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COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

Tenth Regular Session

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REPORT FROM FAO ON ITS POLICIES, PROGRAMMES AND ACTIVITIES ON AGRICULTURAL BIOLOGICAL DIVERSITY:

(1) SECTORIAL MATTERS

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I. INTRODUCTION

1. The Commission on Genetic Resources for Food and Agriculture regularly receives reports from relevant international organizations, including FAO, on their policies, programmes and activities of relevance to the conservation and sustainable use of genetic resources for food and agriculture. These reports contribute to understanding in this area between FAO and its Commission, and other international organizations, and to the development of appropriate mechanisms for cooperation and coordination.

2. This report provides information on the wide range of FAO's activities relevant to the conservation and sustainable use of genetic resources for food and agriculture. It deals with crops, farm animals, forestry, fishery, soil biota, and micro-organisms. Cross-sectorial activities are covered in document CGRFA-10/04/10.2. Information on the relevant Priority Areas for Inter-disciplinary Action (PAIAs) is in document CGRFA-10/04/10.3. Document CGRFA-10/04/10/Annex provides information on relevant FAO's technical consultations, training courses and workshops, and publications. Reports submitted by other organizations are in documents CGRFA-10/04/11.1, CGRFA-10/04/11.2 and CGRFA-10/04/11.3.

II. FAO ACTIVITIES IN 2002 AND 2003

1. Crop and forage genetic resources

3. Table 1 lists the 2002-2003 budget allocations to the Regular Programme with components relevant to crop and forage genetic resources of the Plant Production and Protection Division (AGP). FAO staff salaries are included. For the current biennium 2004-2005, AGP has reviewed its programme entities related to the Global System and to Seed Production and Security to address specific issues, such as the implementation of the International Treaty on Plant Genetic Resources. To that effect, the programme entity on the Global System is renamed and focusses on technical support for the implementation of the International Treaty with a budget similar to biennium 2002-2003 (i.e. US$2,742,204), while the programme entity on Seed Production and Security has been replaced by a new entity. This new entity has as main objective the wide dissemination and use, as well as conservation, of plant genetic resources and related biodiversity, through strengthening the seed sector and plant breeding, including appropriate biotechnology, capacities at national level and effective implementation of the Global Plan of Action (US$1,977,388).

Table 1: 2002-2003 Budget allocations to the Regular Programme of work with components relevant to crop and forage genetic resources, and estimated weight of these components

PROGRAMME ELEMENT	Budget (US$ 000)	Estimated weight of PGR components	Relevant GPA Activity
Support to the FAO Global System on Plant Genetic Resources for Food and Agriculture	2,726	High	All
Strengthening Sustainable Seed Production and Seed Security Systems in Member Countries	1, 573	Medium	3, 13 and 15
Alternative crops and cultivars for new opportunities	1,200	Medium	17
Strategies and Technologies for Sustainable Crop and Grassland Production Systems	3,300	Medium, becoming high in forages	11

Urban and Peri-urban agriculture	500	Medium	12 and 14
Integrated Pest Management	1,195	Medium	2 and 14
International Plant Protection Convention (IPPC)	2,132	Low	8 and 13

4. *Support to the FAO Global System on Plant Genetic Resources for Food and Agriculture* includes both normative and technical assistance on its various elements to optimise decision-making at national level. FAO initiated the establishment of the Facilitating Mechanism for the implementation of the *Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture (Global Plan of Action)*, and supported the Technical Advisory Group of the Global Crop Diversity Trust. Technical assistance was provided to countries to develop national legislation on plant genetic resources for food and agriculture (plant genetic resources) in line with the International Treaty, and to implement the Cartagena Protocol on Biosafety. During 2002-2003, technical support was provided to the Ninth Regular Session of the Commission and to the Second Session of the Intergovernmental Working Group on Plant Genetic Resources.

