				1	1	1	1	1	1	1	Human food, wood. Species of social importance
<i>Britoa guazumaefolia</i>				✓	2	2		2	1	3		Human food	
<i>Brosimum glaziovii</i>													
<i>Bowdichia nitida</i>	✓				2	2		2	2	2			
<i>Bumelia sartorum</i>				✓	1	2		2	1	2		Medicinal products	
<i>Bursera leptophlecos</i>			✓	✓	3	2	2	2	2	2			
<i>Caesalpinia echinata</i>	✓			✓	2	1	3	1	3	1		(E)	
<i>Carapa guianensis</i>	✓			✓	2	1	2	1	2	1		Oils	
<i>C. legalis</i>	✓				2	1	1	1	1	1			
<i>Caryocar brasiliense</i>	✓	✓	✓		2	2	1	2	1	2	1	1	Human food
<i>C. wriaceum</i>			✓	✓	2	2	2	2	2	2	2	2	Human food
<i>Cavanillesia arborea</i>				✓	2	2	1	2	1	2			
<i>Cedrela fissilis</i>	✓				1	2	1	2	1	2	1	1	(E) in parts of range
<i>C. odorata</i>	✓				2	1	1	1	1	1	1	1	(E) all range. Overexploitation
<i>Chlorophora tictoria</i>	✓		✓		1		1		2		1		(E) all range
<i>Chloroleucon foliosum</i>	✓		✓	✓	3	2	3	2	3	2			
<i>Citronella congonha</i>					2	2	2	2	2	2		Medicinal use	
<i>Copaifera langsdorfii</i>	✓				2	2	2	2	2	2	2	2	
<i>Cordia alliodora</i>	✓				2	2	2	2	2	2	2	2	
<i>C. goeldiana</i>	✓				2	2	1	2	1	2		1	
<i>Couepia schotii</i>	✓				2	2	2	2	2	2			
<i>Couratari asterophora</i>	✓				2		1		1				Endemic. PVT. <i>Ex situ</i> cons.
<i>D. nigra</i>	✓				1	1	1	1	1	1			(E) all range
<i>Dicypellidium caryophyllatum</i>				✓	2	2	1	2	1	2			Medicinal products
<i>Dipteryx alata</i>	✓	✓			2	2		2	1	2			Human food
<i>Euterpe edulis</i>		✓			1	1		1	1	2	2	3	Human food

SPECIES	End use of species				Operations/ Activities								REMARKS
					Exploration & collection		Evaluation		Conservation		Germplasm use		
	1	2	3	4	5	6	7	8	9	10	11	12	
<i>E. oleracea</i>		✓			1	1		1	2	1	2	3	Human food
<i>E. precatoria</i>				✓	2	2	2	2	2	2	2	2	
<i>Fitzroya cupressoides</i>	✓				2	2	2	2	1	2	2	2	
<i>Gomoterka keule</i>	✓				2	2	2	2	2	2	2	2	
<i>Hynenaea courbaril</i>	✓				3	2	2	3	1	2			
<i>Juglans neotropica</i>	✓				1	2	1	2	1	2			(E) all range
<i>Lecythis pisonis</i>	✓	✓			2	2	2	2	1	2			Human food
<i>Malouetia arborea</i>	✓				2	2	2	2	2	2			
<i>Manilkara bidentata</i>	✓				2	2	2	2	2	2	2	2	
<i>Manihot glaziovii</i>		✓		✓	3	2	3	2	3	2			
<i>Marlierea edulis</i>				✓	2	1	2	2	1	1			(E). Human food
<i>Maytenus ilicifolia</i>		✓		✓	2	3	2	3	2	3			(E) all range. Medicinal use
<i>Melanoxilon brauna</i>	✓		✓		3	3	2	3	2	3			
<i>Micropholis melinoniana</i>	✓				2	2	1	2	2	2			(E)
<i>Mimosa caesalpinifolia</i>			✓	✓	3	2	3	2	3	2	2	2	
<i>Myracrodruon urundeuva</i>	✓		✓	✓	2	1	2	2	2	1			
<i>Nothofagus alessandrii</i>	✓				2	2	2	2	2	2	2	2	(E) all range
<i>Ocotea catharinensis</i>	✓				1	2	1	2	1	2			(E) parts of range
<i>Pachystroma longifolium</i>				✓	2	2	2	2	1	2			Medicinal products
<i>Parinari brasiliensis</i>	✓				2	2	2	2	2	2			
<i>Parkia platicephaia</i>	✓				2	2	2	3	2	2			
<i>Peltogine paniculata</i>	✓				1	2	1	2	1	2			(E) all range
<i>Pilocarpus jaborandi</i>		✓			1	2	1	2	1	2			(E) all range. Medicinal products
<i>Pitavia punctata</i>		✓			2	2	1	2	1	2	2	2	
<i>Plathymeria foluiosa</i>	✓		✓	✓	3	2	3	2	3	2			
<i>Pouteria psammophila</i>	✓				2	2	2	2	2	2			
<i>Prosopis juliflora</i>			✓	✓	2	2	2	2	2	2	2	2	
<i>P. chilensis</i>			✓	✓	2	2	2	2	2	2	2	2	(E) all range
<i>Prumnopytis montana</i>	✓				1	2	1	2	1	2			(E) all range
<i>Quassia amara</i>	✓				2	2	2	2	2	2	2	2	
<i>Quiina glaziovii</i>				✓	2	3	2	3	2	3			Medicinal products
<i>Schinopsis brasiliensis</i>	✓				2	2	2	2	1	2			
<i>Sophora toromiro</i>		✓			2	2	1	2	1	2	2	2	(E). Carving
<i>Stryphnodendron adstringens</i>			✓	✓			2	2	2	2	2	2	(E)
<i>Stylites andicola</i>	✓				2	2	2	2	2	2	2	2	
<i>Swietenia macrophylla</i>	✓					2	1	2	1	2	1	1	(E) in parts of range

