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**Item 13 of the Draft Provisional Agenda**

# INTERNATIONAL TREATY ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

**SECOND SESSION OF THE GOVERNING BODY**

**Rome, Italy, 29 October - 2 November 2007**

# INFORMATION RECEIVED FROM RELEVANT ORGANIZATIONS CONCERNING THE IMPLEMENTATION OF ARTICLE 6

# CONTRIBUTION FROM FAO

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## I. INTRODUCTION

1. In the International Treaty on Plant Genetic Resources for Food and Agriculture (the 'Treaty'), the importance and need for sustainable use is emphasized by the wide range of measures covered under Article 6 including policy development, strengthening research, plant breeding, broadening the genetic base of crops, expanding use of local crops and improving regulations on variety release and seed distribution. The need for ensuring continued emphasis on sustainable use of plant genetic resources for food and agriculture (PGRFA) is also fully acknowledged in the supporting component of the Treaty: the *Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture* through a number of Priority Activities, in particular 9, 10, 11,12, 13, and 14 that cover characterization, evaluation, genetic enhancement, diversification of crop production, promotion of underutilized crops and species, support for seed production and distribution, and developing new markets for local varieties and diversity-rich products

2. At its First Session, the Governing Body recognized the importance of Article 6 of the Treaty and stressed that the Contracting Parties will assume a major role in enhancing the sustainable use of PGRFA. It noted that its main contribution would be to develop and facilitate partnerships and cooperation for such country-driven implementation. The Governing Body decided that the implementation of Article 6 should be a component of its programme of work, and a standing item on its agenda as a priority and therefore, decided to engage in an in-depth consideration of the sustainable use of PGRFA following a staged approach. Towards this end, the Governing Body invited Contracting Parties, and other relevant organizations to submit information on policy and legal measures relevant to Article 6.1 of the Treaty, as well as other relevant information that would serve as a basis to assess progress in implementation of Article 6.

3. In responding to this request, this information document provides a comprehensive overview of the work undertaken by FAO for policy, legal, technical and knowledge assistance to member countries in partnership with relevant national, international and regional stakeholders. In 2005, FAO provided a working document to the Third Session of the Intergovernmental Technical Working Group (ITWG-PGR) of the Commission on Genetic Resources for Food and Agriculture (CGRFA) entitled '*Capacity Building to Support the utilization of plant genetic resources for food and agriculture through seed systems, breeding and genetic enhancement"*. The submission responded to the request made at the Tenth Regular Session of the CGRFA to the ITWG-PGR for 'providing guidance on the Organization's initiatives for capacity-building to support the utilization of plant genetic resources for food and agriculture, through seed systems and plant breeding and genetic enhancement, including inviting information on the relevant activities of the CGIAR and other relevant stakeholders'.[1]

4. The Organization's work on sustainable utilization of PGRFA was reported in 2005[2]. Maximum effort has been made to retain the same thematic sections in this update to highlight the overall continuity of the ongoing activities. When activities have been undertaken in new thematic areas they are mentioned separately. In addition, an overview of the specific country led activities on sustainable use as reported by Member Countries within the context of Monitoring the implementation of *Global Plan of Action* is available in *Information document on activities related to the Supporting Components of the Treaty* (IT/GB-2/07/Inf.7)

## II. MANAGEMENT AND USE OF PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

5. FAO works with Member Countries at the national, sub-regional and international levels in a variety of areas to support the management and use of plant genetic resources. The thrust of

[1] CGRFA-10/04/REP
[2] CGRFA/WG-PGR-3/05/4 http://www.fao.org/waicent/FaoInfo/Agricult/AGP/AGPS/pgr/ITWG3rd/pdf/p3w4E.pdf

these activities to raise awareness among policy makers on strategies and approaches for comprehensive management and use of PGRFA; providing assistance in development of relevant policy, legal and regulatory frameworks, strengthens institutional capabilities and institutional development for sustainable use and technology transfer.

a) Ecosystem approach of agro-biodiversity management

6. Managing biodiversity in agricultural systems through an ecosystem approach is being integrated into FAO activities related to use of PGRFA, and made operational at the field level. Much work has been undertaken in the past five years towards the development of criteria, indicators (at gene, species, and ecosystem levels), practical tools and guidelines, as well as supporting initiatives to improve implementation of the ecosystem approach. An information paper was presented to the Third Session of ITWG-PGR[3] to highlight areas in agriculture where the ecosystem approach can be used in achieving the goals of international instruments related to the conservation and sustainable utilization of agricultural biodiversity, specifically highlighting the synergies between the Ecosystem Approach of the Convention on Biological Diversity, and the *Global Plan of Action*.

