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ASSESSMENT OF PROGRESS IN IN SITU CONSERVATION  
 OF PLANT GENETIC RESOURCES

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ANNEX. In situ conservation of plant genetic resources: progress  
 since the Second Session



ASSESSMENT OF PROGRESS IN IN SITU CONSERVATION  
OF PLANT GENETIC RESOURCES

I. INTRODUCTION

1. At its Second Session in June 1987, the FAO Commission on Plant Genetic Resources took note of the activities in in situ conservation of forest genetic resources being developed by FAO and other major international organizations, in collaboration with national institutes, worldwide.

2. Acknowledging that in situ conservation was the only method presently available for conserving a number of little-known species and ecosystems and that it constituted an optimal strategy for the conservation of wild, weedy and vegetatively propagated species, the Commission stressed the need for FAO to continue and further strengthen its activities in this field.

II. PROGRESS AND ACTIVITIES

3. In line with previous recommendations, the work programme of FAO has concentrated on the following aspects

- (i) the preparation of publications and the dissemination of information to increase awareness at decision-making, technical and grassroots levels; co-sponsorship of meetings and workshops;
- (ii) support to national institutes in the exploration, evaluation and conservation of genetic materials of socio-economically important species of interest to a range of countries;
- (iii) support to the establishment of pilot in situ conservation areas and to associated research, with special emphasis on woody species; promotion of in situ conservation of genetic resources in national parks and equivalent areas, as well as in managed forest reserves;
- (iv) strengthening the network of protected areas and collaboration with national and international institutes to improve coverage and management of existing reserves;
- (v) elaboration of project proposals at the national, sub-regional and regional level, promoting the conservation and wise use of plant genetic resources, as well as increasing emphasis on ecosystem and in situ conservation in the elaboration of Tropical Forestry Action Plans for regions and individual countries;

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<sup>1</sup> Annex I highlights some activities undertaken by FAO and other major international organizations since the last session of the Commission.

4. Appreciable progress has been achieved in relation to the limited funds available, especially in the in situ conservation of woody species and species found in forest ecosystems, by coupling genetic resource conservation with closely related activities, such as management of forest reserves (aimed mainly at sustainable production of a range of wood and non-wood forest products) and management of protected areas (focused on ecosystem conservation and on protection of soils and watersheds).

### III. SUGGESTIONS FOR FUTURE ACTION

5. Current problems in genetic resource conservation are often so severe that it is tempting to concentrate on them alone. However, preventive measures through the inclusion of conservation aspects in short, medium and long-term planning at the policy-making, the organizational and the technical levels, must also be given due attention. Full use should continue to be made of existing, dynamic schemes such as the Tropical Forestry Action Plan as a framework for conservation activities, linking them to sound landuse planning and overall development programmes of individual countries.

6. Efforts to increase awareness through the distribution of well targeted documentation produced in several languages should be continued. This information material should focus on the importance of conserving ecosystems and genetic resources of species of actual or potential socio-economic value in the overall context of development. It should specifically refer to the importance of considering conservation aspects at the early stages of land use planning and should underline the links of conservation with protected as well as productive areas. It should also help make available technical strategies for action, pinpoint research needs and demonstrate the advantages of increased efforts in extension and training.

7. Activities should be intensified in support of the demarcation and management of pilot areas for in situ conservation of target species, including woody species, crop relatives and species providing fruits, fodder, medicine, shade, shelter and other important goods and services. Such projects should implicitly be inter-disciplinary and pay particular attention to training, extension, research and awareness. To maximize impact, it is important that in situ pilot projects receive support and finance over an extended period of time in order to demonstrate the short and long term compatibility between conservation and sound utilization of natural resources and the central role that local populations can and should play in conservation activities.

8. Programmes should be developed to support participatory schemes for on-farm testing, use and conservation of local landraces of agricultural crop species across a broad range of agro-ecological conditions, as a dynamic complement to ex situ conservation activities and as an important component of an over-all plan to safeguard genetic variation at all levels.