SPECIES	End use of species				Operations/ Activities								REMARKS
					Exploration & collection		Evaluation		Conservation		Germplasm use		
	1	2	3	4	5	6	7	8	9	10	11	12	
<i>Swartzia glazioviana</i>	✓				2	2	2	2	2	2			
<i>T. cassinoides</i>	✓				2	1	2	2	1	1			2
<i>T. impetiginosa</i>			✓	✓	3	2	2	3	2	2			
<i>Thiloo glaucocarpa</i>	✓		✓		3	2	3	2	3	2			
<i>Virola surinamesis</i>	✓			✓	2	1	2	2	1	1			1
<i>Vochisia maxima</i>	✓				2	2	2	2	1	2			
<i>Zeyheria tuberculosa</i>	✓		✓		2	1	1	1	1	1			1
6. NORTHERN AND CENTRAL EUROPE													
<i>Abies alba</i>	✓				2	2			2	2			PVT. PGT. SO. (E) by pollution
<i>Fraxinus excelsior</i>	✓			✓	1	1			1	1			
<i>Juglans regia</i>	✓			✓		3		3		3			3 Human food
<i>Larix sukaczewii</i>	✓					3		3	2		2	3	In Russia
<i>Picea abies</i>	✓				2	2		2	2	2	2	2	(E) by pollution in some regions. PVT. PGT. CLT. SO
<i>Pinus sylvestris</i>	✓				2	3		3	3	3			Scotland
<i>Populus nigra</i>	✓			✓	2	2			2	2			2
<i>Prunus avium</i>	✓			✓	2	2		2	2	2			2
<i>Quercus robur</i>	✓			✓	2	2		2	2	2			2 Northern Europe
<i>Taxus baccata</i>				✓	1	1			2	2			Baltic
<i>Tilia cordata</i>	✓			✓	2	2		2	2	2	1		
<i>Ulmus glabra</i>	✓			✓	2	2		2	2	2			Elm disease
<i>U. laevis</i>				✓	1	1		1	1	1	1		
7. MEDITERRANEAN REGION, SOUTHERN EUROPE AND NEAR EAST													
<i>A. marocana</i>				✓		2			2	2			
<i>A. nordmanniana/bornmullariana</i>	✓				3	2		2			2	2	
<i>A. numidica</i>				✓		1			1	1			(E)
<i>A. pinsapo</i>	✓					2		2	2				
<i>Acacia albida</i>				✓	✓	2	1	1	1		1	1	
<i>Acacia nilotica</i>				✓	✓	1	1	1	1		1		Int. PVT in progress
<i>A. saligna</i>				✓	✓		1	1	1		1	1	
<i>A. senegal</i>				✓	✓	1	1	1	1		1	1	
<i>A. tortilis</i> (incl. ssp. <i>raddiana</i>)				✓	✓	1	1	1	1		1		Int. PVT in progress

SPECIES	End use of species				Operations/ Activities								REMARKS
					Exploration & collection		Evaluation		Conservation		Germplasm use		
	1	2	3	4	5	6	7	8	9	10	11	12	
<i>Cedrus atlantica</i>	✓			✓	2	2	2	2			1	2	Int. testing in progress
<i>C. libani</i>	✓			✓	2	1	2	2	1	1	2	2	Int. testing. National stands in Lebanon (E). Conservation priority activities apply to Lebanon.
<i>Ceratonia siliqua</i>				✓	1	1	1	1					
<i>Cupressus atlantica</i>	✓				1	2		2	1		1	1	(E) ? in parts of range. Drought and frost tolerant. Important for breeding
<i>C. dupreziana</i>	✓			✓	1				1		1	1	(E). <i>Ex situ</i> cons. stands. Breeding for resistance to <i>Ceridium cardinale</i>
<i>C. sempervirens</i>				✓	2	2		2				1	Breeding for resistance to <i>Seridium cardinale</i>
<i>Gleditzia triachantos</i>					1	1				1		1	
<i>Inglans regia</i>	✓			✓	2					3		2	
<i>Picea omorika</i>	✓			✓		2				2			<i>In situ</i> cons. stands
<i>Pinus brutia</i>	✓			✓	3	2		2			1	1	Int. PVT. Further sampling desirable
<i>P. eldarica</i>	✓				2	1		2	1	1	2		Int. PVT. (E) some provenances
<i>P. halepensis</i>	✓			✓									Int. PVT
<i>P. laricio mauretanica</i>	✓					1				1			(E)
<i>P. pinaster</i>	✓			✓	2	1		2	1	1	1	1	Int. PVT
<i>P. pinea</i>	✓			✓	2	2		2			1	1	
<i>Platanus orientalis</i>				✓	1				2			2	(E) ? some provenances
<i>Prosopis cineraria</i>			✓	✓	1	1	1	1	1	1	2	2	
<i>Quercus aegilops</i>			✓	✓					2				
<i>Q. suber</i>		✓			2	2	2	2			2	2	
<i>Tetraclinis articulata</i>				✓	1	1	1	1	2	2			
<i>Ulmus wallichiana</i>	✓								1				(E)
8. SOUTH AND EAST ASIA EXCL. CHINA AND INDIA													
<i>Acacia auriculiformis</i>	✓		✓			1	1	1	1	1	1	1	Int. PVT in progress
<i>A. catechu</i>	✓	✓	✓	✓	1	1	1	1	1	1	2	2	MPTS for farmers
<i>A. cressicarpa</i>	✓		✓		1	1	1	1	1	1	2	2	PVT in progress
<i>A. mangium</i>	✓		✓	✓		1	2		1	1		1	Int. PVT in progress. Need for resistance selection. Work on hybridization (with <i>A. auriculiformis</i>) needed

