

FO:FGR/14/Rep.

***REPORT***

Rome,  
Italy,  
31 January -  
2 February  
2007

# **FAO Panel of Experts on Forest Gene Resources**

## **Fourteenth Session**



**FO:FGR/14/Rep.**

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

**Rome, Italy**

**31 January – 2 February 2007**

**FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS  
Rome, 2007**



**TABLE OF CONTENTS**

	<u>Page</u>
Acronyms	iv
I. Introduction	1
II. Progress since the 13th Session of the Panel (2003)	3
III. Discussions and Recommendations	4
 <u>Appendices</u>	
1. Current Membership of the FAO Panel of Experts on Forest Gene Resources	9
2. Agenda	11
3. FAO Regular Programme Activities in Forest Genetic Resources 2004-2006	12
4. Proposed minimum set of information on genetic diversity of planted tree species	14
5. Proposed outline for the structure of the State of the World's Forest Genetic Resources	15

## ACRONYMS<sup>1</sup>

CBD	Convention on Biological Diversity (Canada)
CGIAR	Consultative Group on International Agricultural Research (USA)
DFSC	DANIDA Forest Seed Centre (Denmark)
FAO	Food and Agriculture Organization of the United Nations (Italy)
GEF	Global Environment Facility (USA)
IPGRI	International Plant Genetic Resources Institute of the CGIAR, now Bioversity International (Italy)
ICRAF	World Agroforestry Centre of the CGIAR (Kenya)
INRA	Institut National de la Recherche Agronomique (France)
IUCN	World Conservation Union (Switzerland)
IUFRO	International Union of Forestry Research Organizations (Austria)
OECD	Organisation for Economic Co-operation and Development (France)
SL-KVL	Danish Centre for Forest Landscape and Planning (Denmark)
UNDP	United Nations Development Programme (USA)
UNEP	United Nations Environment Programme (Kenya)
UNESCO	United Nations Educational, Scientific and Cultural Organization (France)
UNF	United Nations Foundation (USA)
UNFIP	United Nations Fund for International Partnership (USA)
WCMC	World Conservation Monitoring Centre (UK)
WWF	World Wide Fund for Nature (Switzerland)

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<sup>1</sup> Location of headquarters is given in brackets.

## **FAO PANEL OF EXPERTS ON FOREST GENE RESOURCES**

### **REPORT OF THE FOURTEENTH SESSION**

**Rome, Italy 31 January – 2 February 2007**

#### **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 1.

The Panel held Sessions as follows:

<b>Session N°</b>	<b>Date</b>	<b>Place</b>	<b>Year of Report</b>
1	October 1968	Rome, Italy	1969
2	March 1971	Macon, Georgia, USA	1972
3	May 1974	Rome, Italy	1974
4	March 1977	Canberra, Australia	1977
5	December 1981	Rome, Italy	1984
6	December 1985	Rome, Italy	1988
7	December 1989	Rome, Italy	1990
8	June 1993	Rome, Italy	1994
9	October 1995	Rome, Italy	1996
10	September 1997	Rome, Italy	1998
11	September 1999	Rome, Italy	2000
12	November 2001	Rome, Italy	2002
13	November 2003	Rome, Italy	2004

The Fourteenth Session of the Panel was held at FAO Headquarters, Rome, Italy from 31 January to 2 February 2007.

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

**1. Panel members**

Mr. P.Y. Kageyama	Brazil
Mr. A. Nikiema	Burkina Faso
Mr. Wang Huoran	China
Mr. C. Navarro	Costa Rica
Mr. B. Kigomo	Kenya
Mr. F. Asmar	Lebanon (last minute apologies)
Mr. D. Baskaran K.	Malaysia
Mr. S. Pouli	Samoa
Mr. L. Ackzell	Sweden
Mr. W. Dvorak	United States of America

**2. Resource persons**

Mr. L. Thomson	Bioversity International
Mr. J. Koskela	Bioversity International
Ms. B. Vinceti	Bioversity International
Mr. M. Bariteau	INRA (France)
Mr. L. Graudal	Danish Centre for Forest, Landscape & Planning

**3. Secretariat**

Mr. O. Souvannavong	FAO, Forest Management Division
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Mr. J. Heino, Assistant Director-General, Forestry Department, and Mr. Peter Holmgren, Chief, Forest Resources Development Service, attended parts of the Session. Officers from the Agriculture, Fisheries and Natural Resources Departments, the Secretariat of the CGRFA, and several Services of the Forestry Department participated in parts of the meeting to present information relevant to items of the Agenda.