5. The Seed and Plant Genetic Resources Service (AGPS) activities to support the implementation of the *Global Plan of Action*, including its monitoring, have been particularly effective. FAO in close collaboration with International Plant Genetic Resources Institute (IPGRI) in 2002-2004 has provided technical assistance to seven countries[1] in conducting an institutions and capacity building process with the involvement in each country of a wide range of stakeholders dealing with conservation of plant genetic resources(*ex situ* and *in situ*) and utilization[2]. As a result of these processes, national mechanisms for plant genetic resources information sharing and resources planning have been established. These participatory mechanisms either have become part and strengthened existing policy advisory or decisional bodies, such as National Genetic Resources Committees (Cuba, Czech Republic, and Ghana), or have raised awareness for their establishment (Ecuador and Kenya). Support and technical advice has been provided on activities on minor millets to other international organizations, in particular to IPGRI and the International Crop Research Institute for the Semi-Arid Tropics (ICRISAT). In September 2002, a joint workshop was organised by FAO and ICRISAT to further the understanding of the contribution of crop and crop associated biodiversity (C-CAB) for sustaining agricultural productivity and enhancing livelihoods in the semi-arid tropical agroecosystems. A UNEP/GEF funded project entitled "*Conservation and Management of Pollinators for Sustainable Agriculture, through an Ecosystem Approach*", was approved in June 2003 and it addresses pollinator related issues at global level and in eight countries[3]. Under a UNEP/GEF funded project implemented by IPGRI, support to the conservation and use of crop wild relatives is provided to Armenia, Bolivia, Madagascar, Sri Lanka and Uzbekistan. Guidance was provided at meetings of regional PGR networks (e.g. ECP/GR, GRENEWECA).

6. *Strengthening Sustainable Seed Production and Seed Security Systems in Member Countries* aimed to provide technical advice and assistance in defining appropriate seed policies and programmes to improve national seed and planting material supply systems, at national and regional levels, and to rehabilitate seed supply systems after disasters. In collaboration with the FAO emergency's division (TCE), more than 300 emergency seed relief projects were

[1] Cuba, Czech Republic, Ecuador, Fiji, Ghana, Kenya and Papua New Guinea.

[2] Similar activities have been initiated in Bangladesh, Bolivia, India, Malaysia, Mali, Philippines, Sri Lanka, Thailand, Uzbekistan and Vietnam, and, depending on funding availability, may start this year in Jordan, Kazakhstan, Laos, Lebanon, Libya, Syrian Arab Republic, Morocco, Tanzania and Tunisia. In situ and on-farm conservation activities were supported in Bangladesh, Burkina Faso, Ethiopia, India, Laos, Mali, Niger, Philippines, Sri Lanka, Thailand and Vietnam.

[3] Brazil, China, Ghana, India, Kenya, Nepal, Pakistan and South Africa.

implemented during the period 2002-2003. AGPS and TCE held a *Workshop on Effective and Sustainable Seed Relief Activities*, 26-28 May 2003. Two other expert consultations were held in 2003 on seed policy, and for updating the FAO Quality Declared Seed system. The project on harmonization of seed rules and regulations in the Southern African Development Community (SADC) has continued with an added element on the development of sub-regional information systems to improve exchange of varieties. Similarly, the process for harmonization of seed rules and regulations for the West Africa sub-region was initiated starting with UEMOA countries[4]. Technical advice for the national or sub national seed programme development and seed production has been provided or is still ongoing in Albania, Afghanistan, Angola, Argentina, Belize, Burkina Faso, Democratic Republic of Congo, East Timor, Jamaica, Iran, Myanmar, North Korea, Sierra Leone, and Sri Lanka. Community seed security projects are operating in Ethiopia, Malawi, Myanmar, and Afghanistan. Regional workshops were conducted on biotechnological methods for varietal identification and the detection of adventitious Genetically Modified Organisms (GMO) in traded seed in Latin America, Sub-Saharan Africa, Asia and Pacific, North Africa, and Near East regions. Technical materials were also produced for different crops (corn, hot pepper, potato, rice, sorghum, wheat, and some vegetables). AGPS co-organised the *First Global Conference on Organic Seed Production*, 5-7 July 2004. The Seed Information Exchange Unit continues to help to identify sources of local and adapted varieties to rehabilitate agricultural production in the aftermath of disasters.

7. *Alternative Crops and Cultivars for New Opportunities*. FAO is working with alternative crops and cultivars for new opportunities to assist crop diversification in specific eco-zones, in relation to food security and income generation targets and market opportunities. The progress made on normative information/decision support tools, such as EcoCrop (now over 2000 crops characterized by environmental adaptation and use) and EcoPort, is enabling easier assessment on what crop options can be considered for diversification and income generation. The popularity of these tools ensures that they are appreciated and relevant. To complement the normative tool development, promising crops and cultivars are being promoted to demonstrate opportunities, e.g.: cold-tolerant oil palm, sweet sorghum, cactus pear, etc.

