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pour
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Organización
de las
Naciones
Unidas
para la
Agricultura
y la
Alimentación

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COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

Eleventh Regular Session

Rome, 11-15 June 2007

**REPORTS FROM INTERNATIONAL ORGANIZATIONS ON
THEIR POLICIES, PROGRAMMES, AND ACTIVITIES ON
AGRICULTURAL BIOLOGICAL DIVERSITY:**

**(2) INTERNATIONAL AGRICULTURAL RESEARCH CENTRES
OF THE CONSULTATIVE GROUP ON INTERNATIONAL
AGRICULTURAL RESEARCH (CGIAR)**

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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 for the conservation and sustainable use of genetic resources for food and agriculture. The Commission considers such reports to be of value, as they contribute to facilitate cooperation in this area between FAO and other international organizations, and to develop appropriate mechanisms for cooperation and coordination. FAO has limited itself to compiling the reports as submitted. Each report is fully the responsibility of the organization submitting it.
2. FAO's own activities are reported in documents CGRFA-11/07/20.1, CGRFA-11/07/20.2 and CGRFA-11/07/20.3.
3. Reports from United Nations and other Inter-Governmental Organizations are contained in document CGRFA-11/07/19.1 and reports from International Non-governmental Organizations can be found in document CGRFA-11/07/19.3.
4. This document presents a report on the activities undertaken by the Centres of the Consultative Group on International Agricultural Research (CGIAR)¹ in relation to genetic resources for food and agriculture.
5. The CGIAR System-wide Genetic Resources Programme (SGRP) has prepared the document on behalf of the Centres, with inputs from individual Centres. It presents an overview of the activities since 2004, updating the document presented at the last session of the Commission² and complementing reports³ submitted to the Working Group on Plant Genetic Resources for Food and Agriculture in 2005.
6. SGRP facilitates collaboration among the Centres and with national and international organizations to enhance the CGIAR's contribution to global efforts to conserve genetic resources for use in agriculture, forestry and fisheries. This includes fulfilling representation and public awareness functions, and contributing to international agendas on the Centres' behalf. Bioversity International is the convening Centre of SGRP; representatives of the Centres and FAO comprise its steering committee, the Inter-Centre Working Group on Genetic Resources.

¹ Africa Rice Center (WARDA); Bioversity International (formerly International Plant Genetic Resources Institute IPGRI); including the International Network for the Improvement of Banana and Plantain INIBAP); Centro Internacional de Agricultura Tropical (CIAT); Centro Internacional de Mejoramiento de Maíz y Trigo (CIMMYT), Centro Internacional de la Papa (CIP); Center for International Forestry Research (CIFOR); International Center for Agricultural Research in the Dry Areas (ICARDA); International Crops Research Institute for the Semi-Arid Tropics (ICRISAT); International Food Policy Research Institute (IFPRI, including the International Service for National Agricultural Research ISNAR programme); International Institute of Tropical Agriculture (IITA); International Livestock Research Institute (ILRI); International Rice Research Institute (IRRI); International Water Management Institute (IWMI); World Agroforestry Centre (ICRAF); WorldFish Center (WorldFish).

² CGRFA-10/04/11.2.

³ CGRFA/WG-PGR-3/05/Inf.2; CGRFA/WG-PGR-3/05/Inf.8.

7. Over the last reporting period, there has been significant activity in areas important to the Commission including contributions to the safe maintenance and improved use of *ex situ* conserved crop genetic resources as part of an evolving global system, 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 developing work on farm animal genetic resources conservation. Recently, inputs have been made to the ongoing in-depth review of the programme of work on agricultural biodiversity of the Convention on Biological Diversity (CBD), in which FAO plays a key role.

8. An important strategic development is the completion of the CGIAR Science Council-led process to develop 20 System-level priorities to deliver a more cohesive, focused, and high-quality research programme to alleviate poverty, hunger and malnutrition⁴. Priority Area 1 *Sustaining biodiversity for current and future generations* is directly relevant to the Commission's conservation objectives. It comprises four priorities: 1A on staple crops; 1B on underutilized species; 1C on indigenous livestock; and 1D on aquatic animals. The Commission's objectives regarding use of genetic resources are covered by four other Priority Areas. The Science Council has tasked SGRP to coordinate the development of Framework Plans for implementing Priority Area 1.

