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COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

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REPORT FROM FAO ON ITS POLICIES, PROGRAMMES AND ACTIVITIES ON AGRICULTURAL BIOLOGICAL DIVERSITY: (1) PLANT GENETIC RESOURCES

CONTENTS

REPORT FROM FAO ON ITS POLICIES, PROGRAMMES AND ACTIVITIES ON AGRICULTURAL BIOLOGICAL DIVERSITY: (1) PLANT GENETIC RESOURCES

I. INTRODUCTION

1. The Commission regularly receives reports from international organizations, including FAO, on their policies, programmes and activities for the conservation and use of plant genetic resources. The Commission considers such reports to be of value, both to it and to the organizations, which are able to acquaint countries with their objectives and programmes, and benefit from their comments.

2. The Commission considered that the report on FAO's activities submitted to the Sixth Session "should serve as a model for future reports, which should be provided to the Commission at each regular session". As in the previous report, the present document covers FAO's work in the field of plant genetic resources for food and agriculture, supported by the Agriculture Department and, in particular, the Plant Production and Protection Division, for crop genetic resources, and by the Forestry Department, for the genetic resources of forest plant species. They collaborate in regard to *in situ* conservation, particularly of wild crop relatives. FAO's ongoing projects in the field of plant genetic resources are listed in document CGRFA-7/97/Inf. 4.

3. Following the broadening of the mandate of the Commission, FAO is also reporting on its activities in other sectors of agro-biodiversity (farm animal genetic resources and fishery genetic resources), in the companion document, CGRFA-7/97/8.2. The Legal Office's substantial support to agro-biological diversity programmes, as well as the supporting activities of other departments, such as the Economic and Social Department, and the Sustainable Development Department, are also covered there.

4. Other international organizations have also been requested to report on their activities not only in the field of plant genetic resources, but also in other sectors of agro-biodiversity. Reports submitted by such organizations are given in document CGRFA-7/97/7, to be considered under agenda item 6.

II. FAO ACTIVITIES IN 1995 AND 1996, AND FUTURE PROGRAMME

1. Crop genetic resources

Regular programme activities

5. *Table 1* shows 1996-1997 Regular Programme budgetary allocations to the Agriculture Department, under which substantial crop genetic resource conservation and utilization activities take place. (These include staff salaries.) For each programme element, the degree of involvement in plant genetic resources activities is estimated. Under these budgetary allocations, a number of components of the FAO Global System on the Conservation and Sustainable Utilization of Plant Genetic Resources (document CGRFA-7/97/3) are operationally supported, including by the provision of the Secretariat for, and the servicing of, the Commission and its Working Group.

6. In 1995 and 1996, substantial Regular Programme staff and non-staff resources supported the preparation of the Fourth International Technical Conference on Plant Genetic Resources

Resources (see CGRFA-7/97/3). The World Information and Early Warning System (WIEWS) was a major source of information in this task.

Table 1: 1995/96 budget allocations to Regular Programme elements with components relevant to plant genetic resources, and estimated weight of these components

Programme element	Budget (US $ 000)	Estimated weight of PGR components
Commission on Plant Genetic Resources	1837	high
Ex situ and *in situ* conservation and networking	452	high
Evaluation/monitoring of use of plant genetic resources for sustainable agricultural development	441	high
World Information System on Plant Genetic Resources	729	high
Maintenance of biodiversity for difficult ecologies	320	high
Optimization of diversified food crops production system	1162	medium
Support to the International Rice Commission	522	medium
Intensification and Diversification of Horticultural Crops Production	902	medium
Industrial crops promotion for sustainable development	552	medium
Seed and planting material information and exchange	612	medium
Strengthening of national seed programmes	726	medium
Improved on-farm seed production	344	medium
Implementation of International Plant Protection Convention	1402	low
Integrated Pest Management	1978	low

7. *Ex Situ and In Situ Conservation and Networking* has supported the development of the International Network of *Ex Situ* Collections under the Auspices of FAO. In 1996, FAO participated in the CGIAR centres' external assessment of their genebank operations (twelve centres having formally joined the Network in October 1994). The Review Panel's recommendations will assist in improving genebank facilities and operations, including the safety duplication of accessions. In 1995 and 1996, FAO (in cooperation with IPGRI and other institutions) supported various technical consultations to develop guidelines for seed crop germplasm regeneration, and field genebank and *in vitro* genebank management: such technical consultations are listed in *Appendix 1*. FAO will be convening an Expert Consultation on Ecosystem Conservation and Sustainable Rural Development, planned for 1998, which will link conservation and sustainable rural development and training.