8. *Strategies and Technologies for Sustainable Crop and Grassland Production Systems* aims at reducing food insecurity, generating income and contributing to the sustainable use of natural resources and biodiversity. It covers the diverse aspects of crop production and cropping systems, from horticulture through field crops, pastures, rangeland, and industrial crops and also includes the plant breeding and biotechnology that support these systems. Activities included: a broad range of technical publications on crops such as rice, wheat, triticale and their improvement; publications and knowledge systems for forage production and conservation; the consolidation of the Global Cassava Development Strategy through development of a global action plan on cassava improvement, and implementation of projects through partnerships of the National Agricultural Research programmes (NARs) with IFAD and CGIAR; crop biotechnology information development and sharing, especially in Latin America; strong support to the Biodiversity PAIA (numerous new publications) and to the Biotechnology PAIA, as well as to a number of Inter-departmental Working Groups such as Mountains, Desertification, etc.

9. Activities included building awareness on the importance of biodiversity and the use of genetic resources for food and agriculture, with additional funding from the FAO/Netherlands Partnership Programme (FNPP). The publication materials and activities target the general public[5], policy makers[6], scientists[7], and young people[8].

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[4] Members of UEMOA (Union Economique et Monétaire de l'Afrique de l'Ouest): Benin, Burkina Faso, Côte d'Ivoire, Guinea Bissau, Mali, Niger, Senegal, and Togo.

[5] General public: materials produced include a series of six videos for Cambodia, Chad, Ethiopia and Niger; the series will also be widely distributed to celebrate World Food Day.

[6] Policy makers: materials include a folder in three languages covering eleven technical themes; a book on traditional knowledge on Lake Chad for Cameroon, Chad, Niger and Nigeria; a book on farmers, the guardians of biodiversity for Ethiopia, Peru and Philippines.

10. Field activities are also being developed on the use of wild food from grasslands in Chad, Niger and Sudan. Fodder oat cultivar selection work is ongoing in Bhutan, China, Nepal and Pakistan. Monitoring programmes and field projects are being developed for funding from different donor sources in China, Morocco, Fiji and Vanuatu. Expert meetings were held on the use and management of native forage species for permanent grassland management and use in crop/pasture rotation systems[9]. Work on biodiversity and genetic diversity related to grassland genetic resources is increasing, and additional activities will take place in 2005-2006 in relation to the use and management of crop/pasture rotation systems, management of grassland biomes, wild grasses for food and feed production, as well as contributions to the documentation, case studies and *in situ* conservation activities related to grasses, legumes and herbs.

11. The Crop and Grassland Service (AGPC) has also provided the Secretariat for the *International Year of Rice* (IYR-2004)[10]. The IYR envisions rice as the focal point through which the interdependent relationships among agriculture, food security, nutrition, and agro-biodiversity, can be clearly viewed. During 2003 numerous preparatory activities took place to ensure wide ownership of the critical themes, including the crucial role of biodiversity and genetic resources for food and agriculture on rice-based production systems.

12. *Urban and Peri-urban agriculture*. FAO organized three regional workshops on feeding cities, in Cuba (Latin American cities), Addis Ababa (the Horn of Africa countries) and Morocco (North African countries) in 2003. They sensitized municipal and government authorities on issues related to feeding their rapidly expanding cities and what policies and programmes should be considered. FAO assisted municipal authorities in strategic planning of urban agriculture, technology innovation and building technical support mechanisms for growers (Congo, Ivory Coast, Namibia, Paraguay, Venezuela and Bolivia).

13. *The International Plant Protection Convention* (IPPC) deals with phytosanitary measures to protect plant health against harmful pests. This includes the safe movement of germplasm in general, and is not restricted to agricultural crops. The IPPC is the legal instrument for international standard-setting for phytosanitary measures identified in the World Trade Organization Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement). The IPPC was recently amended to reflect its role as forum for international harmonization of phytosanitary measures. It recognizes the significant phytosanitary risks, including environmental risks, associated with the international movement of germplasm (including Living Modified Organisms that are pests), particularly for developing countries with a high dependence on introduced and improved crops, plants and plant products. Publications include the *International Standards for Phytosanitary Measures* (ISPMs), and the *Technical Guidelines for the Safe Movement of Germplasm* (prepared jointly by FAO and IPGRI).

2. Farm animal genetic resources

14. *Table 2* lists the biennial budget of the Animal Genetic Resources Programme Entity in the Animal Production and Health Division (AGA). FAO staff salaries are included.

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[7] Scientific community: materials include case studies on rice varieties in Asia, yam in Benin, and native grasses in the Sahel and North Africa.

[8] Young people: materials include a series of educational booklets prepared in collaboration with UNEP for Bhutan, India and Pakistan; Kenya, Tanzania and Uganda; Burkina Faso, Mali, Mauritania and Niger.

[9] These meetings were held in Campos (Argentina, Brazil and Uruguay), Patagonia (Argentina and Chile); Southeast Asia (Indonesia, Malaysia, Philippines, Thailand and Vietnam); Himalaya (Bhutan, China (Tibet), India, Nepal and Pakistan).