9. This document reports on the following areas: plant genetic resources for food and agriculture, animal genetic resources for food and agriculture, aquatic genetic resources, forest genetic resources, and cross-sectorial matters.

II. PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

10. At the heart of the CGIAR Centres' work on plant genetic resources for food and agriculture lies the management of the in-trust collections holding over 650,000 accessions of some 3,000 staple crop, forage and agroforestry species essential to food security and nutrition. This section covers policy aspects regarding Centre stewardship of the collections on behalf of the global community, followed by efforts to enhance the security and accessibility of the collections, and finally Centre actions supporting implementation of the Global Plan of Action.

11. The policy work described below focuses on interactions between the Centres and the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture (the International Treaty) regarding the in-trust collections. In addition, Centres provide capacity-building and awareness-raising support to national partners on international policy developments including International Treaty negotiations and implementation.

Agreements between the CGIAR Centres and the Governing Body of the International Treaty

12. On 16 October 2006, 11 Centres signed agreements with the Governing Body placing the in-trust collections within the purview of the International Treaty. The agreements, which follow the model approved by the Governing Body at its First Session in June 2006, entered into force on 14 January 2006.

13. At the time of signing, the Centres issued a statement indicating that they will apply the Standard Material Transfer Agreement (SMTA), as approved by the Governing Body, for all transfers of Annex 1 materials as from 1 January 2007.

14. In May 2004, a joint meeting of the CGIAR Centre Board Chairs (now known as the Alliance Board), and the CGIAR Centre Directors Committee (now known as the Alliance Executive), adopted a common policy regarding germplasm products of Centres' research,

⁴ Science Council Brief: Summary Report on System Priorities for CGIAR Research 2005-2015.
<http://www.sciencecouncil.cgiar.org/activities/spps/pubs/SCBrief%20SystPrior.pdf>

requiring that Centres make them available subject to the benefit-sharing provisions of the SMTA. The adoption of the SMTA by the Governing Body superseded the Centres' policy, in as much as it makes provision for the distribution of 'Plant Genetic Resources For Food And Agriculture Under Development' derived from Annex 1 material. As a result the products of Centres' research will now be distributed using the SMTA as 'Plant Genetic Resources For Food And Agriculture Under Development'.

15. To ensure coordinated use of the SMTA by all Centres, a *Centres' Guide to the Use of the SMTA* was developed and circulated to all the Centres. It will continue to be revised in the light of experience with the implementation of the SMTA over the initial period of deployment. It is anticipated that the guide, or a summarized version, will be presented to the Governing Body for information.

16. Through the System-wide Information Network for Genetic Resources (SINGER), Centres are participating in technical consultations convened by the Governing Body on *Information technology support for the implementation of the Multilateral System of Access and Benefit-Sharing*. Bioversity will host a transitional arrangement for the allocation of the persistent identifiers required for providers and recipients of germplasm under the Multilateral System.

Management of the in-trust plant collections

17. Over the last ten years, the CGIAR Centres have critically reviewed their genebank standards, practices and costs to identify practical and strategic actions to ensure that they meet their in-trust obligations. These analyses provided a sound basis for obtaining resources from the World Bank to upgrade both the collections and the facilities in which they are conserved.

18. The first phase of the exercise *Global Public Goods Rehabilitation* ("GPG1") drew to a successful close in 2006. Its achievements include:

- Improved facilities for storage (all Centres), seed processing (six Centres), regeneration (nine Centres), plant health (four Centres), molecular identification (two Centres), and bar-coding (seven Centres).
- Safety-duplication agreements negotiated between genebanks within and outside the CGIAR, and safety-duplication of >190,000 accessions.
- Reduced backlogs in processing (>400,000 accessions), regeneration (ca. 200,000 accessions), plant health (>170,000 accessions), and characterization (>80,000 accessions).
- Hardware and software upgrades (all Centres), with enhanced SINGER functionality and improved data quality (eight Centres).

19. SINGER now provides access via a central entry point to more accurate information on the in-trust collections, including characterization and evaluation data. It helps Centres answer questions about the origin of accessions and the distribution of material to users. Distribution statistics⁵ reveal the key service that Centres provide to developing country national agricultural research systems, which receive over 80% of all samples transferred to users.

20. A 2005 External Review of GPG1 confirmed that the project was meeting its objectives, and recommended a second phase. Accordingly, a three-year project, *Collective Action for the Rehabilitation of Global Public Goods in the CGIAR Genetic Resources System: Phase 2* ("GPG2") was prepared and successfully submitted for World Bank funding. Implementation began in early 2007.