9. In situ conservation of genetic resources will implicitly lead to the conservation of a range of component species of the ecosystems in which they occur. As a complement, special attention needs to be paid to the

protection of fragile ecosystems found in e.g. arid and high altitude areas and tidal and partly inundated zones, where the system as a whole acts as a buffer against conditions generally considered adverse to plant growth; and where intricate inter-relationships between component species are presently little known.

10. The importance of using participatory approaches should be forcefully stressed, thus ensuring that day-to-day needs of local populations are met while, at the same time, genetic diversity is conserved and safeguarded for future use.

#### IV. CONCLUSIONS

11. The concerns for conservation of genetic resources have steadily increased over the past decade and have led to changes in policies and priorities of national governments as well as international agencies and donors. In recent decades particular attention has been paid to the important role that in situ conservation of genetic resources must play in overall development plans of nations, complementing on-going efforts of ex situ conservation of economically and socially important species.

12. Harmonizing utilization and conservation of actually or potentially important species is a key to genetic conservation, in the long term. This implies careful planning and management of collection or harvesting operations, supervision, monitoring and in many cases research on biology of species and ecosystems, carried out in parallel with their utilization; and early incorporation of new research findings in prevailing management practices through extension and training.

13. In addition to genetic conservation activities carried out in parallel with sustainable use, it will frequently be desirable to link such activities to protection in National Parks and equivalent reserves, in which action is generally limited to research and monitoring and possibly non-destructive local use of products available from the areas concerned.

14. In line with its international mandate, it is important that FAO further strengthen its role as focal point for information and technical know-how in in situ conservation of plant genetic resources and assert its leadership role in helping countries to determine priorities for action; assist national institutes to draw up viable in situ conservation programmes taking into account legal, technical and socio-economic aspects, and stimulate collaboration between neighbouring countries and countries with similar ecological conditions.

**IN SITU CONSERVATION OF PLANT GENETIC RESOURCES:**  
**PROGRESS SINCE THE SECOND SESSION**

The paragraphs below focus on work on ecosystem conservation and in situ conservation of plant genetic resources, carried out over the past two years by FAO and some other international organizations, in close collaboration with national institutes in developing countries. The list is not comprehensive, but aims at highlighting activities which are considered of greatest relevance to the Commission's work.

1. Raising of awareness, information materials. Training, workshops, meetings<sup>2</sup>

(i) Following the publication of the Tropical Forestry Action Plan (TFAP) in 1985, a framework for action in tropical forestry which includes as one of 5 components the conservation of tropical forest ecosystems, the following information materials were prepared:

- a fold-out leaflet on the TFAP (FAO 1986), aimed at the public at large (English-E, French-F, Spanish-S);
- a special insert in Unasylva 152, Vol. 38 (1986), aimed at the technical level (E,F,S, Chinese);
- a booklet (FAO 1987), aimed mainly at decision-makers, but also at the technical level and the informed public (E,F,S, Portuguese).

In addition to the global plan, a regional TFAP was elaborated for Latin America and the Caribbean (FAO, 1988; E,S); and a number of sub-regional plans are under consideration for Africa.

(ii) As direct follow-up to earlier recommendations of the FAO Commission on Plant Genetic Resources, publication of a practical booklet, "Plant Genetic Resources: their Conservation for Human Use" (FAO 1988, in collaboration with Unesco, UNEP and IUCN; E,F,S), aimed at the policy making and technical levels; and a general information leaflet, "In situ Conservation of Plant Genetic Resources: to ensure today's and tomorrow's human needs" (FAO 1988, E; F,S in press F,S).

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<sup>1</sup> See Secretariat Note, "Status of in situ Conservation of Plant Genetic Resources: Follow-up to the Recommendations of the First Session of the FAO Commission on Plant Genetic Resources" (CPGR 87/7, Dec. 1986); and the Report of the 2nd Session of the Commission on Plant Genetic Resources (CL 91/14, April 1987).

<sup>2</sup> A key to acronyms is given on p. 7.