SPECIES	End use of species				Operations/ Activities								REMARKS	
					Exploration & collection		Evaluation		Conservation		Germplasm use			
	1	2	3	4	5	6	7	8	9	10	11	12		
<i>Azelia xylocarpa</i>	✓		✓		1	1		1		1		2	2	Construction and furniture purposes
<i>Agathis</i> spp.	✓		✓		1	1		1		1		2	1	Indonesia and Malaysia
<i>Alstonia scholaris</i>	✓		✓	✓	2	2	2	2	2	2		2	2	
<i>Aquilaria</i> spp.	✓	✓	✓		1	1	1	1	1	1		1	1	Medicinal products
<i>Artocarpus heterophyllus</i>	✓	✓	✓	✓	2	2	2	2	2	2				Excellent MPTS, used on farms. Need for trials on farms
<i>Araucaria cunninghamii</i>	✓		✓	✓	2	2	2	2	2	2		1	2	Int. PVT in progress
<i>Araucaria hunsteinii</i>	✓		✓	✓	2	2	2	2	2	2		1	2	Int. PVT in progress
<i>Azadirachta indica</i> (incl. var. <i>excelsa</i>)	✓	✓	✓	✓	1	1	1	1	2	1		1	1	Int. PVT in progress
Bamboo	✓	✓	✓	✓	1	1	1	1	1	1			1	Cooperation with INBAR. Excellent MPTS
<i>Bombax ceiba</i>	✓		✓		3	3	3	3	3	3		2	2	Important on-farm tree species
<i>Broussonetia papyrifera</i>	✓		✓		2	2	2	2	2	2		2	2	Important on-farm tree species
<i>Cassia siamea</i>	✓	✓	✓	✓	2	2	2	2	2	2		1	2	For dry areas within the region
<i>Casuarina equisetifolia</i>	✓		✓	✓	1	1	1	1	1	1		2	2	Int. PVT in progress
<i>C. junghuhniana</i>	✓		✓	✓	1	1	1	1	1	1			2	Int. PVT in progress
<i>Dalbergia cochinchinensis</i>	✓		✓		1	1	1	1	1	1		2	2	Excellent wood
<i>D. latifolia</i>	✓		✓		1	1	1	1	1	1		2	2	Excellent wood
<i>Dipterocarpus alatus</i>	✓		✓	✓	1	1	1	1	1	1		1	1	Excellent wood for construction and veneer purposes
<i>Dyera costulata</i>	✓	✓	✓		1	1	1	1	1	1		1	1	(E). Gum
<i>Endospermum malaccensis</i>	✓		✓		2	2	3	3	3	3		3	3	Construction wood
<i>E. peltatum</i>	✓		✓		1	1	1	1	1	1		1	1	Construction wood
<i>Eucalyptus camaldulensis</i>	✓	✓	✓	✓		1		1		1		1	1	Int. PVT in progress. Work on hybridization needed
<i>E. deglupta</i>	✓		✓		1	1	1	1	1	1		1	2	Int. PVT needed
<i>E. pellita</i>	✓		✓		2	2	2	2	2	2		1	1	Promising species trials
<i>E. urophylla</i>	✓	✓	✓	✓	1	1	1	1	1	1		1	1	Int. PVT in progress. Work on hybridization needed
<i>Gmelina arborea</i>	✓		✓		2	2	2	2	2	2		1	1	Priority species for ASEAN
<i>Hopea odorata</i>	✓		✓	✓	1	1	1	1	1	1		1	1	Priority species for ASEAN. Excellent wood for furniture
<i>Leucaena leucocephala</i>	✓	✓	✓	✓	2	1		1		1			1	MPTS. Need for selection for psyllid resistance

SPECIES	End use of species				Operations/ Activities								REMARKS
					Exploration & collection		Evaluation		Conservation		Germplasm use		
	1	2	3	4	5	6	7	8	9	10	11	12	
<i>Paraserianthes falcataria</i>	✓	✓	✓	✓	2	1	2	1	1	1	1	1	Excellent wood for furniture and veneer purposes. Use on-farm
<i>Parashorea stellata</i>	✓		✓		2	2	2	2	2	2	1	1	
<i>Parkia javanica</i>	✓	✓	✓	✓	3	3	3	3	3	3	2	2	MPTS
<i>Parkia speciosa</i>	✓	✓	✓	✓	1	1	1	1	1	1	1	1	MPTS
<i>Peltophorum dasyrachis</i>	✓		✓	✓	1	1	1	1	1	1	1	2	Promising MPTS (pioneer species)
<i>Peronema canensis</i>	✓		✓		1	1	1	1	1	1	1	1	Promising MPTS
<i>Pinus kesiya</i>	✓	✓	✓			1	1	1	1	1	1	1	Priority species for ASEAN
<i>Pinus merkusii</i>	✓	✓	✓		1	1	1	1	1	1	1	1	Priority species for ASEAN
<i>Pterocarpus indicus</i>	✓		✓		1	1	1	1	1	1	1	1	Excellent for construction purposes. Priority species for ASEAN
<i>P. macrocarpus</i>	✓		✓		1	1	1	1	1	1	1	1	Excellent for construction purposes. Priority species for ASEAN
<i>P. marsupium</i>	✓		✓		1	1	1	1	1	1	1	1	
Rattan	✓	✓		✓	1	1	1	1	1	1	1	1	(E) in parts of range. Cooperation with INBAR, MPTS
<i>Rhizophora</i> spp.	✓	✓	✓		1	1	1	1	1	1	1	1	Some populations threatened by aquaculture in the region
<i>Santalum album</i>	✓	✓	✓		1	2	1	2	1	2	1	1	Promising MPTS
<i>Shorea</i> spp.	✓		✓		1	1	1	1	1	1	1	1	Potential hardwood for construction purposes.
<i>Swietenia</i> spp.	✓			✓								1	
<i>Tectona grandis</i>	✓		✓		1	1	1	1	1	1	1	1	Very important species
9. NORTH, NORTH-EAST AND CENTRAL ASIA INCL. CHINA AND INDIA													
<i>Abies beshanzuensis</i>	✓			✓	3	3	3	3	2	3	2	3	China. (E), a few trees left
<i>A. chensiensis</i>	✓	✓		✓	3	3	3	3	2	3	3	3	
<i>A. delavayi</i>	✓	✓	✓	✓	2	2	2	2	2	3	3	3	
<i>A. ernestii</i>	✓	✓	✓	✓	2	2	2	2	2	2	3	3	
<i>A. fabri</i>	✓	✓	✓	✓	3	3	3	3	3	3	3	3	
<i>A. firma</i>	✓	✓	✓	✓	1	1	1	1	2	3	1	1	
<i>A. georgei</i>	✓	✓	✓	✓	2	2	2	2	2	2	2	2	
<i>A. holophylla</i>	✓	✓	✓	✓	2	2	2	2	2	2	2	2	Important for greenery and Christmas tree growing. Tolerant to frost