[10] By Resolution 2/2001, the FAO Conference requested the UN General Assembly to declare the IYR. The Fifty-Seventh Session of the UN General Assembly declared 2004 the IYR. The dedication of an International Year to a single crop was unprecedented in the history of UN General Assembly. FAO was invited to facilitate IYR implementation in collaboration with other relevant organizations.

Table 2: 2004-2005 Regular Programme Budget on animal genetic resources activities, and estimated weight of these components

PROGRAMME ELEMENT	Budget (US$ 000)	Estimated weight of AnGR components
Global Strategy for the Management of Farm Animal Genetic Resources	454	High
First State of the World's Animal Genetic Resources Report with identification of priority actions for improved management and conservation of farm animal genetic resources	1,163	High
Preparation and implementation of the State of the World's Animal Genetic Resources Follow-up Mechanism for country assistance	228	High
Development of policy framework and regulatory instruments for animal genetic resources management	131	High

15. The *Global Strategy for the Management of Farm Animal Genetic Resources* (Global Strategy) consists of an intergovernmental mechanism, a country-based planning and implementation infrastructure, a technical programme of work, and reporting and evaluation. Regular Programme resources support core activities of the Global Focal Point based at FAO. The Intergovernmental Working Group on Animal Genetic Resources at its Third Session, recommended further development of the Global Strategy to provide countries with improved capacity to use and develop their animal genetic resources, and the strengthening or establishment of national and regional focal points[11].

16. The first *Report on the State of the World's Animal Genetic Resources*, in the context of the Global Strategy, should be finalised in 2006[12]. FAO provided training, technical and financial support to 156 countries. Country Reports will provide the basis of the first Report. This will include the *Report on Strategic Priorities for Action*, which is presented to the Tenth Regular Session of the Commission as a draft document prepared by the Secretariat. Further information on the process for preparation of the first *Report on the State of the World's Animal Genetic Resources* is in Document CGRFA-10/04/9.

17. FAO will facilitate the development of a *policy framework and regulatory instruments* for animal genetic resources management. Country reports will provide a basis for establishing national, regional and global frameworks, and policy and regulatory capacity will be a key component of the first *Report on the State of the World's Animal Genetic Resources*. Stakeholder involvement and donor support are critical in establishing an effective policy framework.

3. Forest genetic resources

[11] See document CGRFA-10/04/7, *"Progress report on the further development of the Global Strategy for the Management of Farm Animal Genetic Resources."*

[12] See document CGRFA-10/04/9, *"Progress on the preparation of the first State of the World's Animal Genetic Resources and Report on Strategic Priorities for Action."*

Table 3: 2004-2005 Budget allocation to Regular Programme of work with components relevant to forest genetic resources, and estimated weight of these components

PROGRAMME ELEMENT	Budget plan (US$ 000)	Estimated weight of FoGR Components
Sustainable Management of Natural Forests and Woodlands	1,476	Low
Forest Plantations and Trees Outside Forests	979	Low
Conservation in Forests and Fragile Ecosystems	844	Very low
Support to Statutory Bodies and Liaison with the Regional Offices	1862	n.a.

18. 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. Table 3 lists those programme elements in the 2004-2005 Forestry Department Regular Programme in which forest genetic resources activities are involved. Staff salaries are included. The overall Regular Programme allocation to forest genetic resources activities has been significantly reduced from the previous biennium.

19. *Evaluation and Assessment of International Species and Provenance Trials* aims at providing regional and global applications to the results of comparative field trials of socio-economically important tree species, previously established by national institutions in collaboration with FAO. Recent activities have concentrated mainly on arid zones species, including *Acacia*, neem (*Azadirachta indica*) and *Prosopis*. The main conclusions, in terms of adaptation of introduced species and provenances, have been published and posted on the Internet. Within the framework of *Silva Mediterranea*, FAO and the French National Institute for Agronomic Research (INRA) have started to approach countries in Southern Europe and the Near East towards a systematic review of earlier introductions of Mediterranean conifers.

20. *Biosecurity in Forestry*: the short-term and long-term effects of forest tree germplasm exchange are increasingly considered through a *biosecurity* perspective. A number of global reviews and regional case studies have been commissioned to assess the phenomenon of "invasiveness" by introduced forest trees. Special attention was given to *Prosopis* species in the Sahel and the Near East, and other woody species in Southern Africa and the small islands of the Western Indian Ocean. In partnership with IPGRI, technical guidelines for the safe movement of *Pinus* and *Acacia* germplasm have been published and digitalized. The *biosecurity* programme also includes an on-going review of research on forest trees genetic modification. The review will be integrated in a broader review of status and trends of biotechnology applications in forestry.