8. *Crop-related Networks*: FAO reported extensively to the Sixth Session on activities concerning such networks (document CPGR-6/95/5.1 *Appendix 1*), which, the Commission noted, were "a useful approach to integrating activities on plant genetic resources". It "suggested that such networks be regarded as part of the Global System, in order to strengthen practical linkages between the conservation and sustainable utilization of crop genetic resources". The *Global Plan of Action* identified the promotion of crop networks as a priority area. During 1995 and 1996, FAO has supported various global, inter-regional and regional crop-related networks (established in close collaboration with FAO Regional Offices and relevant scientific organizations), with the aim of strengthening collections, preserving genetic diversity (including that of wild relatives), and integrating conservation and utilization. Computerized databases have been or are being developed for such networks. The activities of individual networks are summarized in *Appendix 2*.

9. Under *Evaluation/Monitoring of the Use of Plant Genetic Resources for Sustainable Agricultural Development*, with financial support from FAO, the Indian National Bureau of Plant Genetic Resources collected tea germplasm and established the first base collection of a crop with recalcitrant seeds. Similar support was provided to the Xinjia Kiwi Fruit Research

accessions. A catalogue of this material was published, to facilitate international germplasm exchange. A basic study on cacao germplasm in rural areas by the National University of Honduras was initiated in 1996.

10. In 1995 and 1996, Regular Programme activities also gave technical support to development projects implemented with extra-budgetary funds, for the strengthening of regional and national programmes for plant genetic resources conservation and utilization. For example, a global project proposal for "Coconut Germplasm Utilization and Conservation to Promote Sustainable Coconut Production" was developed, for likely support by the Common Fund for Commodities (CFC) and the Asian Development Bank, and execution by the International Coconut Genetic Resources Network (COGENT) of IPGRI. A project for the "Development of Strategies for *In Situ* Conservation and Utilization of Plant Genetic Resources in Desert-prone Areas of Africa" will become operational in 1997, with funding from IFAD (the International Fund for Agricultural Development). FAO and IPGRI are collaborating in this project.

11. In 1995 and 1996, FAO supported the Global Programme on *Prosopis* spp., and promoted an awareness of the value of *Prosopis* spp. for the sustainable development of agro-sylvo-pastoral production systems in arid and semi-arid regions. A further focus was the use of plant genetic material suited to difficult ecologies, including germplasm exchange, and research on fast-growing pasture crop selection. Activities in support of the local production of forage crop seed was carried out in several regions (East Africa; the Chaco, Campos and Patagonia agro-ecological zones of South America; the Himalayas; and South East Asia) with similar ecological and social conditions and production systems.

12. *Optimization of Diversified Food Crops Production Systems* focuses on crop improvement, including through plant breeding, and on cropping systems optimization in developing countries, with emphasis on cereals and legumes. Activities have included support to the Tropical Asian Maize Network and to the Global Grain Legumes Drought Research Network; the development of breeding programmes for enhanced phosphorus uptake; and the preparation of books on maize and barley-breeding in the tropics. Plant Breeding News (a new electronic newsletter) will be launched in May 1997.

13. FAO provides the secretariat of the *International Rice Commission*, and has assisted in promoting the collaborative development and use of hybrid rice and rainfed lowland/swamp rice, and compiling and disseminating information on rice and production factors in various agro-ecologies. The Commission will hold its nineteenth session in Egypt in September 1998.

14. *Intensification and Diversification of Horticultural Crops Production* supports the utilization of fruit, vegetable, and root and tuber crop genetic resources, by promoting plant improvement programmes (selection and breeding), and initiatives to enhance plant multiplication systems and encourage the wider use of adapted and productive varieties, for better nutrition and increased income. Much of this work is carried out through crop-related networks.

15. *Industrial Crops Promotion for Sustainable Development* supports "new" crops or cultivars suitable for marginal ecosystems (such as salt-tolerant samphire, drought-tolerant new sweet sorghums and cold-tolerant oil-palm) and promotes the sustainable integration of under-utilized and wild species in production systems. FAO supports the International Council for Medicinal and Aromatic Plants, and activities related to the conservation and utilization of their genetic resources.