SPECIES	End use of species				Operations/ Activities								REMARKS
					Exploration & collection		Evaluation		Conservation		Germplasm use		
	1	2	3	4	5	6	7	8	9	10	11	12	
<i>G. hainanensis</i>	✓	✓	✓	✓	2	2	2	2	2	2	2	2	
<i>Gonystylus</i> spp.	✓				3	3			1	3			
<i>Haloxyton ammondendron</i>		✓	✓	✓	1	1	1	1	2	2	2	2	
<i>H. persium</i>		✓	✓	✓	1	1	1	1	2	2	2	2	
<i>Holoptelea</i> spp.	✓		✓		1	1	2	2	1	1	1	1	
<i>Hopea</i> spp.	✓	✓	✓		3	1	2	2	1	1	2	2	
<i>Hovenia dulcis</i>	✓	✓	✓	✓	1	1	2	2	1	1	1	1	
<i>Illicium verum</i>				✓	2	2	2	2	1	1	1	1	
<i>Juglans cathayensis</i>	✓	✓	✓	✓	2	2	2	2	1	1	1	1	
<i>J. mandshurica</i>	✓	✓	✓	✓	2	2		2	2	2	1	1	
<i>J. regia</i>	✓	✓	✓	✓	1	1	1	1	1	1	1	1	
<i>J. sigillata</i>	✓	✓	✓	✓	2	2	2	2	1	1	1	1	
<i>Keteleeria davidiana</i>	✓	✓	✓	✓	3	3	2	2	3	3	2	2	
<i>K. pubescens</i>	✓	✓	✓	✓	2	2	2	2	3	3	1	1	
<i>Koompassia malaccensis</i>	✓				3	3			1	3			
<i>Larix griffithiana</i>	✓	✓	✓		1	1	2	2	1	3	2	2	
<i>L. gmelini</i>	✓	✓	✓	✓	2	2	2	2	2	2	1	1	
<i>L. leptolepis</i>	✓	✓	✓	✓	1	1	1	1	1	1	1	1	
<i>L. olgensis</i> (syn. <i>L. gmelini</i> var. <i>olgensis</i>)	✓	✓	✓	✓	2	2	2	2	2	2	2	2	
<i>L. potaninii</i>	✓	✓	✓	✓	2	2	2	2	2	2	2	2	
<i>L. sibirica</i>	✓	✓	✓	✓	1	1	1	1	2	2	2	1	
<i>Liriodendron chinense</i>	✓	✓	✓	✓	1	1	1	1	2	2	1	1	
<i>Liquidamber formosana</i>	✓	✓	✓	✓	2	2	2	2	2	2	2	2	
<i>Madhuca hainanensis</i>	✓	✓	✓	✓	3	3	2	2	1	1	3	3	
<i>M. indica</i>	✓	✓	✓	✓	3	3	2	2	1	1	3	3	
<i>Magnolia officinalis</i>	✓	✓	✓	✓	2	2	2	2	2	2	1	1	
<i>Malus komarovii</i>	✓	✓	✓		3	3	2	2	3	3	3	3	
<i>M. sieversii</i>				✓	3	3	2	2	3	3	3	3	
<i>Mangifera persiciforma</i>	✓	✓	✓	✓	2	2	2	2	2	2	2	2	
<i>Mangifera</i> spp.	✓	✓	✓	✓	1	1	1	1	1	1	1	1	
<i>Manglietia aromatica</i>	✓	✓	✓	✓	3	3	3	3	3	3	3	3	
<i>M. fordiana</i>	✓	✓	✓	✓	2	2	2	2	3	3	3	3	

SPECIES	End use of species				Operations/ Activities								REMARKS
					Exploration & collection		Evaluation		Conservation		Germplasm use		
	1	2	3	4	5	6	7	8	9	10	11	12	
<i>M. glauca</i>	✓	✓	✓	✓	2	2	2	2					
<i>M. patungensis</i>	✓	✓	✓	✓	3	3	3	3	3	3	3	3	China
<i>Melia azedarach</i>	✓	✓	✓	✓	1	1	2	2	3	3	2	2	
<i>M. toosendan</i>	✓	✓	✓	✓	1	1	1	1	3	3	2	2	
<i>Mesua ferra</i>	✓		✓	✓	1	1	1	1					
<i>Metasequoia glyptostroboides</i>	✓		✓	✓	1	1	2	1	3	3	3	2	Living fossil, China
<i>Michelia</i> spp.	✓	✓	✓	✓	2	2	1	2	2	2	2	2	
<i>M. wilsonii</i>	✓	✓	✓	✓	3	3	2	3	3	3	2	2	China
<i>Moringa oleifera</i>	✓	✓		✓	1	1	1	1	1	1	1	1	India. Agroforestry
<i>Mytilaria laosiensis</i>	✓	✓		✓	2	2	2	2	2	2	2	2	
<i>Neobalanocarpus heimii</i>	✓				3	3			1	3			Overexploited, poor regeneration, recalcitrant seeds
<i>Nyssa sinensis</i>	✓	✓	✓	✓	2	2	2	2	3	3	3	2	
<i>N. japonica</i>	✓	✓	✓	✓	2	2	2	2	2	2	2	2	
<i>Ormosia henryi</i>	✓	✓	✓	✓	2	2	2	2	1	1	2	2	Over selected
<i>O. hesiei</i>	✓	✓	✓	✓	2	2	2	2	1	1	2	2	
<i>O. macrophylla</i>	✓	✓	✓	✓	2	2	2	2	1	1	2	2	
<i>Parashorea chinensis</i> var. <i>kwangsiensis</i>	✓	✓	✓	✓	3	3	2	3	1	1			China
<i>Paulownia elongata</i>	✓		✓	✓	1	1	1	1	2	2	2	2	Work in progress. China
<i>P. fortunei</i>	✓		✓	✓	1	1	1	1	2	2	2	2	
<i>P. tomentosa</i>	✓		✓	✓	1	1	1	1	3	3	1	2	
<i>Phellodendron amurense</i>	✓	✓	✓	✓	2	2	2	2	1	1	2	2	Timber and medicine
<i>Phoebe nanmu</i>	✓	✓	✓	✓	2	2	2	2	1	1	2	2	
<i>Picea asperata</i>	✓	✓	✓	✓	2	2	2	2	2	2	2	2	
<i>P. brachytyla</i>	✓	✓	✓	✓	2	2	2	2	2	2	2	2	
<i>P. brachytyla</i> var. <i>complanata</i>	✓	✓	✓	✓	2	2	2	2	2	2	2	2	
<i>P. crassifolia</i>	✓	✓	✓	✓	2	2	2	2	2	2	2	2	
<i>P. jezoensis</i>	✓	✓	✓	✓	2	2	2	2	1	1	1	1	Breeding in China, Korea and Japan
<i>P. koraiensis</i>	✓	✓	✓	✓	2	2	2	2	1	1	1	1	
<i>P. likiangensis</i>	✓	✓	✓	✓	2	2	2	2	2	2	2	2	
<i>P. meyeri</i>	✓	✓	✓	✓	2	2	2	2	2	2	2	2	
<i>P. schrenkiana</i>	✓	✓	✓	✓	2	2	1	1	1	1	1	1	Protected, NW China
<i>P. wilsonii</i>	✓	✓	✓	✓	2	2	1	1	1	1	1	1	
<i>Pinus caribaea</i> var. <i>bahamensis</i>	✓	✓	✓	✓	2	2	1	1	1	1	1	1	PVT, PGT in China
<i>P. caribaea</i> var. <i>caribaea</i>	✓	✓	✓	✓	2	2	1	1	1	1	1	1	PVT, PGT in China