21. *Seed and Forest Reproductive Material*: an overview of issues related to forest reproductive materials has been produced, which addresses both traditional, technical issues and highlighted new challenges, such as practical implications of property right applications and examples of material transfer agreements in forestry. In 2003, a draft version of a global review of extension manuals of relevance to forest seed was released. Work is on-going to provide quantitative data and statistical information on the global status and trends of forest seed supply and demand. The study will complement the work of other FAO units working on global forest assessments; global wood supply and demand outlook studies; and status and trends of planted forests.

22. *Conservation of Genetic Resources* actively contributed to elaborating forest genetic resources conservation methodologies, through the evaluation of *in situ* and *ex situ* field stands of native and introduced species. The experience gained was synthesized and summarized in a series

of technical guides to forest genetic resources conservation that FAO, IPGRI and the Danida Forest Seed Centre, Denmark, are finalizing. The first guide, focusing on *in situ* conservation, available in English and Spanish, has been translated into Chinese and French. Support was also provided to an international initiative for the genetic conservation of Mexican island populations of *Pinus radiata*.

23. *Forest Conservation, Biodiversity and Wildlife* is a programme element being implemented by the Forest Resources Division to promote the management of wildlife and protected areas. In the recent past, the programme was focused on the sustainable use of wildlife for food and income generation. Synoptic publications on wildlife and food security in Latin American and Africa were produced, as were specific publications on game husbandry techniques for the paca (*Agouti paca*), the grasscutter (*Thryonomys swinmderianus*), and other small mammals. Current focal areas include management effectiveness in protected areas, effectiveness of biodiversity conservation, reconciling protected area management with sustainable rural development, and sustainable use of forest animal biodiversity. A major current programme activity is the development of a GEF initiative on Best Practices for the *in situ* Conservation of Wild Plants of Economic Importance. The programme also assists member countries to fulfil the requirements of international conventions, like the *Convention on International Trade in Endangered Species of wild fauna and flora* (CITES).

24. *Regional Workshops*: as a follow-up to recommendations by the 13th Session of the Committee on Forestry (COFO) in 1997, FAO has been supporting the preparation of country assessment of forest genetic resources, and the organization of eco-regional workshops for their conservation and sustainable use. In collaboration with international and national agencies, workshops have been convened in Central America, Cuba and Mexico (2002) and Central Africa (2003). FAO also provided inputs to the Inception Workshop of the Forest Genetic Resources Programme for Asia-Pacific Region. During the process, several documents have been prepared, including country assessments, regional syntheses, and eco-regional action plans. This information was used to update the FAO global information system on forest genetic resources REFORGEN.

25. Under *International Collaboration*, FAO worked with IUFRO, Future Harvest (CGIAR) centres (notably IPGRI, the Centre for International Forestry Research (CIFOR) and the International Centre for Research in Agroforestry (ICRAF)), the Secretariats of the CBD and the OECD, universities, national forest services and research institutes. IUFRO's SylvaVoc completed a glossary of terms frequently used in the forest genetic resources field, and terms related to biosecurity, with definitions given in English, French, German and Spanish. FAO provided inputs to, and closely followed, the preparation of the CBD expanded work programme on forest biological diversity, which makes reference to national and regional status and action plans on forest genetic resources. FAO provided resource persons to the Ad-Hoc Technical Expert Group meetings to review the implementation of the work programme on forest biological diversity.

26. Focused assistance was provided to *Field Projects* and activities, including projects with components in seed collection, production, handling and exchange; tree-improvement and breeding; ecosystem and genetic resource conservation; and the integration of genetic conservation in forest management practice and protected area management. Countries include China, Egypt, Lebanon, Morocco, Namibia and Turkey. A project in North China is considering the sustainability of poplar shelterbelts through short- and long-term approaches to the control of insect pest *Anaplophora glabripennis* (Asian long-horn beetle).

27. *Information Activities* have continued through the upgrading of REFORGEN, which content has been transferred to the FAO Forestry Department information system. As far as the new system allowed, new information originating from regional workshops has been incorporated in the database. Issues No 29 and 30 of the FAO news bulletin, *Forest Genetic Resources*, have been published (3,800 copies, in three languages). The whole series has been digitalized. The

homepage[13] 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.

28. The *FAO Panel of Experts on Forest Gene Resources* held its thirteenth session in November 2003. The Panel discussed technical proposals to better frame and streamline FAO's work programme on forest genetic resources, highlighted a number of priority actions, and updated lists of important tree species by regions of the world. The Report of the Twelfth Session of the *Panel of Experts on Forest Gene Resources* (2001) is available in English, French and Spanish, in printed version, and on the Internet[14].