The Panel unanimously elected Mr. Daniel Baskaran Krishnapillay of Malaysia Chairman and Mr. William Dvorak of United States of America Vice-Chairman. The Agenda adopted is shown in Appendix 2.

## II. PROGRESS SINCE THE 13TH SESSION OF THE PANEL (2003)

The Panel was informed on the reform of FAO and related changes in the Forestry Department programme and structure. Forest genetic resources activities were mainly contributing to programme entities “Sustainable management of forests, woodlands and trees outside of forests” and “Conservation and rehabilitation of forests and woodlands ecosystems” implemented by the Forest Management Division (formerly Forest Resources Division), they should also contribute, to a lesser extent, to programme entities “Assessment, monitoring and reporting on forest resources products and institutions” and “Forests and climate change”. A Senior Forestry Officer (Biological Diversity and Conservation) was now covering activities in forest genetic resources as part of a broader mandate than the Forestry Officer (Forest Genetic Resources) formerly. The overall Regular Programme allocation to forest genetic resources activities has been significantly reduced from the previous biennium. The Panel was presented with a summary of FAO’s forest genetic resources programme. The period 2004-2006, the programme has concentrated on: (i) the finalisation and publication of technical guides for the conservation and management of forest genetic resources in collaboration with Bioversity International and the Danish Centre for Forest Landscape and Planning (SL-KVL), which recently integrated the former DANIDA Forest Seed Centre (DFSC); (ii) the finalisation and publication of a review of biotechnology in forestry including genetic modification; (iii) the maintenance of the information base on forest genetic resources; and (iv) the review of global indicators of forest genetic diversity. Most activities reported are carried out with partners inside and outside FAO. Forest genetic resources are represented in interdepartmental working groups, namely biodiversity, biotechnology and biosecurity.

Other activities and elements of the Forestry Programme were presented: (i) Global Assessment, and Voluntary Guidelines for responsible management of planted forests, (ii) Forest health including tree improvement and breeding for insect and disease resistance, and (iii) results of the *Global Forest Resources Assessment* (FRA) 2005, as well as information on the preparation of FRA 2010, which should provide the forest-related information needed for the assessment of progress towards the 2010 Biodiversity Target of the Convention on Biological Diversity (CBD), and should include information on trends in genetic diversity and a thematic study on *in-situ* and *ex-situ* conservation. The network of FRA national correspondents should be maintained and strengthened.

Officers from various FAO units informed the Panel on on-going global programmes. The Agriculture Department presented updates on (i) the preparation of the second report of the *State of the world’s plant genetic resources for food and agriculture*, mentioning networking approach, inter-sectoral dialogue and collaboration with regional and sub-regional organisations, and (ii) lessons learnt and content of *State of the world’s animal genetic resources*, a 7-year country-driven process reaching its final phase. The Fisheries Department presented trends in aquatic genetic resources and the *Code of Conduct for Responsible Fisheries*, by which countries have an obligation to conserve and develop fishery genetic resources and biodiversity to improve human condition. The Inter-Departmental Working Group and Priority Area for Interdisciplinary Action on Biodiversity for food and agriculture informed the Panel on inter-departmental activities including work on genetic diversity indicators for monitoring progress towards the 2010 targets of the CBD, under the Biodiversity Indicators Partnership. The Secretary of the Commission on Genetic Resources for Food and Agriculture (CGRFA) gave a comprehensive presentation on the Commission and the follow-up to a decision of the FAO Conference in 1995 that the CGRFA’s mandate covers “all components of biodiversity of relevance to food and agriculture”. At its forthcoming 11<sup>th</sup> Session, the Commission will discuss the establishment of a Multi-year Programme of Work (MYPOW) for which a component on forest genetic resources should be proposed.

