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**Item 5 of the Draft Provisional Agenda**

# 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) SECTORIAL MATTERS

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# REPORT FROM FAO ON ITS POLICIES, PROGRAMMES AND ACTIVITIES ON AGRICULTURAL BIOLOGICAL DIVERSITY: (1) SECTORIAL MATTERS

## 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 and animal genetic resources. The Commission considers such reports to be of value, both for it and for the organizations, which are able to acquaint countries with their objectives and programmes, and benefit from their comments.

2. This report provides information on the wide range of FAO's activities relevant to genetic resources for food and agriculture. Document CGRFA-9/02/14.1 Annex provides information on FAO's technical consultations, training courses and workshops, and publications, of relevance to genetic resources for food and agriculture. It deals with crops, farm animals, forestry, fishery, soil biota, and micro-organisms of relevance to food processing. Cross-sectorial activities are covered in document CGRFA-9/02/14.2. Information on the relevant Priority Areas for Inter-disciplinary Action (PAIA) is in document CGRFA-9/02/14.3. Reports submitted by other organizations are in documents CGRFA-9/02/15.1, CGRFA-9/02/15.2 and CGRFA-9/02/15.3.

## II. FAO ACTIVITIES IN 2000, 2001, AND 2002, AND FUTURE PROGRAMMES

### 1. Crop genetic resources

**Table 1: 2000-2001 Budget allocations to the Regular Programme of work with components relevant to crop genetic resources, and estimated weight of these components**

| PROGRAMME ELEMENT | Budget (US$ 000) | Estimated weight of PGR components | Relevant GPA Activity |
|---|---|---|---|
| Management and sustainable utilization | 1 672 | High | all |
| Policy support | 917 | High | all |
| Improved crops and cropping system | 3 234 | High | 10, 11 and 14 |
| Sustainable seed production and seed security | 1 934 | Medium | 3, 13 and 15 |
| Information on plant production and protection decision-making | 914 | Medium | 17 |
| Urban and peri-urban agriculture | 448 | Medium | 12 and 14 |
| Grassland-based production systems | 1 016 | Medium | 11 |
| Technical services - crop production | 706 | Medium | 11 and 15 |
| International plant protection convention | 2 091 | Low | 8 and 13 |
| Integrated pest management | 1 240 | Medium | 2 and 14 |

3. *Table 1* presents the 2000-2001 Regular Programme budgetary allocations for the Plant Production and Protection Division of the Agriculture Department, with substantial crop genetic resources conservation and utilization activities, including staff salaries. These budgetary allocations support a number of components of the FAO Global System for the Conservation and Sustainable Utilization of Plant Genetic Resources. The relevance of each Programme Element to priority activities of the *Global Plan of Action* is indicated in each case.

4. *Management and sustainable utilization of Plant Genetic Resources for Food and Agriculture* (PGRFA) supports national programmes and promotes international cooperation within the framework of the *Global Plan of Action for the Conservation and Sustainable Utilization of PGRFA* (GPA). FAO organized an expert consultation on crop diversification in Asia and the Pacific Region in 1999, and, in 2000, prepared an annotated bibliography and draft guidelines on "understanding farm diversification," to characterize diversification trends, driving factors, analytical approaches and policy responses. In 1999, a workshop was organized by FAO with the University of Edinburgh on *Broadening the genetic base of crops.* A forum on the same topic was organized in August 2000 in Germany. In 1999 and 2000, FAO assisted a number of countries to strengthen their national PGR programmes A new network for temperate fruits in the tropics and subtropics has been established by FAO to promote and develop conservation strategies for local varieties. An initiative to form a Date Palm Global Network - to include a sub-network on date palm genetic resources has also been launched.

5. *PGRFA policy support* both contributes to the joint FAO-CBD work programme on agrobiodiversity and includes support for the Commission's Inter-governmental Technical Working Group on PGRFA (ITWG/PGRFA). Contributions were made to the documentation for the CBD and the ITWG/PGRFA. Case studies for on-farm/community management of PGR were made in Mali and Zimbabwe. In 1999 and 2000, FAO continued to provide technical support for projects to be implemented with extra-budgetary funds aimed at strengthening regional and national programmes for the conservation and utilization of PGRFA. For example, a project on the *In Situ* Conservation of Crop Wild Relatives in Armenia, Bolivia, Madagascar, Sri Lanka and Uzbekistan was prepared with FAO's input, and funding from the Global Environment Facility (GEF). Support was also provided to develop Technical Cooperation Programme projects.