SPECIES	End use of species				Operations/ Activities								REMARKS
					Exploration & collection		Evaluation		Conservation		Germplasm use		
	1	2	3	4	5	6	7	8	9	10	11	12	
<i>P. simonii</i>	✓		✓	✓	2	2	2	2	2	2	2	2	
<i>P. suaveolens</i>	✓		✓	✓	2	2	2	2	2	2	2	2	
<i>P. tomentosa</i>	✓		✓	✓	2	2	2	2	2	2	2	2	Endemic to China
<i>P. ussuriensis</i>	✓		✓		2	2	2	2	3	3	3	3	
<i>P. yunnanensis</i>	✓		✓	✓	3	1	1	1	1	1	1	1	
<i>Prosopis</i> spp.	✓		✓	✓	1	2	2	2	2	2	1	1	
<i>Prunus amygdalus</i>				✓	2	2	2	2	1	1	1	1	Nut for arid areas
<i>Pseudolarix amabilis</i>	✓		✓	✓	1	1	1	1	1	1	1	1	Protected in China
<i>Pseudotaxus chienii</i>	✓		✓	✓	3	3	3	3	1	1	1	1	Over exploited
<i>P. brevifolia</i>	✓			✓	3	3	3	3	1	1	1	1	Over exploited
<i>P. gaussenii</i>	✓		✓	✓	1	1	1	1	1	2	2	2	
<i>P. sinensis</i>	✓		✓	✓	1	1	1	1	1	2	2	2	
<i>Pterocarpus</i> spp.	✓		✓	✓	1	1	2	2	1	1	1	1	
<i>Pterocarya paliurus</i> (syn. <i>Cyclocarya paliurus</i>)	✓		✓	✓	2	2	2	2	1	1	1	1	
<i>Quercus mongolica</i>	✓	✓	✓	✓	2	2	1	2	1	1	1	1	
<i>Q. variabilis</i>	✓	✓	✓	✓	1	1	2	2	1	1	1	1	
<i>Rhododendron</i> spp.			✓	✓	1	1	2	2	1	1	1	1	Rich in SW China
<i>S. matsudana</i>	✓	✓	✓	✓	2	2	2	2	2	2	1	1	
<i>S. mongolica</i>	✓	✓	✓	✓	2	2	2	2	2	2	1	1	
<i>Santalum album</i>	✓		✓	✓	1	1			1	1	1	1	India
<i>Sapium sebiferum</i>	✓	✓	✓	✓	2	2	2	2	2	2	1	1	China, MPTS
<i>Sassafras tzumu</i>	✓	✓	✓	✓	2	2	2	2	2	3	1	2	
<i>Schima superba</i>	✓	✓	✓	✓	2	2		2					Fire protection
<i>S. wallichii</i>	✓	✓	✓	✓	2	2		2					
<i>Sciadopitys verticillata</i>	✓	✓	✓	✓	2	2		2					Ornamental plantings
<i>Sesbania</i> spp.			✓										
<i>Shorea assamica</i>	✓	✓	✓		3	3	3	3	3	3	3	3	India
<i>Shorea</i> spp.	✓	✓	✓	✓	1	1	1	1	1	1	1	1	India, China
<i>Sinowilsonia xylocarpa</i>				✓	3	3		3	3				China
<i>Syzygium cumini</i>	✓		✓	✓	1	1		2	1	1	3	1	India. High genetic variation, polyembryony chromosomal races
<i>Taiwania cryptomerioides</i>	✓	✓	✓	✓	2	2	2	2	1	1	2	2	(E), Taiwan, China
<i>T. flousiana</i>	✓	✓	✓	✓	1	1	1	1	1	1	1	1	(E), China, PVT
<i>Tectona grandis</i>	✓		✓	✓	1	1	1	1	1	1	1	1	
<i>Terminalia</i> spp.	✓		✓	✓	1	1	2	2	1	1	1	1	India
<i>Thuja sutchuenensis</i>	✓				3	3			3	3			China

SPECIES	End use of species				Operations/ Activities								REMARKS
					Exploration & collection		Evaluation		Conservation		Germplasm use		
	1	2	3	4	5	6	7	8	9	10	11	12	
<i>Tilia amurensis</i>	✓	✓	✓	✓	2	2	2	2	2	2	1	1	
<i>Toona microcarpa</i>	✓	✓	✓	✓	1	1	1	1	2	2	1	1	MPTS
<i>T. sinensis</i>	✓	✓	✓	✓	1	1	1	1	2	2	1	1	
<i>T. sureni</i>	✓				1	1	1	1	2	2	1	1	
<i>Torreya grandis</i>	✓	✓	✓	✓	2	2	2	2	1	1	1	1	Nut
<i>T. jackii</i>	✓	✓		✓	3	3	2	2	3	3	3	3	China
<i>Trochodendron aralioides</i>	✓	✓	✓	✓	3	3	2	2	1	1	1	1	China. Monogenus
<i>Tsaroniodendron odorum</i>	✓	✓		✓	3	3	2	2	1	1	1	1	China. Monogenus
<i>Tsuga chinensis</i>	✓	✓	✓	✓	2	2	2	2	2	2	3	3	
<i>T. dumosa</i>	✓		✓	✓	1	1	1	1	1	1	3	1	India. Eastern Himalaya
<i>Ulmus laevis</i>	✓	✓	✓	✓	2	2	2	2	2	2	3	3	
<i>U. japonica</i>	✓	✓	✓	✓	2	2	2	2			3	3	
<i>U. macrocarpa</i>	✓	✓	✓	✓	2	2	2	2	1	1	2	2	
<i>U. parviflora</i>	✓	✓	✓	✓	2	1	2	2	1	1	2	2	
<i>U. propinqua</i>	✓	✓	✓	✓	2	2	2	2	2	2	2	2	
<i>Vatica guangxiensis</i>	✓	✓	✓	✓	1	1	1	1	1	1	1	1	China. Tropical rain forest
<i>V. hainanensis</i>	✓	✓	✓	✓	2	2	2	2	1	1	1	1	China. Tropical rain forest
<i>Xanthoceras sorbifolia</i>		✓		✓	2	2	1	1	1	1	1	1	For oil in arid area
<i>Zelkova schneideriana</i>	✓	✓	✓	✓	2	2	2	2	2	2	1	1	Breeding in Japan
<i>Zenia inidignis</i>	✓	✓	✓	✓	2	2	2	2	1	1	1	1	Endemic to China
10. AFRICA													
<i>Acacia auriculiformis</i> (exotic)	✓		✓					2			3	3	Prov. collection
<i>A. crassicarpa</i> (exotic)	✓					2		2			3	3	
<i>A. erioloba</i>			✓	✓			3	1					PVT in progress
<i>A. holosericea</i> (exotic)			✓	✓				2			2		Prov. collection
<i>A. karroo</i>		✓	✓	✓			1	1			2	3	PVT in progress
<i>A. mangium</i> (exotic)	✓							2			2		
<i>A. nilotica</i>		✓	✓	✓	2	3	1	1			2	3	Int. PVT in progress. W. Africa to be completed. Problems with natural regeneration
<i>A. polyacantha</i>			✓	✓	2	2		2					
<i>A. senegal</i>		✓	✓	✓	1	1	1	1	1	1	3	2	(E) populations in N parts of range. Problems with natural regeneration
<i>A. seyal</i>			✓	✓		1	1	1					
<i>A. tortilis</i> (incl. ssp <i>raddiana</i>)			✓	✓	2	1	2	1			3	2	Int. PVT in progress. W. Africa to be completed.