7. FAO has been facilitating and coordinating the implementation of the 'International Initiative for the Conservation and Sustainable Use of Pollinators' and developed an ongoing global-sized GEF project, entitled "Conservation and Management of Pollinators for Sustainable Agriculture, Through an Ecosystem Approach"[4], in partnership with Brazil, Ghana, India, Kenya, Nepal, Pakistan and South Africa. One of the aims of this project is to apply scientific principles to the documentation and management of pollination services in pollinator-dependent crops. The role of pollinators and measures for improved management through an ecosystem approach in cocoa, chili pepper, eggplant, buckwheat, mustard and bitter gourd farming systems has also been investigated with researchers at University of Cape Coast, Ghana, and the Institute for Agricultural and Animal Sciences, Nepal. Differences, and benefits of, maintaining multiple crop varieties on farm are included as part of the investigation; diversity of pollinators has also been documented. With the International Crops Research Institute for the Semi-Arid Tropics a joint workshop was organized, to better understand the contribution of crop-associated biodiversity (CAB) in the semi-arid tropics, the proceedings of which were published[5].

8. A number of technical documentation has been produced on the utility of crop genetic diversity in maintaining ecosystem services and exploring the contribution of biological diversity to ecosystem functioning in agricultural production systems. A review paper has been prepared that provides a framework for research for securing the potential benefits of crop genetic diversity in pest and disease management, promoting pollination services and soil processes, carbon sequestration, preventing of soil erosion and contributing to the long-term stability of agro ecosystems[6]. Two Thematic Studies dealing with management aspects that are under preparation for the Second Report of the State of the World's Plant Genetic Resources for Food and Agriculture are "Managing Plant Genetic Resources in the Agro-ecosystem: Crop and Crop-Associated Biodiversity and Ecosystem Services in the Context of Global Change" and 'Interactions between plant and animal genetic resources, and opportunities for synergy in their management'. These studies will provide a thorough review of the characteristics of the key ecosystem services provided by genetic resources and their interactions for sustainable food and agriculture.

[3] "The Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture and the Ecosystem Approach" - http://www.fao.org/waicent/FaoInfo/Agricult/AGP/AGPS/pgr/ITWG3rd/pdf/p3i4E.pdf

[4] http://gefonline.org/projectDetails.cfm?projID=2123

[5] Waliyar, F. *(ed.)*; Collette, L. *(ed.)*; Kenmore, P.E. *(ed.)*. Beyond the Gene Horizon: Sustaining Agricultural Productivity and Enhancing Livelihoods Through Optimization of Crop and Crop-Associated Biodiversity with Emphasis on Semi-arid Tropical Agroecosystems. Proceedings of a workshop: 23-25 Sep 2002. 2003. ICRISAT/FAO.

[6] Forthcoming, to be published in the Journal, *Agriculture, Ecosystems and Environment*.

b) Regulatory Framework for PGRFA management

9. Technical assistance was provided to member countries to develop national legal frameworks for management and use of PGRFA in line with the international legal frameworks such as the 'Treaty' and the Cartagena Protocol on Biosafety to the Convention on Biological Diversity. In the period under review, legal assistance was provided to Uzbekistan for the development of appropriate legal frameworks for the protection of their genetic resources, with particular emphasis on conservation and utilization of Crop wild relatives through the project In Situ Conservation of Crop Wild Relatives. Assistance was also provided to Guinée, for drafting legislation to strengthen Plant Genetic Resources conservation and use in line with the 'Treaty'. In Jamaica analysis and assessment of national legislations were undertaken in view of compliance with the 'Treaty' obligations, based on which the Government deposited its instrument of accession on time for the First Session of the Governing Body. A review and assessment of national legal regimes relating to access, exchange and sustainable use of plant genetic resources for food and agriculture and an analysis of their impact on seed access by farmers was undertaken in Mali. The analysis focused on seed legislation (i.e. legislation on development, evaluation, release, production and distribution of seed varieties) and the effects of the Treaty. FAO also assisted the Democratic Republic of Congo in identifying national positions and drafting national legislations on seeds and plant variety protection according with the international commitments of the country. In the area of biosafety, Nicaragua received legal assistance from FAO, in drafting a proposal for a national policy on agriculture biotechnology in accordance with the Cartagena Protocol on Biosafety to the Convention on Biological Diversity.