4. Fishery genetic resources

29. Table 4 lists estimates of the major budgetary allocations to programme elements in the Fisheries Department within FAO's 2004-2005 Regular Programme budget, in which substantial fishery genetic resources activities are pursued, reflecting only activities directly related to fishery genetic resources, non-staff human resources allocations, and FAO staff salaries.

30. The Fishery Resources Division (FIR) is the lead unit for fishery genetic resources, with most work handled by the Inland Water Resources and Aquaculture Service (FIRI), with assistance from the Marine Resources Service (FIRM) and the Fishery Information, Data, and Statistics Unit (FIDI), and the Fishery Development Planning Service (FIPP).

31. Information on fishery genetic resources is provided as guidelines, codes of conduct, protocols and technical publications (Fishery Technical Papers and Fishery Circulars); in scientific publications and conference proceedings, the *FAO Aquaculture Newsletter* and the fishery Department's internet site (http://www.fao.org/fi/default.asp).

Table 4: 2004 – 2005 Estimated non-staff budget allocations to Regular Programme elements with components relevant to fishery genetic resources, and estimated weight of components

PROGRAMME ELEMENT	Budget (US$ 000)	Estimated weight of FiGR components
Promotion of responsible fisheries and aquaculture	303.9	Low
Global monitoring and strategic analysis of inland fisheries and aquaculture	462.5	Low
Increased contribution of inland fisheries and aquaculture to world food supply	106.0	Low
Marine fisheries resources identification and biodata	74.4	Medium

32. *Promotion of responsible fisheries and aquaculture* continues to support implementation of the Code of Conduct for Responsible Fisheries and the Convention on Biological Diversity through activities such as participation in meetings of FAO, meetings under the Convention on Biological Diversity and others; publication of guidelines on fisheries and aquaculture; and the organization of international forums on fishery genetic resources. Activities during 2002-2003 included:

- The Government of Italy/FAO/World Fisheries Trust (Canada) collaboration on a Fishery Information Network on Genetic Resources (FINGER). A framework and strategy for

[13] http://www.fao.org/forestry/fgr

[14] http://www.fao.org/DOCREP/MEETING/005/Y3947E/Y3947E00.HTM

improving access to and information on aquatic animal diversity has been developed and case studies are being identified for inclusion into the information network.

- Participation in meetings of the Convention on Biological Diversity, such as the Eighth Session of the Subsidiary Body on Scientific, Technical and Technological Advice of the Convention of Biological Diversity (SBSTTA 8) on 10-14 March 2003, Montreal, Canada.
- Participation in international fora to develop and promote responsible aquaculture and fisheries, such as with WorldFish Centre a workshop on Biosafety and Risk Assessment of Genetically Improved Species in Africa, Nairobi, February 2002; with Mekong River Commission, Network of Aquaculture Centers in Asia/Pacific, IUCN, University of California SeaGrant an expert consultation on International Mechanisms for the Control and Responsible Use of Alien Species in Aquatic Ecosystems, 27-30 August 2003, in Xishuangbanna, People's Republic of China; with academic partners in Europe and Chile, an International Workshop on Sustainable Management of Exotic and Naturalized Genetic Resources in Relation to Native Biodiversity on 24-26 Sept 2003 in Puerto Varas, Chile.

33. *Global monitoring and strategic analysis of inland fisheries and aquaculture* provides analysis of fishery production, new species and strains used in fisheries and aquaculture, and alien species. Work continues on the online Database of Introductions of Aquatic Species (DIAS). The FishStat database on fishery production collects information provided by Members and provides a means to analyse trends on production. Specific activities included the integration of DIAS into the Fishery Global Information System (FIGIS).

34. *Increased contribution of inland fisheries and aquaculture to world food supply* includes the production of technical documents to describe and evaluate various technologies and their impacts on fishery production. Specific publications are listed in document CGRFA-10/04/10/Annex.

35. *Improvement of biological data on marine resources* is run by the Species Identification and Data Programme, to produce taxonomic guides and faunistic lists on commercially important fishery resources. Publications by this unit are listed in CGRFA-10/04/10/Annex.

36. *Participation in inter-agency and inter-departmental activities* involves headquarters work as well as regional and global activities. Principal external partners include the Convention on Biological Diversity, WorldFish Center (formerly ICLARM), the Network of Aquaculture Centers in Asia, MRC, the International Network on Genetics in Aquaculture, the CGIAR System-wide Genetic Resources Programme, the World Fisheries Trust, and various professional fishery organizations such as the Asian Fisheries Society, the American Fisheries Society, the World and European Aquaculture Societies, and the International Council for the Exploration of the Sea. Internally, the FI Department participates in inter-departmental groups on biosecurity, biotechnology, biodiversity, and ethics in food and agriculture, which address issues of genetic resources.