Panel members and resource persons reported on activities which had taken place since the last Session (2003).

### **III. DISCUSSIONS AND RECOMMENDATIONS**

#### **Historical perspective**

As part of its discussions, the Panel took note of the important milestones of the establishment of the Panel of Experts of Forest Gene Resources in 1968; the elaboration of a first global plan of action on forest genetic resources to provide an informal framework to harmonize and coordinate action at international level (1975); and discussions focused on forest genetic resources (FGR) at the 13<sup>th</sup> Session of the Committee on Forestry (COFO, 1997). COFO had noted that, country driven, participatory, regional action plans on FGR might, in the future contribute to an international framework for action on FGR.

#### **Institutional collaboration**

The Panel noted that while inter-sectoral linkages are important, there are some notable differences in the relevance and balance of strategies applied and in the methods used for conserving and managing crops, animals, fish and of forest genetic resources. This is largely due to the biological characteristics of the forest species, levels of knowledge on their variation and genetic makeup, the management systems applied and the uses made of their products. The differences in approach and application make the availability of the sector-specific expertise essentially important. Taking these into consideration, the Panel also noted that the 11<sup>th</sup> Session of the CGRFA would by reviewing sectoral issues, including status of FGR.

The Panel noted that national forest programs provide an overall framework for information and action in forestry and they constitute links to wider, inter-sectoral actions plans and processes, such as the Millennium Development Goals; and environmental and rural development plans, such as poverty reduction strategies etc.

Noting that while institutions dealing with FGR generally cover different aspects of work, the Panel recommended that collaboration among them needs to be strengthened. Harmonization of actions among institutions, based on respective mandates and comprehensive advantages, would help avoid wasteful duplication of efforts, ensure the important FGR issues are not inadvertently neglected, reporting burden on countries will be minimized and the provision of data and information will be consistent across sectors, thus facilitating cross sectoral linkages.

#### **Management of forest genetic resources (FGR)**

Management of FGR is based on (a) conservation in protected areas; (b) incorporation of genetic considerations in natural and planted forest management; and (c) incorporation of such considerations in tree improvement strategies. The main emphasis of the FGR strategy to be applied depends on the characteristics of the species, including variation and variation patterns; present day and future potential uses; levels of security and integrity of populations and species; level of genetic and silvicultural knowledge; institutional abilities; and financial possibilities. Hence the panel recommends the following:

It is recommended that efforts to explore, conserve, evaluate and better utilize FGR resource be continued and further strengthened in collaboration with national institutions, intergovernmental and non-governmental partners

It is recommended to intensify action in the various steps of FGR management, gradually improving basic biological knowledge and incorporating a wider range of species in national programs (including species providing both non-wood and wood-products), and using varying intensities of forest management interventions. The definition of priorities for conservation and early application of genetic resource management should be supported by the use of ecogeographical and genecological zoning.

It is recommended that countries give attention to identifying priority species targeted for conservation and genetic management, based on the value and attributes of the species; their occurrence and present management; operational needs; and levels of security and threat. There is also a need to develop relevant, scientifically sound, economically feasible and practically implementable methods for genetic management

It is recommended that FAO update and maintain the existing REFORGEN for the collection, storage and provision of sector relevant information on FGR, expanding the species list and geographical coverage of information in the database and ensuring its continued complementarities with other available and incipient information management tools. Reliable mechanisms should be established to allow the continued up-dating of these databases.

It is recommended that FAO examine the effects of climate change on tree species distribution and productivity to determine future needs of adaptation of forests and forest tree species to environmental changes and the continued availability of genetic materials for plantation establishment, tree planting and bioenergy purposes.