10. A series of Legislative Studies and reviews were published to assess international and regional legal instruments and selected national laws related to biotechnology with particular reference to access and availability of genetic resources[7] and the online legislative database FAOLEX (http://faolex.fao.org/faolex/) was further expanded to contain international treaties and national legislation, and summaries *inter alia*, on plant and animal genetic resources, seeds and plant variety protection.

c) Sustainable Intensification of Crop Production Systems

11. A number of activities were undertaken to promote conservation and sustainable use of natural resources, improve water use and management, enhance crop productivity and sustainability in harsh environments and develop improved mutant varieties with the aim of sustainable use of PGRFA through short-term and long-term approach. In the period under review, technical assistance was provided to over 100 capacity building projects, and 15 Coordinated Research Projects that addressed cross-cutting, generic, as well as specific practical problems related to sustainable production of several major and minor crops, cereals, legumes, fruits and nuts[8]. Some 30 regional and interregional training courses and 10

[7] Intellectual Property Rights in Plant Varieties - International Legal Regimes and Policy Options for National Governments by Laurence R. Helfer (LS No. 85, 2004), Effectivité de la protection de la biodiversité forestière en République Démocratique du Congo: Cas du Parc National des Virunga (PNVI) by Christol Paluku Mastaki (LPO No. 43, 2005) and Marco analítico para el desarrollo de un sistema legal de la seguridad de la biotecnología moderna (bioseguridad) 2006

[8] Assistance provided to Afghanistan, Albania, Algeria, Angola, Argentina, Armenia, Bangladesh, Benin, Botswana, Brazil, Bulgaria, Burkina faso, Cameroon, Central African Republic, China, Colombia, Costa Rica, Cuba, Democratic republic of the Congo, Ecuador, Egypt, Eritrea, Ethiopia, Georgia, Ghana, Guatemala, India,Indonesia, Iraq, Islamic Republic of Iran, Jamaica, Jordan, Kazakhstan, Kenya, Lebanon, Libya,Madagascar, Malaysia, Mali, Mauritius, Mexico, Mongolia, Morocco, Myanmar, Namibia, Niger, Nigeria, Pakistan, Peru, Qatar, Republic of Korea, Republic of Moldova, Romania, Saudi Arabia, Senegal, Sierra Leone, South Africa, Sri Lanka, Sudan, Syrian arab Republic, Thailand, Macedonia, Philippines, Tunisia, Turkey, Uganda , Ukraine, United Arab Emirates, Tanzania, uzbekistan, Viet nam, Yemen, Zambia, Zimbabwe.

symposia/seminars/workshops were organized mainly through the FAO/International Atomic Energy Agency's Agriculture and Biotechnology Laboratory[9].

12. FAO is facilitating the implementation of International Year of the Potato (IYP) in 2008, in collaboration with governments, UN agencies, IARCs and NGOs[10].The observance of IYP 2008 will provide an opportunity to raise awareness - among policy-makers, donors and the general public, especially young people and school children - of the importance of the potato in particular, and of agriculture in general, in addressing issues of global concern, such as food insecurity, malnutrition, poverty and threats to the environment

d) Gender and Knowledge Systems on PGRFA management

13. Several activities were undertaken on gender related aspects of PGRFA through the FAO LinKS project (Gender, Biodiversity and Local Knowledge Systems to Strengthen Agriculture and Rural Development) in Southern Africa funded by Government of Norway from 1998-2006 . The main objective was to highlight the dynamics of agro-biodiversity management in the context of food security, especially the rapid loss of PGRFA, and the different roles and responsibilities of rural men and women in the use and management of agro-biodiversity. The project developed tools and methodologies, case studies on PGRFA management and local diversity, training manuals on gender, biodiversity and local knowledge and guidelines and best practice on 'Community Diversity Seed Fairs'. In addition, several community diversity seed fairs were organized to raise awareness of local crop diversity and strengthened linkages among smallholder farmers, researchers, non-governmental organizations (NGOs), policy-makers and other agricultural stakeholders. It also created an opportunity for farmers to buy, sell and barter seeds, encourage of crop diversity and the sharing of local varieties among farmers for food security[11].