16. *Seed and Planting Material Information and Exchange* supports the Seed Exchange Unit, which, in 1995 and 1996, distributed 11,034 seed samples for experimental purposes.

17. *Strengthening of National Seed Programmes* assists governments in formulating and implementing their national seed policies, and smallholders - particularly in poor or remote regions - in adopting appropriate technologies for seed and planting material processing

18. *Improved On-farm Seed Production* helps farmers produce good quality seeds from their own cultivars, and promotes their conservation and continued development.

19. *Implementation of the International Plant Protection Convention* covers regulatory aspects of safe international germplasm movement, and is presently under revision to bring it into line with the WTO Sanitary and Phytosanitary Measures Agreement. Safe germplasm introduction requires effective plant quarantine: this is particularly important in many developing countries, where dependence on introduced and improved crops is high. Relevant publications include *Technical guidelines for the safe movement of germplasm* (prepared jointly with IPGRI); *International standards for phytosanitary measures,* to facilitate implementation of the Convention; and the *Code of conduct for the import and release of exotic biological control agents*.

20. *Integrated Pest Management (IPM)* is a general framework, with broad implications for crop genetic resilience, because it makes farmers the direct managers of diversity promotion and conservation processes. IPM promotes the use of crop varieties resistant to diseases, with a broad genetic base, and mitigates inappropriate pest-driven selection: farmers can continue using a range of varieties that would be discarded if high pest pressure generated by inappropriate strategies overcame their inbred resistance. Biological control through the conservation of pests' natural enemies is an important factor. IPM promotes weed management through new methods that exploit the capacity of some crop varieties to inhibit the growth of some weed species, the plant health concept, and the use of cover crops and other sources of organic materials, in combination with other strategies to improve overall plant vigour.

21. *Training:* a wide variety of individual and group training activities were supported during 1995 and 1996, in close collaboration with national programmes and international organizations. A list of training courses and workshops is in *Appendix 3*.

Field programme activities

22. Many technical assistance field projects involve plant genetic resources activities, although it is difficult or determine the relative weight of plant genetic resources activities in individual projects. Selected projects will be described briefly here to illustrate their plant genetic resources component. A fuller list is given in document CGRFA-7/97/Inf. 4.

23. The Fourth International Technical Conference on Plant Genetic Resources was financially supported by a number of donors, including through field projects.

24. Examples of a direct focus on crop genetic resources include the FAO Technical Programme projects, TCP/CPR/6613, "Conservation of Chinese Crop Germplasm Resources" and TCP/DRK/4555, "Crop Germplasm". The former supported the emergency collection and conservation of crop germplasm in the Three Gorge area in China, before a huge reservoir under construction flooded part or all of nineteen counties. The latter provided equipment and training to the national genebank, which was facing an emergency situation threatening the germplasm collection. Project UNTS/RAB/001/GEF, "Conservation des plantes du Maghreb", prepared a feasibility study for a regional three-to-five-year project, for GEF funding, on the conservation and utilization of plant genetic resources in Algeria, Morocco and Tunisia.

25. Another focus is on seed production and security, through projects such as GCP/RAF/319/AUS, "Promotion of Regional Network for On-farm Seed Production and Seed Security in the SADC Countries", TCP/KYR/6611, "Seed Legislation and Quality Control", and GCP/RAF/319/AUS, which promotes an African regional network for improving on-farm seed production and storage, and the establishment of an efficient seed security mechanism.

2. Forest genetic resources

Regular programme activities

Table 2 lists the programme elements in the 1996-97 Forestry Department Regular Programme, in which substantial forest genetic resources activities are involved.[1]

Table 2 : 1995/96 budget allocations to Regular Programme elements with components relevant to forest genetic resources, and estimated weight of these components

Programme Element	Budget (US$ 000)	Estimated weight of FoGR components
Conservation of forest genetic resources	557	Large
Plantation development, protection and tree improvement	985	Large

27. FAO provides technical and scientific support to member countries' national institutes in the conservation, management, sustainable use and development of forest genetic resources. The focus, in coordination with FAO's international partners, is on the transfer of information, know-how and technologies through networking and twinning mechanisms. Activities on various aspects of forest genetic resources are outlined below.