Noting the great potential of tree planting and forest plantations to contribute to both poverty reduction and the enhancement of forest products supply, the Panel recommended that FAO, in collaboration with international partners, support national efforts in low-input tree breeding and domestication, and promote the development of improved mechanisms for the supply of quality seeds, especially for smallholders and rural communities.

The Panel noted that the regional, sub-regional and eco-regional workshops on FGR carried out over the past 10 years with the support of FAO and partner organizations are presently the best available source of information on FGR. The workshops have provided effective fora to review status, trends, needs and gaps, and have helped harmonize FGR activities at these levels based on national priorities and action. The workshops have, further, facilitated evaluation of status and trends using common core variables for assessment and basing priority setting on similar or comparable and well defined principles and methodologies. The workshops have also strengthened regional collaboration in information sharing and capacity building, and have helped ensure that full use is made of institutional complementarities in participating countries. The Panel recommended that FAO strengthen its support to interested countries and regions to convene additional forest genetic resources workshops, to be carried out in collaboration with international partners, regional organizations and existing networks. Efforts should be made to forge inter-regional links early in the program and to make full use of opportunities for exchanging information and experiences.

The Panel recommended that vigorous efforts should be made to improve the relationship between the public and private sector (industry and private owners, including smallholders) to further improve the management and use of the FGR.

The Panel recommended that support to capacity building be strengthened, with particular attention to bridging the gap between new and traditional methods and technologies in genetic conservation and tree breeding.

Noting that germplasm transfer has become seriously constrained by legal considerations over access and patenting and biosecurity (including risks of invasiveness and genetic pollution), the Panel recommended that FAO, in collaboration with international partners, examine possibilities to help facilitate safe and smooth germplasm transfer within and between countries.

## **Preparation of the State of the World's Forest Genetic Resources**

At its Thirteenth Session in 2003, the Panel had considered the preparation of a periodic global assessment on forest tree genetic diversity. The Panel unanimously agreed that the lack of a global picture on the status and trends of forest genetic diversity, and the lack of estimators of the rate of genetic diversity loss, were limiting factors in decision-making at international, national and institutional levels. It therefore recommended that appropriate studies on the relevance, feasibility and process of a global assessment of forest genetic resources should be undertaken, and that procedures and partnerships for assessment be established.

The Panel considered the Forest Genetic Resources Working Paper "The State of Forest Genetic Resources in the World: feasibility study and work options". The Panel also received background information about the preparation and results of the country-driven *State of the Worlds'* on Plant, and on Animal, Genetic Resources.

The Panel emphasized the need to increase awareness of the many roles and values of forest genetic resources. Forest genetic resources contribute significantly to forest management, and must be wisely used, developed and conserved, as part of efforts to achieve sustainable development. There is an urgent need to provide the international community with regular and systematic information on the state of these resources as the basis for its policy and management decisions. There is yet no assessment on the national and international capacities to manage these vital resources. The compilation and analysis of the essential baseline data and information on the status of forest genetic diversity will expose gaps, and help to establish country, regional and global priorities for the management of forest genetic resources, as part of the overall objective of reducing poverty, achieving and sustaining global food security and enhancing environmental sustainability.

The Panel therefore recommended that top priority be given to the preparation of the country-driven *State of the World's Forest Genetic Resources*. The Report will provide a solid information base for long-term monitoring and regular reporting on the state of forest genetic resources and, most importantly, the implementation of forest genetic programmes at national, regional and global levels. The preparation of a State of the World report will, furthermore, provide a unique opportunity to enhance country capacities and to promote collaboration and cooperation within and among Member Countries, and among Governmental and non-Governmental international and regional organizations involved in the management of forest genetic resources. The preparation of the Report will also help strengthen the cooperation between the Panel and the Commission on Genetic Resources for Food and Agriculture.

The Panel of Experts discussed the scope of the Report on the State of the World's Forest Genetic Resources. It was unanimously agreed that the report should include forest species of socio-economic importance, focusing on both the major planted species and on those species which have important values for local communities. A twin-track approach would be required to produce a comprehensive assessment of the status and trends of genetic diversity of major plantation species and a synthesis analysis of those important for local livelihoods, such as the diverse portfolio of agroforestry species genetic diversity. Appendix 4 contains the minimum information that should be gathered and analyzed for planted species.