## III. STRENGTHENING PLANT BREEDING PROGRAMMES AND LAUNCHING OF THE GLOBAL PARTNERSHIP INITIATIVE FOR PLANT BREEDING CAPACITY BUILDING (GIPB)

14. FAO has been assessing national plant breeding and associated biotechnology capacity worldwide through a global survey to determine the needs and opportunities for defining development policies and strategies to strengthen national plant breeding capacity in developing countries and increase sustainable use of PGRFA. The survey has been ongoing since 2002, and so far completed for 51 countries including (21 countries in Africa, 7 in America, 16 in Asia and 7 in Europe)[12]. The surveys is in progress in the 18 countries (5 in Africa, 7 in America, 3 in Asia, 2 in Europe and one in Oceania) and in the pipeline for 22 other to be completed by July 2008. Following the survey a series of national and regional workshops are being organized to validate the survey data, identify gaps and opportunities in capacities and together with participating institutions, decision makers, international organizations and donors develop next steps or national and regional strategies for strengthen capacity to use plant genetic resources. So far 7 national workshops (Armenia, Azerbaijan, Albania, Bolivia, Georgia, Tajikistan, and Uzbekistan) and 2 regional level workshops have been held in Caucasus and Central Asia region. Progress is being made towards providing the full data and analysis of the national assessments on line by the end of the year The key areas identified for action through the multi-stakeholder approach are to:

[9] http://www-naweb.iaea.org/nafa/about-nafa/biotechnology-lab.html
[10] http://www.fao.org/ag/magazine/0611sp1.htm
[11] The main outputs and further information of the LinKS project are at www.fao.org/sd/GEBIO/HTM
[12] Albania, Algeria, Angola, Argentina, Armenia, Azerbaijan, Bangladesh, Bolivia, Bulgaria, Cameroon, Costa Rica, Czech Republic, Dominican Republic, Ecuador, Egypt, Ethiopia, Georgia, Ghana, Jordan, Kazakhstan, Kenya, Kyrgyz Republic, Lebanon, Macedonia, Malawi, Mali, Moldova, Mozambique, Namibia, Nicaragua, Níger, Nigeria, Oman, Pakistan, Philippines, Rwanda, Senegal, Sierra Leone, Slovak Republic, Slovenia, Sri Lanka, Sudan, Tajikistan, Thailand, Tunisia, Turkey, Uganda, Uzbekistan, Venezuela, Zambia, Zimbabwe.

i. Develop a national integrated strategy to boost sustainable management and use of PGR for increasing national food security.
ii. Enhance national plant breeding and associated biotechnology ability through provision of capacity building opportunities;
iii. Establish the relevant national regulatory frameworks for technology transfer and adherence to international standards.
iv. Facilitate access to information, new technologies and plant genetic resources;
v. Strengthen participatory approach of working with the local governments and institutes.

15. In 2007, two EC-funded projects have been started in Armenia and Georgia, in collaboration with ICARDA towards developing a National Study on *Elements of a National Integrated Strategy for Plant Genetic Resources Management and Use.* The studies are being undertaken through a participatory approach, cover all the relevant sectors related to the use of plant genetic resources, identify emerging issues and provide recommendations towards developing a national policy on plant genetic resources management and use for improving food security through a comprehensive integrated approach.

16. A number of technical training courses are organized in collaboration with national agriculture research institutes, PGRFA networks and CGIAR centres to promote participatory approaches in the breeding strategies. FAO has been supporting pre-breeding training programmes in member countries with the aim of broadening the genetic base of crops during pre-breeding phase. In 2006, in partnership with Brazil (EMBRAPA), and Procitropicos, a Instituto Interamericano de Cooperação para a Agricultura (IICA) network, carried out a pre-breeding training course for more than 100 participants from 10 Latin American countries. In 2007, in partnership with the International Rice Research Institute (IRRI), Philippines, FAO supported a rice breeding course focusing on pre-breeding activities. International Plant breeding course is being offered with emphasis on pre-breeding activities through the Institute of Plant Breeding for Developing Countries in Belgium. Four more courses in this area are planned for 2008 in partnership with national and international programmes as well as international networks and organizations.