28. *Exploration, collection, evaluation of forest genetic resources*: FAO, in collaboration with national institutes and international organizations, such as the International Union of Forestry Research Organizations (IUFRO), relevant CGIAR Centres and other international partners, continues pioneering work started over fifty years ago, aimed at exploring, conserving and better utilizing forest tree genetic variation, focusing on socio-economically important species for the dry and humid tropics. Recent activities have concentrated mainly on the genera *Acacia*, *Azadirachta*, *Prosopis* and *Swietenia*.

29. *Conservation of genetic resources*: FAO has actively advanced methodologies for forest genetic resources conservation, including *ex situ*, as seed, pollen, tissue and in live collections. Since the early 1980s, *in situ* conservation has been emphasized.[2] Collaboration with national institutes has continued in research and pilot activities, and studies underpinning genetic conservation, including in Bangladesh, Brazil, India, Mexico, Morocco, Myanmar, Peru, Senegal, Sri Lanka and Thailand. In collaboration with IPGRI and other relevant CGIAR Centres, IUFRO and the DANIDA Forest Seed Centre (Denmark), FAO is currently developing a practical forest genetic resources *in situ* conservation guide, to complement earlier documents, such as *Plant genetic resources - their genetic conservation* in situ *for human use* (FAO 1989), and Forestry Paper 107, *Conservation of genetic resources in tropical forest management: principles and concepts* (FAO 1993).

30. *Information activities*: FAO has continued developing the World-wide Information System on Forest Genetic Resources (REFORGEN), in close collaboration with national institutes and relevant international organizations, which will support policy and technical decisions for genetic conservation at national, regional and international levels. It contains information provided by countries through a questionnaire, complemented by three international workshops on forest genetic resources, and data assembled in preparation for the Leipzig Conference. It is planned to complement and regularly update information.

1 Other programme elements, not listed here, including for wild-life protection and protected areas, such as natural parks, also have important forest genetic resourses activities.

31. FAO annually publishes *Forest Genetic Resources* (in 3,800 copies) with new findings and national experiences and programmes. The bulletin and other relevant information have recently been posted on the Internet, and an FAO forest genetic resources home page established.

32. *International collaboration:* FAO works closely with bilateral agencies and regional and international organizations, notably UNESCO, UNEP and IUCN: contacts have also been established with the Convention on Biological Diversity Secretariat.

33. FAO collaborates closely with IUFRO, some CGIAR centres (notably IPGRI, CIFOR and ICRAF) and universities and national forest research institutes in research. FAO with IUFRO (Division 2) are planning an international tree breeding conference, probably in September 1998.

34. FAO collaborated in three international forest genetic resources workshops held in 1995, in preparation for the Leipzig Conference: (i) Boreal Zone Forest Genetic Resources (main organizer, the Canadian Forest Service); (ii) North American Temperate Forest Genetic Resources (main organizer, the US Forest Service, within the framework of the North American Forest Commission); and (iii) European Forest Genetic Resources (main organizer, IPGRI, within the framework of the European Forest Genetic Resources Network, EUFORGEN). The workshops provided information on regional forest genetic resources activities and priorities, and could serve as models for similar discussions in other ecological regions, planned for 1998.

35. At its Thirteenth Session in March 1997, the Committee on Forestry (COFO) reviewed a number of major forest policy issues (extracts from the Report of the Session are in document CGRFA-7/97/Inf. 3). In particular, COFO "recommended that efforts to explore, conserve, evaluate and better utilize forest genetic resources be continued and further strengthened in collaboration with national institutes and international governmental and non-governmental partners" (para. 24). The Committee further "agreed that there was a need to strengthen national, regional and international activities in the conservation and sustainable use of forest genetic resources, to help enhance country capabilities and to support the exchange of information, and know-how" (para. 28). "There was no consensus concerning a global plan of action on forest genetic resources. Some delegations were of the opinion that efforts to consider a global plan of action on conservation and sustainable utilization of forest genetic resources were premature. Other delegations suggested that FAO should pursue efforts to develop regional plans of action for the conservation and sustainable use of forest genetic resources as a first step to develop a global plan of action" (para. 27). COFO also noted that "FAO, in conjunction with Regional Forestry Commissions and countries that request it, could convene regional and sub regional forest genetic workshops complementary to those already held in 1995 for boreal and temperate zones" (para. 30). In connection with the broadening of the Commission's mandate, COFO "recommended that the Panel of Experts on Forest Gene Resources continue to provide advice to the CGRFA in its fields of competence. Some delegations suggested that the Panel review the institutional options and Terms of Reference of a possible inter-governmental technical working group on forest genetic resources, if established" (para. 26).