⁵ See: http://www.ifpri.org/pubs/rag/br1002/br1002_12.pdf.

21. GPG2's upgrading components will complete the improvement of Centre genebank facilities, and processing of accessions. Management of crops held in common among Centres will also be rationalized. Accession processing targets are:

- 200,000 processed for storage;
- 150,000 safety duplicated;
- 70,000 regenerated;
- 64,000 health tested;
- 50,000 characterized; and,
- 140,000 documented.

22. SINGER will be developed further, with creation of a central germplasm ordering system. It will serve as a model for and key component of a global information network providing accession-level data and addressing the needs of the International Treaty. The Centres will also develop global crop information systems for Wheat, Barley, Chickpea, Potato, Forages, Rice, Cassava, *Musa*, and study gaps in collections using advanced geographic information system (GIS) tools.

23. In addition to the upgrading, GPG2 mobilizes collective action among Centres on technical and strategic issues to deliver the following outputs:

- Uniform genebank risk-management procedures.
- Best practices for genebank management.
- Unified protocols for locating and delivering germplasm, and for sharing information on crops held in common.
- Strategies and tools for enhancing knowledge on the diversity in the in-trust collections.
- Recommendations for wider CGIAR genebank involvement in managing genetic and genomic stocks, associated biodiversity and underutilized species.
- Strategic planning for training national programme partners and enhancing CGIAR genetic resources research capacity.
- Mechanisms for improved delivery of global public goods by the CGIAR genebanks and promotion of international collaboration.
- Analysis of the elements and functions of an integrated global system for crop genetic resources conservation and use.

24. GPG2 represents a concrete contribution to the aims of the International Treaty and the Global Plan of Action, offering vision, leadership and skills to partners in developing a global system, with the in-trust collections playing a central role. The Framework Plan in development for implementing CGIAR System Priority 1A addresses this crucial area, defining targets, users, implementers and roles, with FAO and national programmes as important partners.

Global Plan of Action and State of the World's Plant Genetic Resources for Food and Agriculture

25. The CGIAR Centres provided scientific and technical inputs to preparation of the Global Plan of Action and the first State of the World Report. Bioversity (as IPGRI), in particular, supported the process culminating in adoption of the Global Plan of Action in 1996.

26. Centres' work on the conservation and sustainable use of plant genetic resources for food and agriculture addresses Global Plan of Action priority activities with particular emphasis, as described above, on managing the in-trust collections and contributing to the development of a

rational and sustainable global system. A key contribution to the latter is the establishment of the Global Crop Diversity Trust⁶, founded by Bioversity on behalf of the CGIAR Centres and FAO.

27. The CGIAR Centres are assisting FAO and national partners through activities including participation in Global Plan of Action implementation workshops and capacity building at global, regional and national levels to support improved management of plant genetic resources for food and agriculture. Capacity-building efforts through group and individual training are directed principally at national programme scientists, but are also available to other stakeholders. In addition, the Centres publish manuals and teaching materials for use by partners.

28. Bioversity has assisted FAO in the development of guidelines for preparing country reports. Along with other Centres, Bioversity is involved in pilot testing of the information-sharing mechanism for monitoring the Global Plan of Action, and is ready to contribute to country reporting, providing information, advice and other support as requested within available resource limits.

29. SINGER makes updated information on the in-trust collections available to FAO's *World Information and Early Warning System* (WIEWS). The Centres also maintain a range of specialized databases relevant to Global Plan of Action priority activities.

30. The Centres welcome all opportunities to make inputs to the second *State of the World's Plant Genetic Resources for Food and Agriculture* regarding their research and collaborations with national partners and others. They are also ready to serve as authors or reviewers to thematic background studies.⁷ Potential contributions and relevant activities are detailed in CGRFA/WG-PGR-3/05/Inf.2 and on Centre web sites.⁸

III. ANIMAL GENETIC RESOURCES FOR FOOD AND AGRICULTURE

31. ILRI and ICARDA conduct research on animal genetic resources in partnership with a range of national and international organizations. The work complements and supports the development of FAO's Global Strategy for the Management of Farm Animal Genetic Resources. The Centres and SGRP have provided assistance and inputs to the development of the Global Strategy and to the first Report on the State of the World's Animal Genetic Resources⁹.