SPECIES	End use of species				Operations/ Activities								REMARKS
					Exploration & collection		Evaluation		Conservation		Germplasm use		
	1	2	3	4	5	6	7	8	9	10	11	12	
<i>Azela guanzensis</i>	✓				2	2	2	2					
<i>Albizia</i> spp.	✓		✓	✓	2	3	3	3					
<i>Alletia tunimani</i>	✓								3				
<i>Androstachys johnsonii</i>	✓				2				1				
<i>Antiaris toxicaria</i>	✓				2				2				
<i>Aucoumea klaineana</i>	✓				2	2		2	3	2	3	3	
<i>Azadirachta indica</i> (exotic)		✓	✓	✓			1	1	1	1	1	1	Int. PVT in progress
<i>Balanites aegyptiaca</i>				✓		2		2	2				(E) in Zimbabwe
<i>Bersama tysoniana</i>				✓					2				Medicinal products. (E) overexploited in South Africa
<i>Bivinia jalbertii</i>				✓		1		1	1	2			(E)
<i>Boscia</i> spp.				✓	1	2		2	1				(E)
<i>Brachylaena hutchinsii</i>	✓				3				3				
<i>Burtdavya nyasica</i>	✓								2				
<i>Chlorophora excelsa</i>	✓				2	1		1	2	2			(E)
<i>C. regia</i>	✓				2				2				2
<i>Dacryodes edulis</i>				✓	2	2		2	2				2
<i>Daibergia melanoxylo</i>	✓				1	1		2	1	1			(E)
<i>Dichrostachys cinerea</i>			✓	✓	1	2		2					Prov. collections proposed by OFI/NRI
<i>Entandrophragma</i> spp.	✓				2				2				Breeding for resistance to shoot borer
<i>Eucalyptus camaldulensis</i> (exotic)	✓	✓	✓					2			1	2	
<i>E. paniculata?</i> (exotic)	✓	✓						1					
<i>E. propinqua</i> (exotic)	✓	✓						1					
<i>E. saligna</i> (exotic)	✓					2		2			2	2	
<i>Faidherbia albida</i>			✓	✓			3	1	2		1	1	Seed collections, PVT, PGT and population genetics studies in progress
<i>Gmelina arborea</i> (exotic)	✓		✓			1		1			1	1	New collections available for testing
<i>Guarea cedrata</i>	✓			✓	2				2				
<i>Gymnostemon zaizou</i>	✓				3				3				(E) some provenances
<i>Heritiera</i> (syn. <i>Tarrietia</i>) <i>utilis</i>	✓				1	1	1	1	1	1	1	1	
<i>Hyphaena petersiana</i>				✓	2				1				
<i>H. ventricosa</i>				✓	2				1				
<i>Irvingia</i> spp.			✓	✓	1	1	1	1	1	1	1	1	(E)
<i>Juniperus procera</i>	✓			✓	2	2		2	2				(E) some provenances

SPECIES	End use of species				Operations/ Activities								REMARKS
					Exploration & collection		Evaluation		Conservation		Germplasm use		
	1	2	3	4	5	6	7	8	9	10	11	12	
<i>Khaya</i> spp.	✓				1	1	1	1	1	1	1	1	
<i>Lovoa</i> spp.	✓				2	2			2	3			
<i>Maesopsis eminii</i>	✓		✓	✓	2	2		2			2	2	(E) some provenances Selection for resistance to shoot borer
<i>Mansonia altissima</i>	✓				2	2		2	2				(E)
<i>Markhamia lutea</i>	✓		✓		2	2	2	2	2	2		2	
<i>Melia volkensii</i>	✓		✓				1				3	3	
<i>Milletia stuhlmannii</i>	✓				2				2				(E) some provenances. PVT, PGT in progress
<i>Mitragyna ciliata</i>	✓				2	2		2	2	2	2	2	
<i>Nesogordonia papavorifera</i>	✓				2				2				
<i>Nauclea diderrichii</i>	✓				2	2		2	2	2	2	2	
<i>Ocotea bullata</i>	✓			✓	2	2		2	2				(E) some provenances
<i>O. kenyensis</i>	✓								3				
<i>O. usambarensis</i>	✓				2	2			2	2			(E) some provenances
<i>Olea capensis</i>	✓				2				1				
<i>Parkhamii utea</i>	✓		✓		2	2		2	2	2		2	
<i>Parkia biglobosa</i>	✓			✓			1	1	1		1	1	
<i>Pericopsis angolensis</i>			✓						2				(E) some provenances. PVT, PGT commenced in East Africa
<i>P. elata</i>	✓				2	2		2	2	2			Prov. collections and gene ecological studies in progress
<i>Pinus maximinoi</i> (exotic)	✓			✓				3		2	1	1	Heavily exploited for carving
<i>P. oocarpa</i> (exotic)	✓										2	2	(E) some provenances
<i>P. roxburghii</i> (exotic)	✓					2		2					(E) in parts of range
<i>Podocarpus</i> spp.	✓				2	2	2	2					PVT in southern Africa
<i>Prosopis</i> spp. (exotic)			✓	✓		1		1			2		
<i>P. africana</i>			✓	✓	2	1	2	1					
<i>Protea gaguedi</i>				✓	1				1				
<i>Prunus africana</i>	✓	✓		✓	1	1	1	1	1	1	2		
<i>Pterocarpus angolensis</i>	✓					1		2	1	1			
<i>P. erinacesis</i>	✓								2				(E). Recalcitrant seed. Field genebank
<i>P. lucens</i>	✓			✓					2				<i>In situ</i> cons. in progress. Problem of die-back disease
<i>P. soyauxii</i>	✓								2				<i>In situ</i> cons. in progress