The Panel of Experts agreed also on an outline for the structure of the State of the World's, as contained in Appendix 5 of this Report.

The Panel subsequently discussed the sources of information necessary to support the preparation of the *State of the World's Forest Genetic Resources*. It emphasized that there is already a large amount of information on the status and trends of forest genetic resources, so the preparation of the *State of the World* report should build on existing information and avoid duplication of efforts. There is also an opportunity to mainstream information about genetic resources into the information gathering process of the Global Forest Resources Assessment (FRA), which would reduce the reporting burden

on Member Countries, and integrate reporting on forest genetic resources into overall reporting on forest resource management. The Panel identified the following sources of information:

- Country-driven National Reports and Outcomes from Regional Workshops, organised with the support of IPGRI, now Bioversity International, and FAO since 1995; there is a need to synthesize available information and identify gaps;
- Information gathered through the FRA questionnaires; Panel members should be consulted on development of questions in relation to forest genetic resources;
- Thematic studies to better understand emerging issues and results of scientific workshops organized as part of preparation of the State of the World's;
- Regional Updates provided by the Panel Members;
- National forest programmes;
- REFORGEN;
- Information collected regularly within the framework of the FAO Regional Committees and Regional Forestry Commissions;
- Information from other sources, including the CBD country reports.

The Panel considered findings of a review of the state of development of forest genetic diversity indicators and proposals for their further development and implementation. It recommended that such indicators be further elaborated to help monitor changes in types and levels of forest biological diversity and FGR, and as a means for their improved management. Biophysical and FGR management related indicators should be fully integrated with those being developed and implemented in other fields and sectors, such as criteria and indicators for sustainable forest management. The use of reliable indicators will help improve the precision of the State of the World assessment, national monitoring of changes over time and related management action, and the future ability of FAO to technically assist countries and local communities to manage FGR effectively, focusing on critically important areas, species and issues. In preparation of the State of the World's Forest Genetic Resources, the Panel will provide overall guidance on scientific and technical matters. The next Session of the Panel should review all existing information in order to identify knowledge gaps and ways and means to fill in them. The Panel expressed a desire to structure its own activities according to a multi-year schedule, coordinated with relevant processes in other inter-governmental bodies. It requested the Secretariat to draw up such a draft schedule for its next meeting, and to make it available to the Secretariat of the CGRFA.

The Panel reviewed (i) an introduction to the preparation and function of the CGRFA's MYPOW, and (ii) a draft of an information note on forest genetic resources that will be provided to the Commission at its Eleventh Session, as background information. The Members of the Panel agreed to make comments on the draft background information note before 1<sup>st</sup> March 2007.

The Panel of Experts discussed overall priorities for FAO's future activities in forest genetic resources. In order to address the many challenges in the field, the Panel agreed that FGR priorities for action needed to be structured and incorporated in medium and long-term rolling programmes of work. In such programs, the Panel recommended that priority be given to the preparation of the *State of the World's Forest Genetic Resources*, the strengthening of information systems such as REFORGEN, and development of mechanisms for incorporating FGR considerations in the global Forest Resources Assessment coordinated by FAO (FRA). In regard to FRA, the Panel recommended to first examine and incorporate information on species diversity; while subsequent global assessments might also include studies of within-species diversity across well-defined geneecological zones.

The Panel agreed that the Commission should be invited to review progress in the development of the *State of the World's Forest Genetic Resources* at its Twelfth Session, with a view to a view to agreeing the final draft at its Fourteenth Session. COFO should be fully involved in this process.