- (iii) Publication of the Report of the Sixth Session of the FAO Panel of Experts on Forest Gene Resources (FAO 1988; E,F,S); the FAO Data Book on Endangered Tree and Shrub Species and Provenances (FAO 1986; E); and two issues of FAO's Annual Newsletter, Forest Genetic Resources Information (No. 15, FAO 1987, No. 16, FAO 1988; E,F,S). A final report on the FAO/UNEP project on in situ Conservation of Forest Genetic Resources (1985-1.987), is in press (FAO 1988).

A number of papers on in situ conservation were also prepared by, or in close collaboration with, FAO officers for technical meetings

- (iv) FAO documentation in closely related fields included the "Interim Report on the State of Forest Resources in the Developing Countries" (forest areas, deforestation, plantations, trends for 127 countries; FAO 1988, E); and the FAO Miscellaneous Paper "Inventory and Mapping of Mangroves" (FAO 1988; E).
- (v) Recent information materials from other organizations included guidelines for inventories of biological resources in biosphere reserves prepared by Unesco in collaboration with MAB-Smithsonian Institution (USA) and an outline of "Minimal Database Requirements for Biosphere Reserves", prepared for Unesco by IUCN/WWF; a folding poster on biosphere reserves prepared by Unesco; the UNEP brochure "Conserving and Managing Biological Diversity: what the United Nations Environment Programme is doing"; the IBPGR/IUCN/WWF booklet "Conserving wild relatives of

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<sup>1</sup> Technical papers of particular interest, available from relevant Technical Departments of FAO, Rome, included:

(1) Cossalter, C. (1987). Conservation in situ des ressources génétiques forestières tropicales: la contribution des aires protégées et des réserves forestières. Conf. sur la Conservation de la Nature et l'Utilization des Ressources Végétales. Rabat (Maroc), Avril 1987. (13 pp., F). (2) Esquinas-Alcazar, J.T. (1987). Plant Genetic Resources: A Base for Food Security. Ceres 20(4): 39-45. FAO, Rome (E,F,S). (3) Palmberg, C. (1987). Conservation of Genetic Resources of Woody Species. Simposio sobre Silvicultura y Mejoramiento Genético. CIEF, Buenos Aires (Argentina), April 1.987. (20 pp., E,S). (4) Palmberg, C. and Esquinas-Alcazar, J.T. (1988). The Role of International Organizations in the Conservation of Plant Genetic Resources, with special reference to Forestry and the UN-System. Paper prepared for the Symposium on the Conservation of Genetic Diversity, Davis CA (USA), July 1988. (24 + 1.7 pp., E). (5) Seal, K. and Lucas, G.L. (1988). Conservation of Plant Genetic Resources and its Role in Improved Food Production and Security. Paper prepared for the FAO Expert Consultation on Forestry and Food Production/Security. Trivandrum (India), February 1988. (37 pp., E). (6) Roche, L. and Hall, J.B. (1988). Conservation of Forest Species. Paper prepared at the request of, and in close collaboration with, FAO's Forestry Department for the IBPGR/IUCN/IITA Workshop on Plant Genetic Resources in Africa. Nairobi (Kenya), October 1988. (E).

Crops"; IUCN's books "Plants in Danger" and "Centres of Biodiversity"; and a Spanish edition of IUCN's "Threatened Plants Newsletter", to complement the English-language version. A brochure on the joint IUCN/WWF Plants Programme, "Biodiversity: the key role of plants", will shortly be complemented by information materials in support of the forthcoming WWF 5-year campaign on biological diversity, to be launched in March 1989.

- (vi) Meetings/workshops of relevance included the WHO/IUCN/FAO Workshop on Genetic Resources of Medicinal Plants (Chiang Mai, Thailand 1987); the FAO/UNEP Workshop on in situ Conservation of Genetic Resources for the Latin American/Caribbean Region (Huaraz, Peru 1987); and the IBPGR/UNEP/IITA Workshop on Plant Genetic Resources in Africa (Nairobi, Kenya 1988).