32. Implementation of CGIAR System Priority 1C: *Conservation of Indigenous Livestock* will enhance research on animal genetic resources diversity at the Centres. ILRI and ICARDA, in coordination with the CGIAR Science Council, SGRP and FAO, are developing a Framework Plan to guide research on this priority.

Characterization and documentation

33. Characterization is an important component of ILRI's and ICARDA's programmes. It informs priority-setting and development of improved strategies for the conservation and sustainable use of livestock genetic resources. The online information system DAGRIS¹⁰, developed and maintained by ILRI, provides easy access to breed-related information.

34. For the past 12 years ILRI, in close collaboration with African and Asian national programmes, has studied the genetic diversity of the continents' indigenous livestock (cattle,

⁶ <http://www.croptrust.org/main/>.

⁷ See: CGRFA/WG-PGR-3/05/Inf. 5.

⁸ Accessible through: <http://www.cgiar.org/centers/index.html>.

⁹ FAO, 2006. The State of the World's Animal Genetic Resources. Draft, FAO, Rome, Italy. <http://www.fao.org/ag/againfo/programmes/en/genetics/angrvent-docs.html>.

¹⁰ Domestic Animal Genetic Resources Information System: <http://dagris.ilri.cgiar.org/>.

sheep, goat, dromedary and Bactrian camel, yak, chicken) using a standard set of genetic markers (e.g. FAO/ISAG¹¹ recommended set of microsatellite loci). The work is taking place at ILRI Headquarters in Nairobi and at a joint ILRI-CAAS laboratory in Beijing.

35. ILRI activities seek to understand genetic variation underlying functional genetic diversity with a particular focus on disease resistance traits including trypanosomiasis, helminthosis and, more recently, resistance to viral infection in poultry. ILRI's work also addresses characterization of production and environment systems including assessment of environmental drivers (human populations, climatic changes, diseases), understanding market opportunities for indigenous livestock and their products, institutional constraints, and factors leading to change in production systems and affecting livestock diversity. Collaboration with NARS and advanced research institutes is central to success, with increased collaboration with ICARDA, the FAO/IAEA joint division and FAO Headquarters in Rome.

36. ICARDA has been working with national programmes in West Asia and North Africa (WANA) and Central Asia and the Caucasus (CAC) on small ruminants, cataloguing past on-station characterization records and conducting on-farm characterization of breeds under current production conditions. Information on sheep and goat breeds in 11 WANA countries has been synthesized and published in two volumes¹² with SGRP support. A third, covering eight CAC countries, will be published in 2007. The books cover the relevance and status of sheep and goat breeds, their phenotypic features and performance, and breeding programmes in each country. To facilitate access, data are being entered into DAGRIS by ILRI, and will be published on ICARDA's web site.

37. In 2004, ICARDA and the Austrian University of Natural Resources and Applied Life Sciences initiated a project supported by Japan on the on-farm characterization of Jabali and Baladi goats in Syria. Phenotypic characterization is complemented by molecular characterization of goats from the same locations using microsatellite (SSR) markers. ICARDA's biotechnology laboratory is expanding its expertise in molecular characterization to cover small ruminants in collaboration with ILRI. This expertise will be shared with NARS in the region to build capacity and standardize methodologies to facilitate data exchange.

Use and conservation

38. ILRI aims to understand animal genetic resources diversity relative to changes in livestock production and market systems. ILRI is developing ways to deliver appropriate genetics to farmers with the design of community-based breeding schemes for the livestock production systems of the tropics and sub-tropics.

39. ICARDA's main emphasis is on the sustainable use of animal genetic resources in crop-livestock production systems. Through projects supported by USDA, the CGIAR System-wide Livestock Programme, Austria, IFAD and Japan, ICARDA scientists and partners have monitored the performance and related socioeconomic aspects of indigenous sheep and goat breeds on-farm. Alternative management strategies have been tested to improve productivity in Syria, Tunisia, CAC, and Latin America. Special emphasis was given to identifying and targeting market opportunities at local, regional and international levels, and to adapting production practices and product quality-to-market requirements.

40. Genetic improvement is an important component of increasing animal genetic resources productivity. ICARDA is developing optimized breeding schemes for indigenous small ruminant breeds based on the needs and opportunities of poor livestock keepers, and has initiated work in Central Asia and Latin America. With NARS of Tunisia, ICARDA has studied the effect of

¹¹ International Society of Animal Genetics.