### **Main general recommendations**

The Panel recommended that FAO intensify action to support countries in the management of forest genetic resources to support sustainable forestry and rural development, emphasising the urgent need to strengthen efforts to manage these resources to reduce unplanned deforestation, to adapt to climate change and mitigate potential climate-related damage to forest ecosystems, and to minimize losses from invasive species, including pests and diseases. The Panel noted that, without adequate knowledge and the availability of well-adapted tree species and populations, countries are in danger of not being able to meet their internal demand for wood, energy, food, fodder, and environmental and ecosystem services, which underpin overall sustainable development and the achievement of the Millennium Development Goals, especially MDG 1 (Reduce extreme poverty and hunger), and MDG 7 (Ensure environmental sustainability).

The Panel stressed that healthy forests provide local communities basic levels of sustenance and reduce poverty. Access to a broad base of genetic material gives communities the opportunity to utilize well adapted, alternative species during periods of global climatic change. Choice of the right species and seed source combined with proper silviculture can improve productivity by well over 20%. Better understanding of a tree species' genetic structure and conservation status helps prioritize efforts for its long-term management and promotes sustainability. The Panel therefore recommended that FAO increase its knowledge base on the current status and trends in forest genetic resources. Priority should be given to the preparation of the first State of the World's Forest Genetic Resources, ensuring appropriate links with the global FRA; and to the strengthening information systems such as REFORGEN to support priority setting in the short, medium and long term.

The Panel noted that FAO was in a unique position to provide leadership in assistance to countries in the management of forest genetic resources, in collaboration with other international agencies, institutions and mechanisms. FAO's Forestry Department has several decades of experience in this field, has developed a powerful database to determine proper seed sources for reforestation and tree planting, and has strong support from member countries. The Panel noted, however, that at the very time when tree genetic resources are under great pressure, and national programmes and local communities are in great need of technical advice and support, the FAO forest genetic resources program lacks sufficient resources to adequately address its leadership role and to react effectively and in a timely manner to requests for assistance from Member Countries. The Panel strongly recommended that additional resources be sought to the program from all identifiable sources.

The Panel of Experts recognized that the integration of forest genetic resources activities within the Multi-Year Programme of Work of the CGRFA would draw attention to the importance of the sector, and help focus the Forestry Department's contribution to FAO's cross-sectoral work on biodiversity and genetic resources, and would support cooperation with other relevant international institutions and partners. In this context, the SoW/FoGR should further clarify the contribution of forest genetic resources to the achievement of MDGs 1 and 7.

The Panel recommended that the outcome of the present 14<sup>th</sup> session of the Panel be brought to the attention of the Committee on Forestry (COFO) and the CGRFA.

**APPENDIX 1**  
**MEMBERSHIP OF THE PANEL OF EXPERTS ON FOREST GENE RESOURCES**  
**Period 1 December 2006 - 30 November 2009**

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**APPENDIX 2**  
**AGENDA OF THE FAO PANEL OF EXPERTS ON FOREST GENE RESOURCES**  
**Fourteenth Session**  
**Rome, Italy, 31 January – 2 February 2007**

1. Opening of the Meeting
2. Election of Chairman and Vice-Chairman
3. Adoption of the Agenda
4. Progress since the 13<sup>th</sup> Session of the Panel (November 2003)
5. Discussion of future work on forest genetic resources:
  - (i) State of the World's Forest Tree Genetic Resources
  - (ii) Indicators of Forest Genetic Diversity
  - (iii) Forest Genetic Resources in the Multi-Year Programme of Work of the Commission on Genetic Resources for Food and Agriculture
  - (iv) Proposals for FAO Programme Activities
6. Discussion on the Role and Functioning of the Panel
7. Any Other Matters
8. Closure of the Meeting

**APPENDIX 3**  
**FAO REGULAR PROGRAMME SUMMARY ACTIVITIES IN FOREST GENETIC RESOURCES**  
**2004-2006**

FAO provides technical support to member countries' national agencies in the conservation, management and sustainable use of forest genetic resources. The focus is on the transfer of information, analysis, knowledge and technologies, through a wide range of communication tools, publications and networking and twinning mechanisms. In the 2006-2007 Forestry Department Regular Programme, forest genetic resources activities are mainly contributing to programme entities "Sustainable management of forests, woodlands and trees outside of forests" and "Conservation and rehabilitation of forests and woodlands ecosystems", they should also contribute, to a lesser extent, to programme entities "Assessment, monitoring and reporting on forest resources products and institutions" and "Forests and climate change". The overall Regular Programme allocation to forest genetic resources activities has been significantly reduced from the previous biennium. Following a reform of the Forestry Department structure, a Senior Forestry Officer (Biological Diversity and Conservation) is now covering activities in forest genetic resources as part of a broader mandate than the Forestry Officer (Forest Genetic Resources) formerly.