17. A number of technical publications have been developed or under preparation in partnership with stakeholders and partners. The book on the application of marker assisted selection in plants, livestock, forestry and fishery, has been published in collaboration with the FAO Interdepartmental Working Group on Biotechnology[13]. A new publication on participatory breeding approached in under preparation that aims at strengthening national capacity to better utilize plant genetic resources through farmer participation in the varietal development process. A Thematic Study is under preparation for the Second Report of the State of the World's Plant Genetic Resources for Food and Agriculture on "Methodologies and Capacities for Crop Improvement and Base Broadening for the Sustainable Use of PGRFA, including new approaches to plant breeding and new biotechnologies". This study is reviewing state of art, trends and challenges and expected advancements in methodologies and technologies applications for identification, conservation and use of PGRFA.

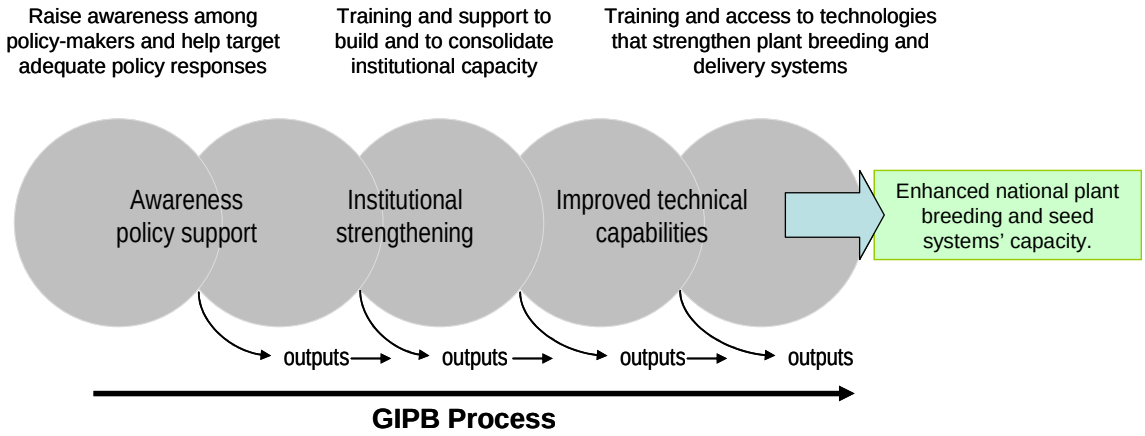
18. The national assessments indicated that there was a definite decline in national plant breeding programmers and capacities due to range of reasons. Based on the results of the national assessment and taking into account several international declarations and national and international efforts, FAO with partners launched the *Global Partnership Initiative for Plant*

[13] Marker-Assisted Selection: Current status and future perspectives in crops, livestock, forestry and fish 2007, edited by E Guimarães, J. Ruane, B. Scherf, A. Sonnino and J. Dargie http://www.fao.org/docrep/010/a1120e/a1120e00.htm

*Breeding Capacity Building (GIPB)* in Madrid, in June 2006, at the First Governing Body Meeting of the International Treaty[12, 13]. GIPB aims at enhancing the capacity of developing countries to improve crops for food security and sustainable development through better plant breeding and delivery systems. The five main thrusts of GIPB are:

i. Provision of policy guidance on plant breeding and associated biotechnology capacity building strategy to policy-makers in developing countries to help allocate resources to strengthen and sustain capacity to use plant genetic resources for food and agriculture;
ii. Provision of training in plant breeding and related biotechnology capacities relevant to utilization of plant genetic resources;
iii. Facilitation of access to technologies in the form of tools, methodologies, know how and facilities to finding genetic solutions to crop productivity constraints;
iv. Facilitation of access to plant genetic resources from public and private core collections in gene banks and in breeding programmes which could benefit developing country breeding programmes; and
v. Sharing of information among GIPB partners in order to provide access to newly available information to national policy makers and breeders in developing country programmes[14].

The ultimate goal of GIPB, is to consolidate, enhanced sustainable national plant breeding systems through well structured and aligned efforts as illustrated here below: (Fig1)




## IV. DEVELOPMENT OF EFFECTIVE SEED SYSTEMS

19. FAO has a long history of working in seeds in support of sustainable use PGRFA. The main objective is to improve food security, through facilitating a better access to quality seeds of a wide diversity of crops and varieties adapted to local conditions and farmer preferences. Activities have included include seed sector reviews, seed policy development, formulation of seed legislation and regulations, capacity building for seed production, biotechnology, biosafety, quality assurance, seed rehabilitation and improving seed security. These activities are carried out through projects, technical assistance and training workshop at national, sub-regional and regional levels.