5. Soil biodiversity and soil ecosystem management

37. During 2002-2003 FAO's Land and Plant Nutrition Management Service (AGLL) has continued to play a lead role to both improve understanding of the importance of soil biodiversity/soil biological function for productive and sustainable agriculture and mobilise activities to strengthen soil health/ecosystem management and integrated agro-ecological approaches by farmers. This includes assessing impacts of various land use and management practices on soil quality and function, and capacity building for improved soil biological management for enhanced soil-water-plant interactions and environmental services in various farming systems and contexts. The latter includes nutrient cycling, carbon sequestration (regulation of greenhouse gas emissions), and maintenance of the hydrological regime and biological control, which provide farmers with options for intensifying agriculture while protecting natural resources.

38. FAO's Land and Water Development Division (AGL) through Regular Programme and extra-budgetary resources, supports activities for soil productivity and land resources management in selected developing countries, with an emphasis on Africa in view of its chronic land degradation and food insecurity situation. Table 5 shows estimated budgetary expenditures from the Regular Programme contribution for 2004-2005, including staff costs, to enhance capacities of Member Countries in the area of soil life/biological function through the FAO-Netherlands Partnership Programme sub-programme on agricultural biodiversity. The FAO-Norway partnership project, approved in 2003, will strengthen FAO's activities in Eastern Africa. The activities do not focus on genetic resources per se but address the contributions of soil life to agro-ecological functions in accordance with the ecosystem approach.

Table 5: 2004-2005 estimated budgetary expenditures from the Regular Programme with components relevant to soil biodiversity and soil ecosystem management

PROGRAMME ELEMENT	Budget (US$ 000)	Estimated weight of GR components
Land and soil productivity – viable and equitable land use and efficient resource use through participatory development and local adaptation of sustainable land use options and management practices	937	low
Integrated Land, Water and Plant Nutrition interdisciplinary decision-making processes for sustainable and productive practices, strategies and policies to manage land and water resources	413	low
Knowledge management and partnerships	535	low

39. The soil biodiversity component includes integrating soil health in Farmer Field Schools approaches at the local/community level through practical learning exercises for monitoring and adaptive management and raising awareness at policy and technical levels of the opportunities for enhanced soil biological management as an integral component of soil productivity and land resources/agro-ecosystems management. A focus is placed on sharing information and experiences among partners, including practical case studies, the development of bio-indicators and training materials for farmer-driven learning and awareness-raising of decision-makers and coordinated actions through networking, publications and presentations at regional and international meetings. The conservation agriculture (no tillage systems) and organic agriculture movements are key opportunities that demonstrate the importance and wide contributions of soil life and function/improved soil biological management for the agricultural sector.

40. Liaison with partners has included, *inter alia*:

- The GEF/UNEP global project "Conservation and sustainable management of below-ground biodiversity", coordinated by TSBF-CIAT in Brazil, Mexico, Côte d'Ivoire, Kenya, Uganda, India and Indonesia, with a view to guide and help disseminate and operationalise its findings for conserving and managing soil life for improved environmental services.
- Development with partners in Kenya, Uganda, Tanzania and Zimbabwe of training materials and methods and capacity building for Farmer Field Schools on soil productivity improvement and soil and water management in drylands to compensate limited soil expertise/advice at the local level and empower farmers to adapt soil management practices to overcome land degradation and improve agricultural productivity and food security.

- Identification and monitoring of soil bio-indicators, including molecular marking techniques for the characterisation of degraded soils, soil respiration measures, monitoring of beneficial species, for example, earthworm counts under different land uses/management practices, and species with detrimental effects on soil processes and land degradation.
- Review of the status and opportunities in Latin America for South-South Cooperation on biological nitrogen fixation with ALAR ("*Asociación Latinoamericana de Rhizobiología*").
- Integration of soil biodiversity as well as above ground biodiversity into the FAO/GEF-UNEP global project on land degradation assessment in drylands (LADA).