6. *Development of Improved Crops and Cropping System* contributes to the promotion of sustainable field crop production, industrial crop promotion for sustainable development, diversification of horticulture-based crop production systems, promotion of specialized horticultural crops for market opportunities, support to the International Rice Commission, and broadening of the genetic base of crops. FAO provides the secretariat of the International Rice Commission and supports cooperative networks on rice and related matters. The International Rice Commission provides support to test and transfer rice varieties developed from crosses between *Oryza sativa* and *O. glaberrima (*New Rice for Africa - NERICA). An Expert Consultation on Yield Gap and Productivity Decline was held in September 2000. A Memorandum of Understanding (MOU) between FAO and IRRI for promoting hybrid rice was signed, as was an MOU between FAO and WARDA for rapid rice technology diffusion in West Africa (RARIDIWA).

7. FAO has been providing training on methods for irrigated rice for Sahelian countries in Egypt, and is developing and testing integrated crop management in rice and wheat. Support was provided to the Tropical Asian Maize Network and to various Working Groups (global food-barley improvement, post-rainy season sorghum in the Sahel, barley and Andean crops for Latin America). Resource books on maize and wheat improvement have been published. FAO continued support to the International Center for Underutilized Crops and is involved in the formation of NAFRINET - the North African Taxonomy Network of BioNET.

8. Industrial crop production activities include further expansion of the cold tolerant gene in oil palm in Kenya; and expansion of new sweet sorghum hybrids for drought and saline tolerance for food, feed, fuel and fibre in China.

9. Grassland and Pasture Crops area activities include: development of a comprehensive Grassland Index,[1] and pasture/forage profiles.[2] Work is under way on fodder oats for mountain areas of the Himalayas, which could lead to a network of trials at different elevations. Work on biodiversity is being undertaken through a Netherlands-funded project that includes consideration of the use of traditional knowledge for the maintenance of biodiversity in the Lake Chad region, and in the Caucasus. FAO plays a key role in facilitating the implementation of the Global Cassava Development Strategy. Activities include, the creation of a Coordination Group; the promotion of cassava and the strategy, through the publication of articles in the FAO State of Food Insecurity in the World; the development of integrated projects to promote and improve cassava; and an action plan on cassava improvement.

10. An initiative called "Potato Production in the Tropical Highlands of Africa" has been proposed. Possible actions include the development of baseline information on potato, and the preparation of a project for strengthening the exchange of potato germplasm and the movement of strategic nuclear seed stocks at the regional level.

11. For banana and plantain, a partnership programme was developed with INIBAP/MUSACO in West and Central Africa resulting in the development of instruments for the collection of baseline information on the *Musa* sub-sector in selected MUSACO member countries; and the collection of baseline information to be incorporated in the Horticultural Cultivar Information System of FAO.

12. The Global Network on Mushrooms aims to facilitate technical communication and the exchange of coordinated information, on mushroom strains/species of interest for food and agriculture. Key achievements include an international meeting on the conservation and utilization of genetic resources of mushrooms for food and agriculture; and a mushroom database.[3]

13. The Inter-American Citrus Network (IACNET) has been further developed to strengthen 27 national systems on citrus in Latin America, the Caribbean and the United States of America. Key outputs include the organization of National Citrus Networks and the implementation of regional workshops and training courses; the launching of regional cooperative research and development programmes; and the establishment of the Global Citrus Germplasm Network.

14. Cactus pear has potential for development projects in semi-arid areas of Latin America, Africa, and the Indian subcontinent. The International Cactus Pear Network activities include an FAO publication on "Agro-ecology, cultivation and uses of cactus pear"; the introduction of cactus pear clones for forage to India; forage, fruit and nopalitos production in other countries; working group and network meetings; and an International Congress on Cactus covering three Continents.

15. The HORTIVAR database was created to facilitate access and use of information on the performance of horticultural crop cultivars. Current research and development activities include specific environmental conditions (pedo-climatic conditions, pest and disease incidence, post-harvest handling, *etc*.) in the open field and under protected cropping; crop management practices (production and protection practices including special crop management practices); and market and consumer requirements related to specific crop categories.