2. Support to national institutes in the exploration, evaluation and conservation of genetic materials of interest to a range of countries; and pilot activities in in situ conservation of plant genetic resources

Activities in exploration/evaluation reported in Section 11/3(11) of the Secretariat Note prepared for the 2nd Session of the Commission (see footnote on p. 1 of this Annex) were continued with special emphasis on collection/evaluation/conservation of Acacia spp. (Africa, Australia, South and South East Asia), Prosopis spp. (Asia, Latin America), and exploration/collection/evaluation/conservation of Hippophaë spp. (China), Butyrospermum and Parkia spp. (Sahelian/N. Sudanian Zones of Africa). Monographs on Acacia albida, Butyrospermum parkii, Parkia biglobosa, Dalbergia sissoo, Khaya senegalensis and Cedrela spp. were prepared by collaborating institutes with support from FAO as an integral part of these activities.

Establishment of pilot areas in in situ conservation and related research continued to be supported as follows:

Brazil: Studies on reproductive biology of pioneer, intermediate and climax forest species, as a basis for conservation strategies and management of in situ conservation areas. Studies on successional stages, soil seed banks, breeding systems and pollination biology of tropical and sub-tropical zone target species.

A national workshop was organized by the University of Sao Paulo in 1987 on in situ conservation of woody species centred around a document prepared for FAO under author's contract, "Conservação in situ de Recursos Genéticos de Plantas" ("In Situ Conservation of Plant Genetic Resources"), which has subsequently been published and widely disseminated in Brazil.

Cameroon: In situ pilot conservation activities in Cameroon were linked closely to activities in existing national parks and reserves, concentrating on inventory and management descriptions for a small number of woody species in the following categories: (i) commercially important species with a wide distribution and heavy utilization; (ii) species with limited distribution, under pressure for changes in land use; (iii) woody species endangered with extinction in Cameroon.



Malaysia: Research on reproductive biology and sustainable management in situ of Calamus, Dryers, Dryobalanops, Neobalanocarpus, Parkia and Shorea species. These pilot species, providing a range of goods and services, were selected based on their socio-economic value and their need for conservation measures.

Peru: Pilot in situ areas of Alnus and Polylepis spp. in the highlands; and Cedrela, Cedrelinga and Swietenia spp. in the lowland humid tropics. Research on the taxonomy and variation of Cedrela spp. aimed at improved conservation measures. Complementary activities in ex situ conservation of Alnus and Polylepis to increase their present-day value in peasant economies.

P.D.R. Yemen: Conservation in situ and improved management methodologies for sustainable use of outlying populations of Prosopis cineraria.

3. International cooperation, coordination of activities

A close dialogue was maintained between the partners of the Ecosystems Conservation Group (FAO, Unesco, UNEP, IUCN) and its ad hoc Working Group on in situ Conservation of Plant Genetic Resources, chaired by FAO (FAO, Unesco, UNEP, IUCN and IBPGR, with WWF and WHO attending meetings in observer capacity). At the 15th session of the ECG, held in Gland, Switzerland 13-15 September 1988 and following the recommendations of the 4th meeting of the ad hoc Working Group held just prior to the Session, it was decided to expand the terms of reference of this Group to include technical questions related to all aspects of conservation of biological diversity, thus stressing the inter-relationships between in situ and ex situ conservation on the one hand and in situ and ecosystem conservation on the other. It was also decided to invite the participation of organizations such as the World Bank and UNIDO in the work of the Group, which should deal with specific technical questions referred to it by the ECG.

KEY TO ACRONYMS

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| FAO    | Food and Agriculture Organization of the United Nations              |
| IBPGR  | International Board for Plant Genetic Resources                      |
| LITA   | International Institute of Tropical Agriculture                      |
| IUCN   | International Union for Conservation of Nature and Natural Resources |
| MAB    | Man and the Biosphere Programme of Unesco                            |
| UNEP   | United Nations Environment Programme                                 |
| Unesco | United Nations Educational, Scientific and Cultural Organization     |
| WWF    | World Wildlife Fund International                                    |