SPECIES	End use of species				Operations/ Activities								REMARKS	
					Exploration & collection		Evaluation		Conservation		Germplasm use			
	1	2	3	4	5	6	7	8	9	10	11	12		
<i>Raphia faranifera</i>	✓				2					3				Problem of die-back disease
<i>Sclerocarya birrea</i>				✓	1	2		2						
<i>Sesbania</i> spp.			✓	✓	2			2						
<i>Tamarindus indica</i>			✓	✓	1	1		2			1			Recalcitrant seed. Field: ICRAF in SADC countries, FAO in CILSS countries
<i>Tectona grandis</i> (exotic)	✓					1	1	1				2	1	PVT of <i>S. sesban</i> in progress in Zimbabwe, Zambia and Malawi
<i>Terminalia ivorensis</i>	✓				2	2		2		3		3	2	
<i>T. superba</i>	✓					2		2				3	3	
<i>Tarrietia utilis</i>	✓			✓	2	2		2		1	3	3		Int. prov. collections in progress
<i>Triplochiton scleroxylon</i>	✓				2							1	2	Int. prov. collections in progress
<i>Turraeanthus africanus</i>	✓				2					2				Recalcitrant seeds
<i>Uapaca kirkiana</i>				✓	1	1	1	1				1	1	Seed production unreliable, poor
<i>Vernonia amygdalina</i>				✓	2	2		2	2				2	
<i>Vitellaria</i> (syn. <i>Butyrospermum</i>) <i>paradoxa</i>				✓		1	2		1	1		2		Seed collections in progress in SADC region
<i>Vitex</i> ssp.	✓				1	1		1	2			1		Seed collected in W. Africa
<i>Warburgia salutaris</i>				✓	1	1			1	1				Seed recalcitrant, vegetative multiplication
<i>W. ugandensis</i>	✓			✓	1	2		2	1			3		Seed supply problems, seed collections in progress
<i>Widdringtonia</i> spp.	✓				2	2		2	1					(E) in parts of range
<i>Ziziphus mauritiana</i>				✓	2	2	1	2						(E) in parts of range
<i>Z. micronata</i>			✓	✓	2	1		1				3		Evaluation of seed sources from India desirable
11. AUSTRALIA AND NEW ZEALAND														
<i>Acacia ampliceps</i>			✓	✓	1	1		1				3		Salt tolerant
<i>A. aulacocarpa</i>	✓		✓		1	1		1						Potential for tropical lowlands. SO
<i>A. colei</i>		✓			3		1					3	3	Proven food value
<i>A. clachantha</i>			✓	✓		1		1				2	2	Species for dry tropical lowland sites with poor soils. SO
<i>A. crassicarpa</i>	✓											1	3	Biogeographic descriptions, sampling, PVT completed. SO

SPECIES	End use of species				Operations/ Activities								REMARKS	
					Exploration & collection		Evaluation		Conservation		Germplasm use			
	1	2	3	4	5	6	7	8	9	10	11	12		
<i>A. decurrens</i>			✓	✓	2	3		3						
<i>A. holosericea</i>			✓	✓	1	1	1	1	1	1	1	1	PVT	
<i>A. mangium</i>	✓				3							1	Biogeographic descriptions completed, sampling, PVT. Hybrids being developed with <i>A. auriculiformis</i> . SO	
<i>A. mearnsii</i>	✓		✓	✓		1		1				3	Int. PVT	
<i>A. melanoxydon</i>	✓		✓	✓	2	3		3					3	
<i>A. saligna</i>			✓	✓	1	2		2				1	Dune fixation.	
<i>A. stenopylla</i>			✓	✓	2	2		2						
<i>A. tumida</i>			✓	✓	1	2		2				2	Under taxonomic revision	
<i>Araucaria cunninghamii</i>	✓				2	2		2				1	1	Int. PVT in progress
<i>Brachychiton populneus</i>				✓	1	1	1	1	1	1	1	3	3	Drought resistant
<i>Casuarina cunninghamiana</i>	✓		✓	✓	3	3		3					3	PVT.
<i>C. equisetifolia</i>				✓	2	2	1	2						Int. PVT underway
<i>C. glauca</i>	✓		✓	✓		3		3						Salt tolerant
<i>Eucalyptus badjensis</i>	✓				2	2		2						
<i>E. benthamii</i>	✓		✓	✓		1	1	2	1	1	1	3	3	Restricted natural distribution. (E) in parts of range. Promising in trials
<i>E. camaldulensis</i>	✓		✓	✓	1	1	3	1	1		1	1	1	Taxonomic assessment ongoing
<i>E. citriodora</i>	✓		✓	✓	2	1		1			1	1	1	
<i>E. cloeziana</i>	✓		✓			1		1			2	3	3	
<i>E. delegatensis</i>	✓										1			PVT
<i>E. dunnii</i>	✓				2	2		2			1			Bulk seed difficult and costly to obtain
<i>E. globulus</i> ssp. <i>globulus</i>	✓		✓	✓	1	1	1	1	1	1	1	1	1	Int. PVT in progress. (E) some provenances
<i>E. grandis</i>	✓		✓	✓			3				1			PVT.
<i>E. nitens</i>	✓										1			PVT. Bulk seed difficult and costly to obtain
<i>E. occidentalis</i>	✓		✓		1	1		1						Tolerates saline soils and high pH
<i>E. paniculata</i>	✓		✓		1	1		1						
<i>E. pellita</i>	✓		✓			2		2			2	2	2	Closely related to <i>E. urophylla</i> . Potential for hybridization
<i>E. pilularis</i>	✓				3						1	1	1	PVT
<i>E. radiata</i>		✓		✓	2							1	1	Some forms high yield of cineole oil
<i>E. saligna</i>	✓										1	1	1	PVT