¹² Iniguez, L. (Ed.) 2005. Characterization of small ruminant breeds in West Asia (Volume 1) and North Africa (Volume 2). ICARDA, Aleppo, Syria.

market and consumer trends on small ruminant genetic diversity and developed a valuation model involving collective action to rescue the Sicilo-Sarde sheep breed, which has been at the edge of extinction, coupled with a basis for continuous genetic improvement. A new project, jointly conducted by ICARDA, ILRI and the Austrian University of Natural Resources and Applied Life Sciences, aims to develop community-owned and participatory breeding systems for sheep in Ethiopia.

41. An international workshop on *Options and Strategies for Conserving Farm Animal Genetic Resources* was held in Montpellier in 2005, convened by SGRP in association with FAO, AGROPOLIS and Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), Germany, with participation of 63 experts from 28 countries. This expert consultation devised a framework to guide decision-making on the conservation strategy for a given farm animal genetic resource, based on its nature and value, the severity and speed of threats, and the capacity for conservation action. A coherent strategy will combine *in situ*, *ex situ in vivo* and *in vitro* conservation. Technical progress, cost reductions and increasing pressure on genetic resources suggest that it be time to reassess *in vitro* technology as a complementary approach.

42. The workshop findings have been published by SGRP¹³ and were presented at the Fourth Session of the Intergovernmental Technical Working Group on Animal Genetic Resources for Food and Agriculture, and at the Eighth Meeting of the Conference of the Parties to the CBD, both in 2006. The research implications made inputs to the development of the CGIAR System Priority 1C Framework Plan. However, the research needs identified cannot be met with current resources for animal genetic resources research in the Centres.

Training and capacity development

43. Most Centre activities include capacity-building components involving training visiting scientists, studentships, internships and graduate fellowships, as well as training workshops and tailor-made courses addressing specific needs.

44. In collaboration with the Swedish University of Agricultural Science (SLU) and supported by SIDA (Sweden), ILRI has, since 1999, been developing and implementing a unique training-of-trainers capacity-building programme for sustainable management of animal genetic resources in Sub-Saharan Africa, South-East Asia and South Asia. Activities in each region/sub-region include: a training course for university teachers and researchers (combining training in animal genetics/breeding and teaching methodologies), development of the “Animal Genetics Training Resource” CD and information package targeting regional livestock production systems, and follow-up activities including impact assessment.

45. In 2007, ICARDA, ILRI and the FAO/IAEA joint division are conducting a training workshop on molecular characterization for NARS researchers from Central Asia and WANA. The SGRP-funded workshop will lay the basis for a network of NARS researchers to enhance characterization of animal genetic resources in the region, and contribute to global understanding of genetic diversity, origins and distribution pathways of sheep and goats.

IV. AQUATIC GENETIC RESOURCES

46. The WorldFish Center’s research and capacity-building endeavours in aquatic genetic resources are developed and coordinated through its Aquaculture and Natural Resources Management programmes. The main purpose of WorldFish’s genetic resources research is to ensure that, in pursuing the enormous benefits to be derived from genetically improved strains, researchers, managers, farmers and policy-makers employ appropriate tools and methods to understand, conserve and sustainably use aquatic biological diversity. WorldFish also strives to

¹³ http://sgrp.cgiar.org/Publications/06_26%20FANGR%20Report_WEB.pdf

ensure that the national breeding programmes supported by the Center maintain and further develop strains for distribution to farmers, and implement measures to conserve the genetic diversity of aquaculture species.

Characterization and documentation

47. FishBase is the world's most comprehensive information system on finfishes, covering all described species (>30,000 by 2007). Initiated in 1990 by WorldFish (formerly ICLARM), the development team remains based at WorldFish Headquarters in the Philippines, and leads a consortium of eight global institutions. FishBase contains some 5 million records on over 60 topics pertinent to finfishes. It is the most frequently used Internet resource within the CGIAR, with ca. 5 million unique users and 20 million user-sessions in 2006. Information is accessible free-of-charge on one production¹⁴ and 6 mirror web-sites, and on DVD. A new system called SeaLifeBase will go on-line in 2007, providing information on all other marine groups in a FishBase-like system. Both systems, while presently holding primarily species-level information, can readily be modified to hold information on genetic diversity.