Panel of Experts on Forest Gene Resources:

36. The Ninth Session of the Panel of Experts on Forest Gene Resources, which guides FAO activities in this sphere, met from 3 to 5 October 1995,[3] and made recommendations regarding the exploration, collection, testing and evaluation, exchange, conservation *in* and *ex situ*, and use of forest genetic resources (including breeding and the role of new biotechnologies in forest tree improvement). It stressed the need for:

(i) continued support and technical assistance to national institutes in developing and executing forest genetic resources programmes, and to TCDC activities and networking;

(ii) the further development of methodologies, and pilot activities, for the *in situ* conservation of forest genetic resources, coupled with forest management and sustainable resource use, to meet present and future needs;

(iii) facilitating contacts and the exchange of information, know-how and genetic materials for testing and conservation; and

(iv) international coordination, and awareness-raising, through targeted information, and up-to-date information on the state of forest genetic resources, notably through the continued development of REFORGEN. At scientific and technical levels, the annual newsletter, *Forest Genetic Resources*, was considered especially useful.

37. The Panel up-dated its list of priority species, which constitutes the only truly global list of forest genetic resources priorities, by region and activity, and prepared another list of species to receive maximum attention in activities supported or coordinated by FAO. As recommended, action is underway to establish a mahogany genetic resources network in the Neotropics.

Field programme activities

38. FAO's forestry technical assistance projects include seed-collection, production, handling and exchange; tree-improvement and breeding; ecosystem and forest genetic resource conservation, *in* and *ex situ*; and the integration of genetic conservation into forest management practice and protected area management. The total delivery costs, in the 1994/95 biennium, were US$124,100,000. The 1995 Panel of Experts on Forest Gene Resources reviewed the 219 on-going forestry field projects supported by the Forestry Department and, as necessary, by other FAO units, many with forest genetic resource components. They can be broadly classified as in *Table 3*.

Table 3: FAO forestry field projects reviewed by the 1995 session of the FAO Panel of Experts on Forest Gene Resources

Main category*	Number of projects	% of projects	% of expenditure
Forest Resources and the Environment	152	69	62
Forestry Institutions	58	27	33
Forest Products	9	4	5
TOTAL	219	100	100

* Most projects cover several categories. The classification is approximate, and is based on the criterion that at least 50% of activities are related to the category specified.

39. All the 219 field projects coordinated by the Forestry Department contain biological and genetic conservation elements, to a varying degree, and most projects also contain strong institutional strengthening and training components. In recent years, many projects have focused on, or emphasized, genetic resources and biological diversity in forest ecosystems. In line with government priorities, projects have focused largely on seed-procurement, tree-improvement and research, in the Asia Pacific Region, and, on *in situ* conservation and the conservation and sustainable use of forests and forest ecosystems, in Africa and Latin America. Most projects were in the tropics or semi-tropics, with a few in temperate zone developing countries. In the tropics, projects divided fairly evenly between dry and humid areas. A wide range of national projects are complemented by important regional and sub-regional projects, such as the FAO/UNDP project, RAS/91/004, "Improved Productivity of Man-made Forests through Application of Technological Advances in Tree-Breeding and Propagation", and project GCP/RAS/134/AsDB, "Forest Research Support Programme for Asia/Pacific".

Table 4: Number of forest biological diversity/genetic resources projects and their main activities (at October 1995)

	Africa	Asia and Pacific	Latin America/ Caribbean	Near East/ Europe	TOTAL
Support to national institutions	7	11	2	3	23
Regional coordination	4	5	3	0	12
Gathering/exchange of information	7	7	2	3	19
Training	5	6	3	4	18
Seed collection, production, storage and exchange	7	8	1	4	20
Testing/breeding	6	7	-	2	15
In situ conservation of FoGR and forest management	13	14	7	5	39
Protected area management and ecosystem conservation	5	10	5	4	24

APPENDIX 1

TECHNICAL CONSULTATIONS RELATED TO PLANT GENETIC RESOURCES, SUPPORTED BY FAO (1995 AND 1996)

Global

FAO/IPGRI/ICRISAT: Expert Consultation on Regeneration of Seed Crops; ICRISAT, Hyderabad, India, 4-7 December, 1995.

FAO/IPGRI/CIAT: Expert Consultation on the Management of Field Genebanks; CIAT, Cali, Colombia, 15-18 January 1996.