SPECIES	End use of species				Operations/ Activities								REMARKS
					Exploration & collection		Evaluation		Conservation		Germplasm use		
	1	2	3	4	5	6	7	8	9	10	11	12	
<i>E. tereticornis</i>	✓		✓		1						1	1	PVT
<i>E. viminalis</i>	✓				1	1	1	1	1	1	1	1	PVT
<i>Grevillea pteridifolia</i>			✓	✓	3	3		3					
<i>G. robusta</i>				✓	3	2	2	2				2	
<i>Leucaena</i> spp.			✓	✓		1		1			1	1	Agroforestry species
<i>Macadamia</i> spp.				✓	2	2	2	2	3	3		3	Nuts
<i>Melaleuca cajuputi</i>			✓	✓	1	1		1					
<i>M. leucadendra</i>	✓	✓	✓	✓	1	1		1			1	1	Tolerant of waterlogged, acid sulphate and saline conditions. Int. PVT
<i>Melia azedarach</i> var. <i>australasica</i>			✓	✓	1	1		1					
<i>Paraserianthes procera</i>	✓		✓		3	3	3	3			3		
<i>Pinus caribaea</i>	✓					1		1	1	1	1	1	
<i>P. elliotii</i>	✓		✓			1		1	1	1	1	1	
<i>P. oocarpa</i>	✓					1		1	1	1	1	1	
<i>P. pinaster</i>	✓		✓			1		1	1	1	1	1	
<i>P. radiata</i>	✓		✓		1	1	1	1	1	1	1	1	(E) in parts of range. Guadalupe Is.
<i>P. tecunumanii</i>	✓				1	1	1	1	1	1	2	2	
<i>Populus</i> spp.				✓	3	3	3	3	3	3	3	3	
<i>Pseudotsuga menziesii</i>	✓												PVT
<i>Santalum album</i>		✓		✓	1	1	1	1	1	1	1	1	Timber for carving. SPRIG proj. germplasm collection and evaluation in progress
<i>S. lanceolatum</i>		✓		✓	1	1	1	1	1	1	1	1	Timber for carving
<i>S. spicatum</i>		✓	✓		1	1	1	1	1	1	1	1	Timber for carving
<i>Syzygium paniculatum</i>	✓			✓	3	3	3	3	3	3	3	3	Ornamental, bonsai tree. Unsuitable for subtropical areas due to insect attack
<i>Sesbania formosa</i>			✓	✓	1	1		1					Close relative of <i>S. grandiflora</i>
<i>Toona ciliatavar australis</i>	✓				1	2		2					SPRIG proj. germplasm collection and evaluation in progress
12. PACIFIC ISLANDS													
<i>Agathis macrophylla</i> sens lat.	✓	✓			3	3	2	2	2	2	1	1	
<i>A. robusta</i> (exotic)	✓			✓			2		2				
<i>A. silbai</i>	✓	✓			2	2	2	2	3				Endemic to Vanuatu
<i>Aglaiia saltatorum</i>			✓	✓	2	2		1					Culturally important in Polynesia
<i>Acacia koa</i>	✓			✓		1			1	1	3	3	Timber for carving

SPECIES	End use of species				Operations/ Activities								REMARKS	
					Exploration & collection		Evaluation		Conservation		Germplasm use			
	1	2	3	4	5	6	7	8	9	10	11	12		
<i>Artocarpus altilis</i>			✓	✓	1	1	1	1	1	1	1	1		
<i>Atuna racemosa</i>			✓	✓	2	2		1				2	Culturally important in Polynesia	
<i>Barringtonia edulis</i>				✓	3	3		2					1	Important indigenous nut
<i>Calophyllum</i> spp.	✓		✓	✓	2	1		1	1	1	1	2		
<i>Camposperma brevipetiolata</i>	✓				1	1	1	1	1	1	1	1		
<i>Canarium harveyii</i>		✓			2		2						3	Important indigenous nut
<i>C. indicum</i>	✓			✓	2	1		1		1	1	1	1	Important indigenous nut
<i>C. solomonensis</i>				✓	1	2	2	2	2		2	2	2	Important indigenous nut
<i>Casuarina equisetifolia</i>	✓		✓	✓	1	1		1		1	1			
<i>Cordia subcordata</i>	✓			✓	1	1	1	1	1	1	1	1	1	Timber for carving
<i>Cocos nucifera</i>	✓	✓	✓	✓	1	1	1	1	1	1	1	1	1	
<i>Dacrydium nausoriense</i>	✓			✓	3		2		3					Endangered valuable timber spp. Fijian endemic
<i>D. nidulum</i>	✓			✓	3	1	2		3					
<i>Diospyros major</i>				✓	2							2		Culturally important in Polynesia
<i>Dracontomelon</i> spp.	✓			✓	2	1		2	1	1			3	
<i>Dysoxylum gaudichaudianum</i>	✓				2	3		2						
<i>Endospermum macrophyllum</i>	✓				2	2		2	2					
<i>E. medullosum</i>	✓				2	3	3	3	3	3	2	3		
<i>E. robleannum</i>	✓				2	2		2	2					
<i>Eucalyptus tereticornis</i> (exotic)	✓	✓										2		
<i>Garcinia sessilis</i>				✓	2	2		2				3		Culturally important in Polynesia
<i>Garuga floribunda</i>	✓			✓	2	2		2						
<i>Gmelina arborea</i> (exotic)	✓			✓		3		3				2	1	Breeding prog.
<i>Intsia bijuga</i>	✓				2	3	3		3				1	
<i>Inocarpus fagifer</i>				✓	2	2		2					1	
<i>Paraserianthes falcateria</i>	✓		✓	✓	1	2	2	2	3	3	1	1		
<i>Pinus caribaea</i> (exotic)	✓					2				2	2	2		
<i>Planchonella torricellensis</i>	✓				1	1		1						
<i>Pometia pinnata</i>	✓			✓	2	1		2	1	1			1	
<i>Pterocarpus indicus</i>	✓				2	2	2		2			2		

SPECIES	End use of species				Operations/ Activities								REMARKS
					Exploration & collection		Evaluation		Conservation		Germplasm use		
	1	2	3	4	5	6	7	8	9	10	11	12	
<i>Santalum album</i> (exotic)		✓			2	3		3		2		2	
<i>S. austrocaledonicum</i>		✓			3	3	2	3	1	2		2	
<i>S. yasi</i>		✓			3	3	2	3	1	2		2	
<i>Securinega flexuosa</i>	✓				1	1	1	1	1	1	1	1	
<i>Swietenia macrophylla</i> (exotic)	✓					3		3		3	1	3	Intro. and eval. of prov. from natural range desirable
<i>Syzigium neurocalyx</i>	✓				1	1		1			2	1	Breeding progr.
<i>Tectona grandis</i> (exotic)	✓			✓									
<i>Terminalia brassii</i>	✓			✓	1	1	1	1	1	1	1	1	
<i>T. catappa</i>			✓	✓		2						2	Soft-shelled nut trees identified in Vanuatu
<i>T. richii</i>	✓			✓	3	3		3	3	1	2	1	Excellent cyclone resistance. Possibly extinct on Niue
<i>Toona ciliata var. australis</i> (exotic)	✓				1	1	1	1	1	1	1	1	Susceptible to cyclone damage