Conservation and use

48. Much fundamental research is urgently needed into the genetic diversity of farmed aquatic organisms, most of which still resides in the wild. WorldFish continues to promote the conservation and wise use of these resources through various measures. The widely-endorsed Nairobi Declaration¹⁵, developed jointly by WorldFish, FAO, IUCN, UNEP and CTA promotes environmentally-safe dissemination of genetically improved fish. A recent CGIAR Science Council Report¹⁶ has stimulated further initiatives, including the development of a Framework Plan for System Research Priority 1D on conservation of aquatic animal genetic resources.

49. Through an 18-year selective breeding programme, WorldFish and partners have developed the Genetically Improved Farm Tilapia (GIFT), which grows more than 60% faster and has a 50% higher survival rate to adulthood than the original fish. GIFT have been transferred to 11 countries in Asia, with significant economic impacts¹⁷. Although WorldFish is currently developing a Policy and Code of Practice for the transfer of GIFT to Africa, the technology is already being transferred. Genetic improvement programmes for Nile tilapia are ongoing in Egypt and Ghana, and for indigenous tilapia (*Oreochromis shiranus*) in Malawi, supported by WorldFish staff. Together with scientists from the University of Wageningen and from Tanzania, research to develop faster growing strains of tilapia under low input and low temperature conditions, and to breed improved strains of African catfish (*Clarius gariepinus*) has recently been completed at the WorldFish Abbassa Center, Egypt¹⁸. Collaborative research on genetic improvement of farmed carp species, focusing on disseminating improved strains to farmers, and on the giant freshwater prawn *Macrobrachium rosenbergii* continues in Asia.

50. The International Network of Genetics and Aquaculture (INGA) provides a global forum for collaborative research and training in applied fish breeding and genetics¹⁹. Through INGA, WorldFish helps promote regional networks among Asian and African countries, has initiated and

¹⁴ <http://www.fishbase.org>.

¹⁵ Nairobi Declaration on Aquatic Biodiversity and Use of Genetically Improved and Alien Species for Aquaculture in Africa. Nairobi, Kenya, 20-23 February 2002.

¹⁶ Science Council Secretariat 2005. *Conservation of Livestock and Fish Genetic Resources*. Joint Report of two studies commissioned by the CGIAR Science Council. Science Council Secretariat, FAO, Rome. pp. 94.

¹⁷ Asian Development Bank. 2005. *An Impact Evaluation of the Development of Genetically Improved Farmed Tilapia and their Dissemination in Selected Countries*. ADB, Manila. pp. 124.

¹⁸ See: Ponzoni, R., Acosta, B. and Ponniah, A.G. (eds.) 2006. *Development of Aquatic Animal Genetic Improvement and Dissemination Programs: Current Status and Action Plans*. WorldFish Center, Penang. pp. 114.

¹⁹ <http://www.worldfishcenter.org/inga/index.htm>.

managed a range of research projects, strengthened research capacity through delivering advanced courses on quantitative genetics and breeding, and helped exchange of genetically improved fish germplasm within Asia.

V. FOREST GENETIC RESOURCES

51. Bioversity, CIFOR and the World Agroforestry Centre (ICRAF), are involved in research on forest and tree genetic resources. Bioversity works on conservation and use of the genetic resources of forest tree species, with a focus on those harvested from the wild. Bioversity's future research will concentrate on conservation of intraspecific diversity in tropical tree species and maximizing use of biodiversity in forest restoration. Forest Genetic Resource networks are an important mechanism for collaboration with national partners. In 2006, a new regional network, LAFORGEN, was established to help create sound and cooperative management of forest genetic resource in Latin America.

52. CIFOR focuses on tropical forests in multiuse landscapes. Its biodiversity-related research promotes sustainable use of forest genetic resources through processes and initiatives extending across national, regional and sometimes global scales. In 2006, CIFOR and ICRAF launched a joint Biodiversity Platform²⁰ addressing biodiversity issues in multifunctional landscape mosaics.

53. ICRAF conducts agroforestry research on a global scale, in close partnership with NARS, universities, and non-governmental and private organizations. Using science to understand the complex role of trees in the environment, and promoting use of this knowledge to improve decisions and practices impacting on the poor, ICRAF focuses on:

- Enhanced access by smallholders to high-quality tree germplasm, and expanded market opportunities for their products.
- Advanced understanding of the role of trees in more productive land management via integrated farming systems based on appropriate tree enterprise portfolios for key agroecological domains.
- Enhanced recognition and deployment of pro-poor agroforestry strategies that generate local benefits while providing global environmental services.
- Improved capacities for effective research, development and education in agroforestry in the developing world.