*International species and provenance trials* are effective traditional means to study interspecific and intraspecific variations of adaptive and productive traits in tree species. Series of trials have been established for socio-economically important species, by national institutions in collaboration with FAO. Such coordinated, multi-locational trials, are regaining interest as valuable material for research in relation with adaptation to climate change. Most recent activities have concentrated mainly on arid zones species, including neem (*Azadirachta indica*) through the International Neem Network. The assessment and analysis of trials, established in 1995 in 20 sites in 15 Asian and African countries, is ongoing with the support of the Danish Centre for Forest Landscape and Planning (SL-KVL), which recently integrated the former DANIDA Forest Seed Centre (DFSC). Efforts are currently concentrated on trials established in South-East Asia.

Within the framework of *Silva Mediterranea*, a systematic review of earlier species and provenance introductions of Mediterranean conifers have started with the support of the French National Institute for Agricultural Research (INRA). A synthesis on the status of the trials was published on the internet at [www.fao.org/forestry/site/24289/en](http://www.fao.org/forestry/site/24289/en). The assessment, analysis and synthesis of trial results are undertaken in collaboration with conifer research networks of IUFRO and EUFORGEN with a view to use these old sets of international trials for research projects on adaptation to climate change.

*Biotechnology in Forestry*: A Preliminary review of biotechnology in forestry, including genetic modification was published as a first attempt to provide statistical information on the extent and patterns of biotechnology research and applications in forest trees, worldwide (<http://www.fao.org/docrep/008/ae574e/ae574e00.htm>). An e-mail conference (June 2005), and an international workshop (November 2005) led to a publication on the role of biotechnology for the characterization and conservation of crop, forest, animal and fishery genetic resources in developing countries.

*Seed and Forest Reproductive Material*: Tree Seed Training and Extension Resources, a global review of extension manuals of relevance to forest seed was released on the Internet (<http://www.dfsc.dk/Extensionstudy/index.html>), in collaboration with SL-KVL, to facilitate access to extension resources concerning tree seed and related topics, and make it easier for extension workers to produce new, appropriate resources.

*Conservation and management of forest genetic resource*: The experience gained in was synthesized and summarized in a series of technical guides that FAO, Bioversity International (formerly IPGRI) and SL-KVL jointly published: Forest genetic resources conservation and

management (1) Overview, concepts and some systematic approaches, (2) In managed natural forests and protected areas (*in situ*) and (3) In plantations and genebanks (*ex situ*). A publication, *In situ* conservation of wild plant species – a critical global review of good practices, was produced in collaboration with Bioversity International to contribute to the understanding of *in situ* conservation of target species of different types, including medicinal and aromatic plants, crop wild relatives, fruit trees and shrubs, ornamental and other valuable species.

*Management of wildlife and protected areas:* The programme focused on sustainable management of wildlife for food and income generation. Support has been provided to strengthen the policies and institutions for sustainable management of wildlife and protected area in Africa, Central Asia, Caucasus and Balkans. A publication on sustainable management of Barbary Sheep (*Ammotragus lervia*) was produced for the Maghreb region. Others focal areas include mitigation of human-wildlife conflicts, and support to the development of laws for sustainable wildlife management. The programme also assists member countries to fulfill the requirements of international conventions, like the Convention on International Trade in Endangered Species of wild fauna and flora (CITES). The Central African World Heritage Forest Initiative (CAWHFI) is being implemented in cooperation with UNESCO, UNF, UNFIP, French Cooperation and partner NGOs. The project aims at combating illegal hunting and regulate the bushmeat trade; strengthening law enforcement for the protection of key trans-border protected areas; improving the management of key protected areas; preparing the nomination of new trans-border World Heritage sites in the Congo Basin forests.