FAO/IPGRI/CIAT: Expert Consultation on the Management of *In Vitro* Genebanks; CIAT, Cali, Colombia, 18-20 January 1996.

Regional

FAO/Swaminathan Research Foundation: Technical Consultation on an Implementation Framework for Farmers' Rights; Madras, India, 15-18 January 1996.

FAO/APAARI: Expert Consultation on Research Priority Setting by NARS in the Asia-Pacific Region; IARI; New Delhi, India, 25/26 November 1996.

FAO/IPGRI/ICAR/IRRI: Asia-Pacific Regional Consultation on Plant Genetic Resources; IARI; New Delhi, 27-29 November, 1996.

Abbreviations used :

APAARI	Asia-Pacific Association of Agricultural Research Institutions
CIAT	Centro Internacional de Agricultura Tropical
IARI	Indian Agriculture Research Institute
ICAR	Indian Council of Agricultural Research
ICRISAT	International Crop Research Institute for the Semi-Arid Tropics
IPGRI	International Plant Genetic Resources Institute
IRRI	International Rice Research Institute

APPENDIX 2

SELECTED PLANT GENETIC RESOURCE ACTIVITIES OF CROP-RELATED NETWORKS, SUPPORTED BY FAO

Global networks

International Network on Cactus Pear (CACTUSNET)
1995-96: Third Network Meeting in Midrand, South Africa, 30 January-1 February 1996. Preparation of cactus pear descriptor list; identification of sites for germplasm collection, based on plant-use; Genetic Resources Working Group in November 1995; technical meeting on collaborative research on biotechnologies in 1996.
1997: Publication of cactus pear descriptor list; *Opuntia* genetic resources survey in member countries; collaborative projects, within the framework of national programmes, on *Opuntia* germplasm characterization.

Global Mushroom Germplasm Conservation Network
An inter-country workshop on mushroom genetic resources management and mushroom cultivation held in Harare, Zimbabwe, 23-26 September 1996, led to the decision to establish a regional system to promote and coordinate mushroom germplasm management in Africa - involving development of methodologies for collection, characterization, conservation and utilization of mushroom genetic resources - and improve mushroom spawn multiplication capabilities, within the activities of the Global Network.
A planned general meeting of the Global Network in Bordeaux in early 1998 will review the mushroom genetic resources situation in different regions, and refine a policy and strategy, particularly for Africa.
Specific technical activities promoted under the Network include:
1995-96: Collection, characterization and utilization studies on edible mushroom and related fungi species and strains; establishment of stored mushroom strains database.
1997: Development of mushroom germplasm conservation methodologies to protect against degradation or mutation; marker development for mushroom strain classification and certification.

Inter-regional networks

Mediterranean Selected Fruit Inter-country Network (MESFIN)
1995-96: Meeting on Tropical and Subtropical Fruit Germplasm Conservation, Tenerife, Spain, 2-4 October 1995. Preparation of document, *Capacity of developing countries of the Mediterranean basin to identify, evaluate and preserve tropical and subtropical fruit germplasm*; Plant Biodiversity and Conservation Training Course; Chania, Greece. 29 April-2 May 1996.
1997: Plant Genetic Resources Meeting, Madeira, Portugal, 5-8 August 1997. Development of conservation and utilization priorities and an action plan for the promotion of a global cooperative mechanism among national institutions.

Network on Identification, Conservation and Use of Wild Plants of the Mediterranean Region (MEDUSA)
1995-96: Meeting to establish the MEDUSA Network; Crete, Greece, June 1996.
1997: Steering Committee Meeting; Leiden, Holland, January 1997. Development of a plant genetic resources utilization database; MEDUSA Workshop, Tunisia 1-3 May 1997.
Inter-American Citrus Network (IACNET)
1995-96: Steering Committee Meeting in 1996; survey of current citrus genetic resources situation in member countries; project proposal for exchange and evaluation of genetic

1997: Preparation of a project on the identification, conservation, cleaning and utilization of germplasm for the Common Fund on Commodities; promotion of propagation material certification programme in member countries.

Mediterranean Citrus Network (MECINET)
1995-96: Working Group on Citrus Germplasm Conservation Meeting, March 1995; collaboration between MECINET and MEDIA (Mediterranean Array) explored.
1997: Linkages with the Inter-American Citrus Network established; global activities on citrus genetic resources strengthened; global action programme on germplasm conservation and citrus production revised; database on conservation and use of germplasm established in collaboration with the WIEWS.