54. SGRP is supporting Bioversity, CIFOR and ICRAF in developing a unified System-wide strategy on forest and tree genetic resources. Preliminary discussions and study of Centres' work have been undertaken, culminating in a meeting at Bioversity in Rome in 2006. This involved representatives of six Centres, FAO and other major organizations working with forest and tree genetic resources. It identified four elements for a CGIAR strategy:

- Understanding the diversity and value of forest and tree genetic resources and the processes that affect them.
- Conducting research to inform the conservation of forest and tree genetic resources.
- Developing approaches to effectively make available germplasm of forest and trees genetic resources to improve livelihoods and benefit society
- Promoting the uptake and sustainable use of forest and tree genetic resources.

55. These elements, along with policy advocacy and capacity-development as cross-cutting issues, will provide the foundation for developing integrated, complementary or collaborative

²⁰ http://www.cifor.cgiar.org/Research/ENV/Themes/Bio/biodiversity_platform.htm.

actions among Centres. The next step will be development of a concise strategy document that outlines the major threats, challenges and opportunities, and presents the work that Centres plan to implement in future to address those issues, based on their comparative advantages. ICRAF and Bioversity are taking the lead in developing a draft, on behalf of SGRP.

56. The CGIAR Centres were represented through Bioversity and ICRAF at the Fourteenth Session of the FAO Panel of Forest Gene Experts held in Rome in February 2007. The Panel made a number of recommendations, noting that collaboration between FAO and the Centres is highly desirable. The recommendations are summarized below, identifying in parentheses the Centres with which collaboration is envisaged:

- A country-driven State of the World's Forest Genetic Resources, in connection with the Global Forest Resources Assessment (Bioversity).
- Support to interested countries and regions to convene regional forest genetic resources workshops (Bioversity).
- FAO's collaboration with international partners to examine possibilities to facilitate germplasm transfer (Bioversity).
- That FAO, in collaboration with international partners, support efforts in low-input tree domestication/breeding and improved seed supply aimed at smallholders and rural communities, noting the great potential to contribute in this way to both poverty reduction and forestry products supply enhancement (ICRAF).

VI. CROSS-SECTORIAL MATTERS

2010 Biodiversity Target of the Convention on Biological Diversity

57. FAO, Bioversity and ILRI are participating in the UNEP/GEF Biodiversity Indicators Partnership project to refine the headline indicator on *Trends in genetic diversity of domesticated animals, cultivated plants, and fish species of major socioeconomic importance*, by contributing an Indicator Development Plan for cultivated plants, focusing on *ex situ* crop collections, and for animal genetic diversity.

58. Building on a joint FAO/Bioversity workshop held in 2002²¹ on review and development of indicators for genetic diversity, genetic erosion and genetic vulnerability, Bioversity organized an expert consultation on genetic erosion methodologies and indicators in 2005. Participants were invited from FAO, CGIAR Centres and national partners to discuss the development of methodologies and indicators for assessing change in plant genetic resources over time, and to provide an assessment of the causes of change.

59. At the invitation of the CBD Secretariat, Bioversity has been collaborating with FAO to facilitate implementation of four of the 16 targets of the Global Strategy on Plant Conservation²².

60. Bioversity attended a workshop on *Streamlining European Biodiversity Indicators for the 2010 targets (SEBI 2010)* in 2006, and contributed to the development of criteria, verifiers and data sources to develop, test and finalize a first set of EU headline indicators for domesticated animals, cultivated plants, and fish of major socioeconomic importance.

Valuation of genetic resources

61. SGRP is conducting valuation research that responds to calls from the Conference of the Parties to the CBD to develop mechanisms to give communities incentives to conserve diversity,

²¹ See: <https://www.biodiv.org/doc/meetings/ind/tegind-01/information/tegind-01-01-inf-10-en.doc>.

²² See: <http://www.biodiv.org/programmes/cross-cutting/plant/default.asp>.

and remove or mitigate perverse incentives that work against conservation objectives, threatening the long-term well-being of those communities. The research seeks to understand the values that farmers assign to biodiversity to create an environment more favourable to conservation and sustainable use.