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1 http://www.fao.org/WAICENT/FAOINFO/AGRICULT/AGP/AGPC/doc/GBASE/Default.htm

2 http://www.fao.org/WAICENT/FAOINFO/AGRICULT/AGP/AGPC/doc/pasture/forage.htm

3 http://www.mlib.cnr.it/ibesm/index.html

16. *The sustainable seed production and seed security unit* provides advice and technical assistance in defining appropriate seed policies and programmes aimed at improving national seed and planting material supply systems. It assists in strengthening seed and planting material production and supply programmes at national and regional levels and rehabilitation of seed supply systems after calamities. The SADC Seed Security Network project was formally implemented in South Africa. The project on harmonisation of seed rules and regulations in Sub-Saharan Africa convened regional workshops in Zimbabwe and Senegal. Under the FAO/Netherlands Partnership Programme, local seed supply systems are being studied to identify constraints to and opportunities for improving farmers' access to and exchange of agrobiodiversity in Sub-Saharan Africa. A number of seed security consultative groups convened workshops in a number of disaster-prone countries (Kenya, Mozambique and Zimbabwe) to develop strategies for restoring farmers' seed systems. The Seed Information Exchange Unit distributed 468 seed samples, and continues to help to identify sources of local and adapted varieties to rehabilitate agricultural production in the aftermath of disasters.

17. *Information on plant production and protection* focuses on technical information on seed and planting material, crop production and plant protection. It facilitates an open-source, Internet-based forum and service to catalyse separate and collective action among partners and clients to collect, analyse, and disseminate information on plant genetic resources, seed and planting material, crop production and plant protection. It also adds an ecological dimension to ensure that the development objectives are not implemented at the cost of ecological sustainability and productive management of natural resources.

18. *Urban and peri-urban agriculture* assists countries in expanding and diversifying urban and peri-urban production systems, while ensuring sustainable use of natural resources. It seeks to establish a comprehensive knowledge base on horticultural crops, production technologies and cultivar performances, and to develop project prototypes to foster small-scale investment initiatives for urban and peri-urban horticulture.

19. *Technical service to members on crop production* provides advice on plant production issues and technical backstopping of FAO field programmes related to plant production, including the Special Programme for Food Security and emergency projects.

20. *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 the forum for the international harmonization of phytosanitary measures. It recognizes the significant phytosanitary risks associated with the international movement of germplasm, 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

21. *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.

**Table 2: 2002-2003 Regular Programme Budget (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 | 477 | 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 | 580 | High |
| Preparation and implementation of the State of the World's Animal Genetic Resources follow-up mechanism for country assistance | 414 | High |
| Development of policy framework and regulatory instruments for animal genetic resources management | 251 | High |

22. *The Global Strategy for the Management of Farm Animal Genetic Resources* (Global Strategy): Regular Programme resources support core activities of the global focal point for the country-based Global Strategy. FAO coordinates and facilitates the step-by-step development of the Strategy. Extra-budgetary resources are needed for country and regional field activities within the Global Strategy.

23. The Inter-governmental Working Group on Animal Genetic Resources for Food and Agriculture met in Rome, in September 2000, and recommended prioritization of actions and elements of the Global Strategy, including the preparation of the *Report on the State of the World's Animal Genetic Resources* as a priority. This was subsequently endorsed by the Commission at its Eighth Session.

24. The *First Report on the State of the World's Animal Genetic Resources* - a key element of the Global Strategy - is to achieve the following objectives: a detailed assessment of the state of animal genetic resources in the farm animal sector covering utilization and conservation; an analysis of the changing and growing demands on the farm animal sector and the implications for future national policies and programmes concerning the sustainable utilization and conservation of farm animal genetic resources; a detailed review of the state of national capacities related to farm animal genetic resources and an overall assessment of capacity-building requirements; agreed priorities for the development of an enhanced national programme of sustainable utilization and conservation, and recommendations for international cooperation, the priority areas, levels and modes of cooperation that the country would wish to pursue.