[14] Additional information can be found at GIPB webpage http://km.fao.org/gipb/

20. National or sub-national seed programme development for seed production of high yielding varieties have been ongoing in Sierra Leone, Libya, Syria, Albania, North Korea, Iraq, Afghanistan, Sudan, Myanmar and Lesotho. In Nigeria a seed programme is being implemented within the context of a Special Project for Food Security (SPFS). Community seed security projects are operating in Ethiopia, Cameroon, Sri Lanka and Malawi that facilitate the production of high yielding varieties at the community level. Support is being provided to Tanzania, Mozambique and Mali on on-farm management of PGRFA including seed. Capacity building particularly focus on the seed services is being or has been undertaken in Iran, Uzbekistan, Afghanistan, Democratic Republic of Congo, North Korea Côte d'Ivoire and Sierra Leone. Regional and sub-regional activities and advanced technologies for GM seed detection were undertaken with ISTA. The Manual of Seed Handling was updated and published in 2006[15].

21. On the request of African Union, FAO is helping to develop an '*Africa Seed and Biotechnology Programme* ' for a strategic framework for the development of efficient and integrated seed systems by strengthening continental, regional and national policies and capacity for germplasm conservation, variety improvement, seed production and extension, improving seed quality assurance procedures, strengthening linkages between formal and informal sectors and promoting national seed industries

22. A project entitled "*Using markets to promote the sustainable utilization of crop genetic resources*" has been launched to analyze the effect of policies and regulations on the level and content of crop genetic diversity accessible to farmers via seed sales in markets. The project is being carried out in Mali, Kenya, Bolivia, Mexico and India and the main components are research, capacity building and policy dialogue. Country case studies are being generated to provide insights into how seed sector regulation and institutional development affects the diversity of crop genetic resources in seed supply chains and how this affects farmers' utilization of crop genetic resources on farm. The ultimate goal of the project is to have an impact on policy making to improve national capacity to promote the sustainable utilization of crop genetic resources. The project will be completed in 2008 and is funded by the FAO Netherlands Partnership Program, the FAO Norway Partnership Program and FAO Regular Program[16]. In addition, a community based assessment tool is being developed based on the case studies conducted in Ethiopia on the role of local markets in exchange of crop diversity. The tool will be tested in a number of African countries. A case study is also being conducted in Laos focused on using a sustainable livelihoods approach to improve access of small scale Laotian farmers to seeds and PGRFA.

23. Viable seed Information systems on availability, adaptability and other characteristics of commercial crop varieties and landraces are a vital element in the planning of actions related to the restoration of seed systems after disaster situations, including the identification of appropriate seed material for reintroduction. In this regard, FAO is continuing cooperation with existing seed security networks in Africa for preparing inventories of commercial and local varieties and is exploring the extension of this in the rest of the continent. Information on a cropping calendar is being compiled for Asian, Sub-Saharan African, North African/Near East, Asia-Pacific and Central Asia, the Caucuses and Caribbean regions.

24. Seed relief and rehabilitation related activities increased due to the incidence of emergency situations stemming throughout the world from natural disasters, such as droughts and floods, as well as from civil wars and ethnic conflicts. Some countries which seed relief emergency operations have been supported in recent years are Liberia, Sudan, DRC, Cote D'Ivoire, Burundi, Afghanistan, Pakistan, Indonesia, and Iraq Haiti. A code of conduct is being developed for the seed components of emergency operations which is including, *inter alia*

[15] Manual of Seed Handling in Gene Banks, 2006 K. Rao, Jhanses, M Ehsan, KGhosh, D Nowell, and M Larinde, Bioversity, FAO and ILRI. ftp://ftp.fao.org/docrep/fao/009/ah803e/ah803e00.pdf