41. FAO's technical and financial support is required to integrate soil biodiversity and its management in relevant strategies, programmes and actions of Member Countries and partner organisations (agricultural development, land resources/agro-ecosystems management, food security and poverty alleviation), and increase attention of land users/practitioners and technical and policy levels to this important aspect of agro-biodiversity for restoring degraded soils, enhancing productivity and improving pest-disease control. Requests have been received from Member Countries to expand pilot activities that were initiated through extra-budgetary funds in Eastern Africa and other parts of Africa, Asia (Vietnam, Cambodia, Laos), the Near East region (starting with Egypt) and in Latin America (Uruguay, Haiti and others). This will require an iterative process and adaptation to different socio-economic, agro-ecological and policy contexts, with a focus on capacity building. The NEPAD process (New Partnership for Africa's Development) in Africa and FAO's Special Programme for Food Security (SPFS) could provide appropriate channels for further development of such agro-ecological and farmer-driven adaptive management approaches.

42. The Land and Plant Nutrition Management Service also coordinates Conservation and Sustainable Management of Globally-important Ingenious Agricultural Heritage Systems (GIAHS) project, for which GEF has approved the PDF-B phase. This project aims to establish the basis for the conservation and sustainable management of outstanding traditional agricultural systems and their associated biodiversity and knowledge systems in developing countries. As a result of millennial co-evolution of people and their environment, including genetic resources, ingenious agricultural heritage systems contribute greatly to food security, sustainable agricultural production and biodiversity conservation throughout the developing world. Theses systems provide a basis of sustainable agricultural development and poverty alleviation for many subsistence farmers in the world, particularly in occupying areas with very specific, harsh or marginal environments. Additionally, the GIAHS project may contribute to establishing effective long-term *in situ* conservation of agricultural biodiversity. The current preparatory stage will assess the existence and characteristics of GIAHS world-wide and identify pilot systems in up to ten developing countries in consultation with governments and farming communities.

43. The Commission is requested provide advice on the need for, and how to strengthen, FAO's role in the area of soil biodiversity/soil biological function for productive and sustainable agriculture, and to identify priorities for action by FAO, in particular regarding policy advice and capacity building on the contribution of improved soil and agro-ecosystem management practices for productive and sustainable agricultural systems, food security, and rural development.

6. Micro-organisms of relevance to food processing

44. FAO continues its efforts to support the use of biotechnology in the processing of food. This includes tools and options that are applicable to the use of microorganisms that offer potential for improving the quality, safety and consistency of fermented foods, and that can contribute to the improvement of efficiency of systems used for the production of food ingredients, food additives and food processing aids (enzymes).

45. The Joint FAO/WHO Expert Committee on Food Additives (JECFA) assesses the safety and preparing specifications of enzyme preparations and food additives relevant in food production. This work has been used by Member Countries in updating their national regulations and by Codex in setting international standards.[15]

46. Recognizing the importance of beneficial microorganisms used in food, FAO/WHO are undertaking work on the evaluation of health and nutritional properties of probiotics. A Joint Expert Consultation, and a subsequent Working Group, have prepared guidelines, recommended criteria and methodology for conducting a systematic approach for the evaluation of probiotics leading to its safe use in food. Member States are provided with scientific advice on functional and safety aspects of probiotics, and general guidance for the assessment of probiotics in relation to their pathogenicity, toxigenicity, allergenicity and other specific features. These guidelines are being used by Member Countries and Codex Alimentarius to identify and define what data need to be available to accurately substantiate health claims.

47. While microorganisms can be beneficial in food production through the fermentation process, the presence of specific pathogens in food raises safety concerns. In this regard, FAO, jointly with WHO, provides technical advice on the risk assessment of microbiological hazards in food to meet the needs of Member Countries and the Codex Alimentarius Commission. The recent publication *Microbiological Risk Assessment Series* provides a range of data and information to understand, undertake and use the results of microbiological risk assessment. The Series comprises guidelines for the development of risk assessment; results of international risk assessments of particular pathogen-commodity combinations carried out through the work of the Joint FAO/WHO *ad hoc* expert meetings on Risk Assessment of Microbiological Hazards in Food (JEMRA); and interpretative summaries of risk assessment. [16]

48. The FAO/WHO Codex Alimentarius Commission adopted, at its 26th session in 2003, the Guideline for the Conduct of Food Safety Assessment of Foods Produced Using Recombinant-DNA Microorganisms, which together with the Principles for the Risk Analysis of Foods Derived from Modern Biotechnology, provides guidance on the risk analysis framework to be used in the safety assessment of foods produced using such methods.

III. GUIDANCE REQUESTED FROM THE COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

49. The Commission may wish to express its views on the policies and activities provided in this document and make suggestions to be taken into consideration by the relevant technical units when carrying out their current tasks, and when planning for the future.

[15] http://www.fao.org/es/ESN/jecfa/works_en.stm.

[16] http://www.fao.org/es/ESN/food/ risk_mra_riskassessment_en.stm.