25. *Preparation of the First Report on the State of the World's Animal Genetic Resources follow-up mechanism:* The initial phase of the process for developing the *first Report* is focused on the preparation of Country Reports. In 2000, Guidelines for the Development of Country Reports were produced, as was a Training Pack that was used in Trainers' Workshops in 14 regions of the world. These training materials were translated into all FAO languages. FAO's Animal Genetic Resources Group carried out a global training effort in 2001 and 2002, involving 176 countries and more than 320 professionals. The workshops strengthen national capacity to prepare Country Reports and facilitate the creation of national structures to address the challenge of conservation and sustainable management of animal genetic resources for food and agriculture.

26. *Development of the policy framework and regulatory instruments for animal genetic resources management:* Preparation of Country Reports will provide a basis for establishing national, regional and global policy frameworks and regulatory instruments. 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. Parties to the Convention on Biological Diversity at their Sixth Conference, in 2002, indicated their support for the *Report*, and recommended financial support from donors to enable full participation of developing countries in the *State of the World's* reporting process.

27. The third edition of the *World Watch List for Domestic Animal Diversity* was published in 2000 as a joint effort with UNEP. The report substantiates the worldwide erosion of farm animal genetic resources. Four issues of the *Animal Genetic Resources Information Bulletin*, a peer-reviewed scientific journal of international standing, were published during the 2000-2001 period. The Proceedings of a Workshop on Developing Breeding Strategies for Lower Input Animal Production Environments was published in 2000, as a part of the sustainable utilization component of the Global Strategy.

### 3. Forest genetic resources

**Table 3: 2002-2003 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 | 217 | High |
| Forest Plantations and Trees Outside Forests | 230 | High |
| Environmental Conservation in Forests and Fragile Ecosystems | 617 | Very low |
| Support to Statutory Bodies and Liaison with the Regional Offices | 551 | Low |

28. FAO provides technical support to member countries' national institutes in the conservation, management and sustainable use of forest genetic resources. The focus is on the transfer of information and technologies, through a wide range of communication tools, publications, networking and twinning mechanisms. Table 3 lists the programme elements in the 2002-2003 Forestry Department Regular Programme, in which substantial forest genetic resources activities are involved.

29. *Assessment, collection, and evaluation of forest genetic resources*: FAO is working on exploring, conserving and better utilizing forest tree genetic variation, focusing on socio-economically important species for the dry and humid tropics, in collaboration with national institutes and international organizations, such as the International Union of Forestry Research Organizations (IUFRO), relevant Centres of the Consultative Group on International Agricultural Research, and the DANIDA Forest Seed Centre, Denmark. Recent activities have concentrated on *Azadirachta indica* (neem). A workshop on data analysis was coordinated by FAO for members of the International Neem Network (INN) at the Arid Forest Research Institute, Jodhpur, India, in 2001. In the 2001-2002 workplan of the INN, priority has been given to completing country-based trial assessments and reviewing the adaptability of neem provenances in different eco-regions of the world. In September 2001, FAO participated in the assessment of the international neem provenance trials in Tanzania.

30. *Conservation of genetic resources:* FAO actively contributes to elaborating forest genetic resources conservation methodologies, through the evaluation of *in situ* and *ex situ* conservation stands of native or introduced species. The DANIDA Forest Seed Centre provides technical and financial assistance, and the programme is carried out in partnership with national institutes. Field investigations have been completed and the publication of results and conclusions of individual

species-specific programmes is expected soon. The experience gained is also being synthesized and summarized in a technical guide to forest genetic resources conservation, which FAO is finalizing together with the International Plant Genetic Resources Institute (IPGRI) and the DANIDA Forest Seed Centre. The guide will include volumes on *in situ* and *ex situ* conservation.

31. *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. 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); the Convention on Wetlands of International Importance Especially as Waterfowl Habitat (RAMSAR); the Bonn Convention on Migratory Species (CMS), and the Convention on Biological Diversity.

32. *Information activities:* There have been improvements in information management with the on-line opening of the World-Wide Information System on Forest Genetic Resources (REFORGEN) to support policy and technical decisions for genetic conservation at national, regional and international levels. The database contains information provided by 146 countries on more than 1 600 tree and shrub species. Information obtained through questionnaires sent to national institutions in 1993 is being complemented by data available in country reports prepared for regional assessments.