In 1996, at an FAO Workshop in Sun City, South Africa, it was agreed to develop **a global network on the conservation of genetic resources of *Citrus* and its relatives**: this was to be further discussed in May 1997, during a MECINET meeting in Catania, Italy.

Regional networks : Africa

Southern and Eastern African Network for Underutilized Species (SEANUC): *in collaboration with **ICUC** and **CSC**.*
1995-96: Third Meeting of SEANUC, Pretoria, South Africa, 11-12 December 1996; SEANUC Steering Committee established.
1997: Information gathering on ten selected species; exploration and collection, conservation, utilization and exchange of genetic resources; collaborative research on prioritized topics promoted.
A sub-regional network for the promotion of on-farm seed production and seed security in the SADC Countries is being established in 1997.

Regional networks : Near East

West Asia and North Africa Network on Plant Genetic Resources (WANANET)
1995-96: Second Working Group Meeting on Range, Pasture and Forage, Rabat, Morocco, 15-17 May 1995. Study on the conservation and propagation of range plant genetic resources in North African countries.
1997: Joint FAO/ICARDA/IPGRI monograph of important pasture and forage species in the region; development of a forage, pasture and range species genetic erosion monitoring programme.

Regional networks : Asia and Pacific

Underutilized Tropical Fruits in Asia Network (UFTANET) *in collaboration with **ICUC** and **CSC**.*
1995-96: Collaborative research plan on genetic diversity, propagation, pollination and fruit-setting, and in-farm research developed; and national priority species determined by a survey.
1997: Jackfruit Consultation Meeting held; newsletter and other documents published; information distributed in electronic format; cooperative research activities on pummelo genetic resources in seven member countries.

A new **network on *Citrus* and its relatives** is proposed for the Asia Pacific region, in 1997, in collaboration with IPGRI.

Asian Network for Improvement of Food Legumes (FLCGNET)
1995-96: Workshop proceedings and a bimonthly Newsletter published; 200 germplasm accessions exchanged among 14 FLCGNET members; meetings, study tours and short-term training sponsored or organized.
Asian Network on Medicinal and Aromatic Plants (ANMAP)
1995-96: First ANMAP Regional Expert Consultation, Bangkok, Thailand, 7-9 November 1996.
1997: Expansion into the upstream and downstream research and development on medicinal and aromatic plants, including utilization and technology transfer.

1995-96: First TAMNET Meeting, Cha-am and Bangkok, Thailand, 18-19 October 1995; regional maize trials.

Regional networks : Europe

European System of Cooperative Research Networks in Agriculture (ESCORENA)

Soybean
1995-96: Network Meeting in Toulouse, France, 2-4 July 1996; studies on genetic adaptation and symbiotic nitrogen fixation.
1997: Joint Workshop on Genetic Studies and Methodology, Warsaw, Poland, 10-14 June 1997.

Nuts (Covers Europe and Near East.)
1995-96: First Sub-network Meeting on Walnut Germplasm Resources, Alcobaca, Portugal, 16 June 1995. FAO/IPGRI Workshop on *Pistachio* Germplasm Resources, Palermo, Italy, June 1995. Sub-network meetings on Hazelnut and on Genetic Resources, Ordu, Turkey, 30 July-1 August 1996. Nut Network Technical Consultation, Meknes, Morocco, 17-19 October 1996. Catalogues of genetic resources under preparation, in collaboration with IPGRI for several species. A transversal working group on nut crop genetic resources with a global profile proposed.

Rice
1995-96: Selection and Biotechnology of Rice Workshop, Montpellier, France, 14-17 May, 1996. Pipeline projects on Genetic Resources in Europe and on Wild Rice. Second Technical Consultation, Arles, France, 4-7 September 1996.
1997: varietal exchanges continued; three or four varieties added for electrophoresis and germination tests; accumulated knowledge on pest races gathered; study of seedling performance under anaerobic conditions established.

Flax (Covers Europe and Near East).
1995-96: Third Meeting of the International Flax Breeding Research Group, St. Valéry-en-Caux, France, 7/8 November 1995.
1997: Breeding and Plant Genetic Resources Working Group Workshop; strengthening of germplasm characterization and documentation efforts.