62. As requested by an international workshop²³ held in 2003, and building on work by IFPRI and ILRI, SGRP has prepared a status report²⁴ reviewing valuation methodologies and exploring a holistic approach to valuing the components of agricultural biodiversity. Many small-scale farmers, especially in subsistence agriculture, integrate crop and livestock management. Furthermore, the same policies, development interventions and forces driving change impact on both crops and livestock.

63. The review considered that, while scope exists for progress in research approaches, data constraints are more critical. Studies are needed to generate data to value crops and livestock together, quantify conservation benefits as well as costs, and identify optimal conservation strategies and policies.

64. The review revealed important findings for both crops and livestock. For example, for many crop resources, commercial valuation appears to underestimate the importance that specific traits have to those dependent on them. Nor is it yet possible to place a value on crop biodiversity's contribution to ecosystem services. Similarly, conventional evaluation criteria are not well-tuned to the subsistence livestock context where non-income functions are important, and benefits of cross-breeding and breed-substitution tend to be overestimated.

65. SGRP organized an expert workshop on *Valuing Crop, Tree, Livestock and Aquatic Genetic Resources* in 2005. Participants designed a project to test the hypothesis that advances in research and policy would benefit from an integrated approach, and identified key research questions. SGRP is supporting the development of such a project placing farmers at the centre, as they alone can explain and quantify the values that they assign to diversity.

66. Following the expert workshop, SGRP organized of an event on valuation of agricultural biodiversity at the eleventh meeting of CBD's SBSTTA in 2005. On SBSTTA's recommendation, the 2006 meeting of the Conference of the Parties to the CBD called for action on valuation of agricultural biodiversity including through pilot studies to inform public and private decision-making.

Platform for Agrobiodiversity Research

67. SGRP is collaborating with Bioversity, FAO and others to create a global Platform for Agrobiodiversity Research to support the necessary knowledge generation and actions to stem the loss of biodiversity in and around areas of agricultural production, and promote sustainable agriculture. International organizations, networks, civil society organizations, universities and others have expressed interest in working with the Platform, and it was welcomed by the 2004 meeting of the Conference of the Parties to the CBD as a contribution to the Convention's programme of work.

68. A Secretariat to oversee full establishment of the Platform was constituted in 2005, and is currently based in Rome and Nairobi. It is concentrating on identifying partners, launching a web site and mobilizing resources.

²³ International Workshop on *Managing Agricultural Biodiversity for Sustainable Development*, Nairobi, October 2003. Organized by Bioversity International and SGRP. See: <http://www.sgrp.cgiar.org/CurrentSGRPInitiatives/Valuation.htm>.

²⁴ Adam D. Drucker, Melinda Smale and Patricia Zambrano eds. 2005. Valuation and sustainable management of crop and livestock biodiversity – a review of applied economics literature. Accompanying bibliography on CD-ROM: ECOGENLit – Economics Literature on Crop and Livestock Genetic Resource. See: <http://www.ifpri.org/pubs/sgrp/about.asp>.

69. The Platform's first International Stakeholder Meeting held in 2006 developed the Platform goal and objectives, set out guiding principles and programme priorities, and proposed operational guidelines and governance. The meeting's conclusions²⁵ and the aims and role of the Platform have been published.²⁶

70. The Platform has three overarching objectives:

- To support development of an agrobiodiversity knowledge base, collating, synthesizing and disseminating knowledge, making available tools and practices, and identifying knowledge gaps.
- To identify ways that agrobiodiversity can address today's major global challenges such as environmental degradation, poverty, climate change, water quality and scarcity, and new global disease threats, by making available information and options for action.
- To identify and facilitate relevant new and innovative partnerships to strengthen multidisciplinary and participatory research addressing different agroecosystem components (livestock, crops, soils, pollinators, etc.) and build research capacity, particularly in developing regions.

71. The Platform will help provide opportunities for researchers, farmers and others to strengthen collaboration on key aspects of agrobiodiversity maintenance. The Stakeholder Meeting highlighted the importance of working with farmers on issues associated with intensification of production and management of agrobiodiversity, and of ensuring better recognition of the contribution that agrobiodiversity can make to key global concerns. Platform focus areas are likely to include valuation of agrobiodiversity, implementation of the ecosystem approach, and improving resilience, stability and adaptability in production systems.

²⁵ <http://www.sgrp.cgiar.org/Publications/PAR%20report.pdf>.

²⁶ http://www.sgrp.cgiar.org/Publications/PAR_flyer.pdf.