33. *International collaboration:* FAO is working 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 CBD Secretariat, universities and national forest services and research institutes. In partnership with IPGRI, work has continued towards the development of technical guidelines for the safe movement of *Pinus* and *Acacia* germplasm. In 2000 and 2001, FAO assisted the CBD Secretariat in preparing a report documenting the status of and trends in forest biological diversity. Resource persons were also provided to meetings of the *Ad Hoc* Technical Expert Group on Forest Biological Diversity that were convened in preparation for the Seventh Meeting of the Subsidiary Body on Scientific, Technical and Technological Advice and the Sixth Conference of the Parties, to address forest biological diversity issues.

34. FAO is supporting the preparation of status assessment for forest genetic resources at national and regional levels, and the organization of a series of eco-regional workshops toward the preparation of regional action plans. The process is aimed at assisting countries in defining their priorities and needs, and identifying areas for coordinated action focusing on a limited number of priority species and activities. In collaboration with international, regional and national organizations, eco-regional workshops for the conservation, management, sustainable utilization and enhancement of forest genetic resources have been convened in Sahelian Africa (1998), the South Pacific (1999), and Southern and Eastern Africa (SADC countries, in 2000). Similar workshops are planned in 2002 in Central Africa, and Central America. In the process of the workshop preparation, a number of documents are prepared by countries concerned with the support of FAO, including country assessments, eco-regional syntheses, and eco-regional action plans. Information gathered is evaluated, published, disseminated, translated, and posted on line at the FAO Forestry homepage. Data on species and institutions is also subsequently used to update the REFORGEN information system.

35. The FAO Panel of Experts on Forest Gene Resources held its twelfth session in November 2001. The Panel highlighted a number of priority actions for FAO's work, and updated lists of important and major tree species by regions of the world.

36. FAO's forestry technical assistance programme provides focused assistance to field projects and activities in seed collection, production, handling and exchange, tree-improvement and breeding, ecosystem and forest genetic resource conservation, and the integration of genetic conservation into forest management practice and protected area management. In addition, developments in emerging issues, including the applications of modern biotechnologies in the forestry sector, biosecurity management, and legal implications of property rights and the preparation of material transfer agreements, are closely followed and related information is regularly disseminated to member countries and national institutions concerned.

37. FAO publishes the annual newsbulletin *Forest Genetic Resources* (3 800 copies, in three languages). Recent issues of the bulletin and other information are posted on the Internet at the FAO forest genetic resources home page.[4]

**4. Fishery genetic resources**

38. Table 4 lists estimates of the major budgetary allocations to programme elements in the Fisheries Department within FAO's 2002-2003 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.

39. 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).

40. 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.[5]

[4] http://www.fao.org/forestry/FOR/FORM/FOGENRES/homepage/fogene-e.stm

[5] http://www.fao.org/fi/default.asp

**Table 4: 2002 – 2003 Estimated 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 | 1 737 | Low |
| Global monitoring and strategic analysis of inland fisheries and aquaculture | 2 070 | Low |
| Increased contribution of inland fisheries and aquaculture to world food supply | 811 | Low |
| Marine fisheries resources identification and biodata | 1 018 | Medium |
| Advice on marine resources and environmental issues and aquaculture development | 2 674 | Low |

41. *Promotion of responsible fisheries and aquaculture* continues to support implementation of the Code of Conduct for Responsible Fisheries and the CBD through activities such as participation in meetings of FAO, the CBD, and others; publication of guidelines on fisheries and aquaculture; and the organization of international forums on fishery genetic resources. Activities during 2001-2002 included:

- Participation in, and co-organization with ICLARM–The World Fish Centre, of a Workshop on Biosafety and Risk Assessment of Genetically Improved Species in Africa, Nairobi, February 2002.

- The Government of Italy/FAO/World Fisheries Trust (Canada) collaboration on a Fishery Information Network on Genetic Resources (FINGER). A framework and strategy for improving access to and information on aquatic animal diversity has been developed and case studies are being identified for inclusion into the information network, January – December, 2002.

- Participation in meetings of the CBD, such as the Third Regional Workshop on the Sustainable Use of Biodiversity, Ecuador, January 2002; the Liaison Group on Inland Water Ecosystems, June 2002, the Netherlands; and an *Ad Hoc* Expert Meeting on Mariculture, Rome, July 2002.