Olives
1995-96: Plant Genetic Resources Workshop, Córdoba, Spain, June 1996.
1997: Studies on olive genetic resources in Argentina, Brazil, Chile and Peru; establishment of duplication of the field collection; descriptor list for the Portuguese olive collections prepared; global conservation and utilization policy developed and variety characterization and cold-resistance strengthened. A global olive genetic resources network constituted.

Cotton
1995-96: Technical Consultation, Montpellier, France, 2-5 October 1995. Exchange of germplasm and modern breeding methods; a common collection established.
1997: Preparation of the list of important cotton lines; joint Working Group meetings for exchanging new methodologies convened.

Sunflower
1995-96: Eighth Technical Consultation, Bucharest, Romania, 25-28 July 1995. Experimentation with new sunflower hybrids; identification of new cytoplasmic male sterility sources; and collection of 61 additional *Helianthus* spp. in Canada.
1997: Wild *Helianthus* spp. collecting mission in Mexico; collected wild species maintenance and characterization; studies on breaking seed dormancy.

Technical Cooperation Network on Plant Biotechnology (REDBIO)
1995-96: Meeting, Iguazu Falls, Argentina, 4-9 June 1995. Identification of limiting factors and status of biotechnology in the region; membership increased to 27 Latin American and Caribbean countries; “policies related to sustainable conservation and utilization of PGR and biosafety of the environment” established as one of its three main areas.

Manihot Genetic Resources Network (MGRN)
1997: CENARGEN/EMBRAPA are working on developing and funding a much-needed Pan-American initiative to characterize and rationalize national Manihot collections.

APPENDIX 3

TRAINING COURSES AND WORKSHOPS ON CROP GENETIC RESOURCES WHICH INCLUDE ELEMENTS ON THE CONSERVATION AND UTILIZATION OF PLANT GENETIC RESOURCES, SUPPORTED BY FAO (1995 AND 1996)

IPGRI/FAO/CATIE Training Course on Plant Biotechnology and its Application for the Conservation and Use of Genetic Resources; Turrialba, Costa Rica. 23 April-6 May 1995: 15 participants from Latin America

IPGRI/FAO/CATIE Training Workshop on Field Genebank Management; Mayaguez, Puerto Rico. 12-18 November 1995: 23 participants from Latin America.

FAO/IPGRI/NPGRI Training Course on the Conservation of Vegetatively Propagated Crops; Los Baños, Philippines. 6-24 November 1995: 18 participants from Asia.

Workshop to establish a Working Group on Onion Genetic Resources, CPACT/EMBRAPA; Pelotas, Río Grande do Sul, Brazil. 30 May-2 June 1995: 10 Participants from Latin America.

COGENT Coconut Regional Planning Meeting; Rian, Indonesia. 16-28 February 1996: 18 participants world-wide.

FAO/MAICH-CIHEAM Training Course on Plant Biodiversity and Conservation; Chania, Greece. 29 April-17 May 1996: nine participants from the Mediterranean region.

Third Meeting of the Mediterranean Selected Fruit Inter-country Network (MESFIN); Tel Aviv, Israel. 28-30 August 1996: eight representatives from Mediterranean countries.

FAO/IPGRI Working Group Meeting on Incorporating Gender-sensitive Approaches into Plant Genetic Resources Conservation and Use; Rome, Italy. 1-4 October 1996: 21 participants world-wide.

FAO/RNE/ICARDA/CIHEAM Training Workshop on Native and Exotic Fodder Shrubs in Mediterranean and Arid Zones; Tunisia. 27 October-2 November 1996: 106 participants from around the world.

FAO/IPGRI/NBPGR Training Course on Seed Genebank Planning; Delhi, India. 8-22 December 1996: 25 participants from Asia.

Abbreviations used :

CATIE	Centro Agronómico Tropical de Investigación y Enseñanza
CIHEAM	International Centre for Advanced Mediterranean Agronomic Studies
CPACT	Centro de Pesquisas Agropecuária de Clima Temperado
COGENT	International Coconut Genetic Resources Network
EMBRAPA	Empresa Brasileira de Pesquisa Agropecuária
INGEBI	Instituto de Investigaciones en Ingeñería Genética y Biología Molecular
IPGRI	International Plant Genetic Resources Institute
MAICH	Mediterranean Agronomic Institute of Chania
NBPGR	National Bureau of Plant Genetic Resources
NPGRI	National Plant Genetic Resources Institute