The *Global Forest Resources Assessment* (FRA) 2005 included information on forests managed mainly for conservation on biological diversity. It was agreed that FRA 2010 should provide the forest-related information for the assessment of the progress of the Convention on Biological Diversity towards the 2010 biodiversity target. Methods for reporting should be examined on area of forest in protected areas and the management effectiveness of such areas; and trends in the genetic diversity of forest tree species. In connection to this requirement, a review of the state of development of forest genetic diversity indicators was conducted under a GEF 2010 Biodiversity Indicators Partnership project, to determine the current status and plan for further development of indicators selected for monitoring progress towards the CBD 2010 target. This work is carried out in close collaboration with SEBI 2010, the Streamlining European 2010 Biodiversity Indicators initiative.

Under *International Collaboration*, FAO worked with IUFRO, Future Harvest (CGIAR) centres and the OECD, universities, national forest services and research institutes. FAO continued to provide inputs to, and closely followed, the implementation of the CBD expanded work programme on forest biological diversity, through participation in meetings of the Ad-Hoc Technical Expert Group. FAO is hosting the next meeting of the Group in May 2007. FAO collaborated with IUFRO in a Division 2 Joint Conference on Low input breeding and genetic conservation of forest tree species, in October 2006, in Antalya (Turkey), and with Bioversity International in an expert consultation on tree diversity in ecosystem restoration in the Asia-Pacific region, in December 2006, in Chiang Mai (Thailand).

*Information:* Activities have continued through the upgrading of REFORGEN and transfer to the FAO Forestry Department information system FORIS, which will improve management and updating facility. The homepage contains detailed information on programmes and activities carried out in the field of forest genetic resources, and links to the work of associated programmes within and outside of FAO.

The Report of the Thirteenth Session of the Panel of Experts on Forest Gene Resources (2003) is available in English, French and Spanish, in printed version, and on the Internet.

**APPENDIX 4**  
**PROPOSED MINIMUM SET OF INFORMATION ON GENETIC DIVERSITY**  
**OF PLANTED TREE SPECIES**

Selection of 25-30 economically most important planted tree species

For each species:

1. Geographic range
2. Climatic range (maximum/minimum values needed)
3. Trends in provenance results (BLUP analysis)
4. Conservation status of provenances sampled
5. Estimated percent of the natural range sampled
6. Genetic diversity estimate by species/population
7. Hectares planted by species/provenance either locally or as an exotic
8. Status of genetic improvement (seed stand? orchards? Clonal deployment?)
9. Information of seed availability/natural stands/seed orchards
10. Are there regional restrictions that limit germplasm transfer?
11. Do *ex situ* conservation stands exist/status?

**APPENDIX 5**  
**PROPOSED OUTLINE FOR THE STRUCTURE OF THE STATE OF THE WORLD'S**  
**FOREST GENETIC RESOURCES**

1. THE STATE OF DIVERSITY
  - 1.1 Origin and history
  - 1.2 Status of Forest Genetic Resources
    - Species Diversity
    - Intraspecific Diversity
    - Risk Status
    - Trends in erosion
  - 1.3 Flows of Forest Genetic Resources
  - 1.4 Uses and Values of Forest Genetic Resources
  - 1.5 Threats
  
2. FOREST SECTOR TRENDS AND IMPLICATIONS TO FOREST GENETIC DIVERSIFICATION
  
3. THE STATE OF CAPACITIES
  - 3.1 Institutions & Stakeholders
  - 3.2 Breeding programmes
  - 3.3 Conservation Programmes
  - 3.4 Biotechnologies
  - 3.5 Policies and Legislation
  
4. THE STATE OF THE ART IN THE MANAGEMENT OF FoGR (Method for Characterization, Improvement, Valuation, Conservation, Research Priorities)
  
5. NEEDS AND CHALLENGES FOR THE FUTURE