[16] More information at http://www.fao.org/es/esa/en/wkshp_01.htm

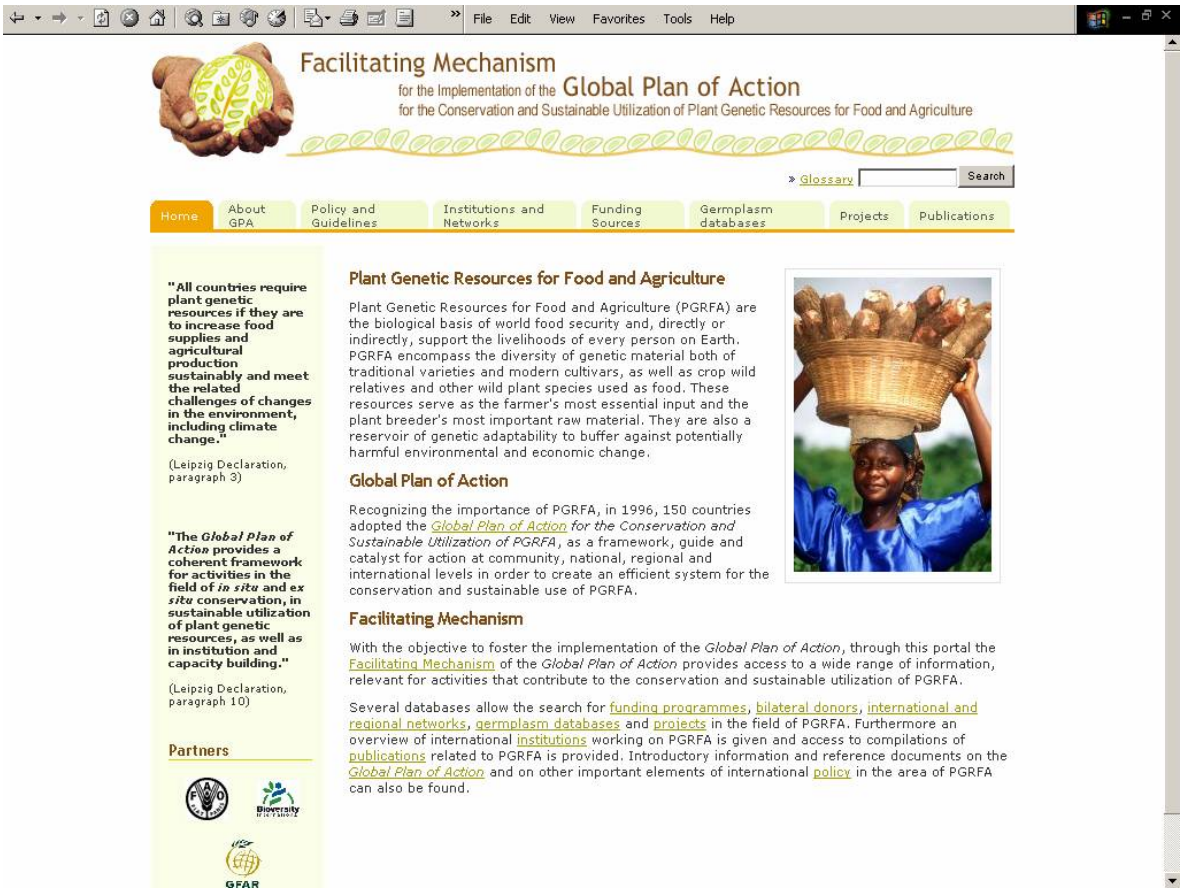
concerns about the use of local PGRFA rather than foreign materials. With partners in Emergency Operations, initiatives are underway to strengthen seed system-related responses and preparedness for, and effective and sustainable response to food and agricultural emergencies. These situations are also critical in the loss of PGRFA.

## V FACILITATING MECHANISM FOR THE IMPLEMENTATION OF THE GLOBAL PLAN OF ACTION (www.globalplanofaction.org)

25. Through the Facilitating Mechanism for the implementation of the GPA, a comprehensive web-based information portal on conservation and sustainable utilization of PGRFA has been developed by FAO in cooperation with its partners Bioversity International and the Global Forum for Agricultural Research (GFAR). It was launched in June 2007 and provides a 'one stop shop' for a wide range of technical and financial information sources on PGRFA, (See Fig 2). The main thematic areas covered by the web portal are[17]:

i. potential funding programmes in the field of PGRFA
ii. PGRFA policy and guidelines
iii. ongoing projects on conservation and sustainable utilization of PGRFA.
iv. international institutions and networks working on PGRFA
v. germplasm databases
vi. publications

FIG.2




[17] More information is provided in IT/GB-2/07/Inf.7