- Participation in international forums to develop and promote responsible aquaculture and fisheries, such as the Meeting of the World Aquaculture Society, where FIRI convened a Special Session on Biotechnology and GMOs, Beijing, April, 2002; the meeting of AquaVision 2002, Norway, June, 2002, where FIRI presented information on GMOs and the aquaculture industry.

42. *Global monitoring and strategic analysis of inland fisheries and aquaculture* provides analyses of fishery production, new species and strains used in fisheries and aquaculture, and alien species. In addition to the existing online Database of Introductions of Aquatic Species (DIAS), FI is developing a Fishery Global Information System (FIGIS) to serve as an integrating mechanism for a variety of information on fisheries and aquaculture. The FishStat database on fishery production collects information provided by Members and provides a means to analyse trends on production. Specific activities included:

- The maintenance and improvement of DIAS in order to evaluate the contribution of alien species to world fishery production and to assess the impacts more accurately.

- In association with the Mekong River Commission and the Governments of Thailand and Netherlands, FI is convening an expert consultation on "New approaches to improving information on inland fisheries in the Mekong Basin," Thailand, September 2002.

43. *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 the document CGRFA-9/02/14.1 Annex.

44. *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 the document CGRFA-9/02/14.1 Annex.

45. *Participation in inter-agency and inter-departmental activities* involves headquarters work as well as regional and global activities. Principal external partners include the CBD, 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**

46. FAO's Soil and Plant Nutrition Management Service has played a lead role under the framework of the agricultural biodiversity programme of work of the CBD, to improve understanding of the importance of soil biodiversity and soil ecosystem management for sustainable and productive agriculture. FAO is proposing an integrated ecological approach, examining soil-water-crop interactions in various farming systems, and how to enhance the roles of different functional groups.

47. FAO's Soil and Plant Nutrition Service supports activities in Asia, Africa, Latin America, and the Middle East/North Africa, through Regular Programme support and extra-budgetary resources to the sum of some US$ 2 423 000 in 2000-2001, for soil productivity and land resources management. The FAO-Netherlands Partnership Programme (FNPP) on agricultural biodiversity, together with the Regular Programme, is enhancing the capacity of FAO to support Member Countries to more effectively address soil biodiversity/soil ecosystem management as an integrated aspect of soil productivity and sustainable agricultural systems. The soil biodiversity component includes: improved information, awareness and networking, the development and use of training materials, case studies and tools for monitoring soil health, and sharing technical knowledge and experiences and priority setting. The soil biodiversity support was initiated in 2001 with US$ 76 000 and is expected to reach US$ 312 000 in 2002. Table 5 shows estimated budgetary expenditures on soil conservation and land management of the Regular Programme of the Agriculture Department, and the soil biodiversity component of the FNPP programme.

**Table 5: 2000-2001 Budget allocations to Regular Programme elements with components relevant to land/soil management, including the sustainable and productive use of soil biodiversity, and estimated weight of these components**

| PROGRAMME ELEMENT | Budget (estimated US$ 000) | Estimated weight of GR components |
|---|---|---|
| Land and soil productivity | 2 423 | Low |

48. Papers on soil biodiversity and sustainable agriculture were prepared by FAO and submitted to the Fifth Session of the Subsidiary Body on Scientific Technical and Technological Advice, November 2001, and subsequently to the Sixth Meeting of the Conference of Parties to the Convention on Biological Diversity, April 2002. In decision VI/5, the Conference of the Parties decided *to establish an International Initiative for the Conservation and Sustainable Use of Soil Biodiversity as a cross-cutting initiative within the programme of work on agricultural biodiversity*, and invited *the Food and Agriculture Organization of the United Nations, and other relevant organizations, to facilitate and coordinate this initiative*. A document based on the paper that was provided to the Sixth Conference of the Parties will be put at the disposal of the Commission.

49. Initial work has been to collect and share information, knowledge and experiences, and to identify gaps, constraints and opportunities for promoting improved soil ecosystem management. A framework on soil biological management was prepared to set the scope and directions for actions, networking and partnerships on improving soil biodiversity/ecosystem management for sustainable agriculture. Case studies are being collected and information on relevant activities and expertise has been compiled, and networking initiated among institutions working on soil biological management.[6] The outputs are presented in a soil biodiversity portal and through a newsletter called *Roottalk*.

50. The next step is to enhance the application of improved techniques through capacity-building and collaboration among those working on different aspects of soil biological management. Participatory processes to test and adapt improved techniques for specific farming systems are being developed. FAO and EMBRAPA jointly organized an International Technical Workshop on Biological Management of Soil Ecosystems for Sustainable Agriculture, 24-27 June 2002, hosted by EMBRAPA-Soja, Londrina, Brazil. Experts shared experiences focusing on technical assessments and monitoring, adaptive management, and innovation and risk alleviation. The expected outcomes include agreed partnerships, networking and actions for the development and use of practical guidelines, training materials and the adaptation of improved technologies, building on existing experiences and expertise.

51. It is recognized that the conservation and sustainable use of soil biodiversity requires approaches that address agriculture and farmers' fields as complex, living systems. Moreover, improved soil ecosystem management requires farmer-centred approaches and close collaboration among soil specialists, integrated pest managers, moisture conservation experts, and livestock and pasture managers. FAO, working with interested partners, aims to prioritize the identification and promotion of field activities that integrate soil biological management into agricultural programmes and projects, with a focus on empowering farmers through participatory technology development processes. The Farmer Field School approach, first developed for integrated pest management, is being piloted for soil productivity improvement, with a focus on soil biological management, including nutrient recycling and restoration, pest and disease control and soil moisture management.

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6 http://www.fao.org/landandwater/agll/soilbiod/default.htm

52. In view of the fact that the work on this area is essentially supported through extra-budgetary means, the advice of the Commission is invited regarding the importance and relevance of the work that has been initiated, and modalities to strengthen and mainstream work on soil biodiversity and healthy soil ecosystems in the work of FAO's Land and Plant Nutrition Service, and through the integrated ecosystem approaches of the Agriculture Department.

### 6. Micro-organisms of relevance to food processing

53. FAO promotes the ongoing use of traditional methods of food preparation and recognizes the importance of these foods as a source of nutrition and food security, through increased diversity of foods available to the population.

54. Enzymes derived from micro-organisms are used in food processing. They may result from naturally occurring micro-organisms in food (for example during fermentation), or from genetically modified micro-organisms. The Joint FAO/WHO Expert Committee on Food Additives (JECFA) has on many occasions addressed issues relating to specifications of enzyme preparations. Most recently, at the 57th Session, a combined set of General Specifications for enzymes was presented for all enzyme preparations, regardless of the source. In the past, separate specifications were prepared for enzymes derived from naturally occurring micro-organisms, and those from genetically modified organisms. Recently, and as part of a series of expert consultations held by FAO and WHO on the safety assessment of foods derived from biotechnology, an expert consultation on foods produced through genetically modified micro-organisms[7] provided useful advice on the assessment of these foods prior to their release on the market.

55. The beneficial health effects of certain live microbes (probiotics) in food are leading to the development of new food products. It has been reported that these probiotics can play an important role in immunological, digestive and respiratory functions and could have a significant effect in alleviating infectious diseases in children. The Joint FAO/WHO Expert Consultation on Evaluation of Health and Nutritional Properties of Probiotics in Food, 1-4 October 2001, evaluated the scientific information available on the functional and safety aspects of probiotics, and proposed guidelines for the assessment of probiotic micro-organisms.[8] In addition to the beneficial uses of micro-organisms in food, reference is made to the need for technical advice on risk assessment of microbiological hazards in food to meet the needs of national governments, the food industry, the scientific community, trade organizations and international consumers groups. FAO, with WHO, is providing this advice through the Joint FAO/WHO Expert Consultations.[9]

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

56. The Commission may wish to express its views and make suggestions on the policies and activities covered in this document, so that the relevant technical groups can take these into consideration when carrying out their specific tasks, and when planning for the future.

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7 http://www.who.int/fsf/GMfood/GMMConsult_Final.pdf

8 The Report is available at http://www.fao.org/es/ESN/Probio/report.pdf.

9 http://www.fao.org/es/ESN/pagerisk/riskpage.htm.