Towards a Global Information System on Plant Genetic Resources for Food and Agriculture

I. Introduction

1.   The International Treaty on Plant Genetic Resources for Food and Agriculture (PGRFA), agreed by the FAO Conference in November 2001, refers to the development of a mechanism to disseminate information on PGRFA. In particular, Article 17 includes the following provisions:

17.1 The Contracting Parties shall cooperate to develop and strengthen a global information system to facilitate the exchange of information, based on existing information systems, on scientific, technical and environmental matters related to plant genetic resources for food and agriculture, with the expectation that such exchange of information will contribute to the sharing of benefits by making information on plant genetic resources for food and agriculture available to all Contracting Parties. In developing the Global Information System, cooperation will be sought with the Clearing House Mechanism of the Convention on Biological Diversity.

17.2 Based on notification by the Contracting Parties, early warning should be provided about hazards that threaten the efficient maintenance of plant genetic resources for food and agriculture, with a view to safeguarding the material.

17.3 The Contracting Parties shall cooperate with the Commission on Genetic Resources for Food and Agriculture of the FAO in its periodic reassessment of the state of the world's plant genetic resources for food and agriculture in order to facilitate the updating of the rolling Global Plan of Action referred to in Article 14.

2.   In addition, Articles 5 and 6 spell out the commitments of Contracting Parties to ensure an integrated approach to the exploration, conservation and sustainable use of PGRFA. Such commitments, which widely reflect the 20 priority activity areas of the Global Plan of Action (GPA), together with those related to the establishment of, and participation in the Multilateral System of Access and Benefit-Sharing (Part III of the Treaty) have direct implications with respect to information handling and exchange.

3.   Article 13.2 (a) indicates the type of information to be exchanged among the Parties, as part of the benefit-sharing arising under the mechanism of the Multilateral System including, "catalogues and inventories, information on technologies, results of technical, scientific and socio-economic research, including characterization, evaluation and utilization."

4.   A Global Information System for PGRFA through the effective and open sharing of information will facilitate access to and sustainable use of PGRFA, exchange of material and the sharing of benefits.

5.   An Informal Consultation hosted by FAO, Rome 9-10 May 2002, provided an opportunity for preliminary discussions concerning the development of a Global Information System on PGRFA involving major players in the information and PGRFA sector. The list of participants in included in the Annex to this document.

6.   The objective of the Consultation was contributing to the overall discussion towards the development and strengthening of a Global Information System to be based on existing information systems, in line with Article 17 of the International Treaty.

7.   This document in Section II briefly highlights the results concerning information of two surveys for monitoring the implementation of the Global Plan of Action, and, in Sections III and IV, presents a summary of the considerations and recommendations, which resulted from the Informal

Consultation, based on the insights into the nature, purpose, objectives and activities – in the context of information – of the organisations or sectors represented.

II.   Survey Results

8.   FAO conducted a survey of GPA implementation in 1998 through a series of Regional Meetings, and subsequently in 2000 by means of a questionnaire.

9.   The 1998 survey reflected generally modest national commitment to PGRFA activities and a lack of quantitative indicators and assessment. National assessments identified major deficiencies in funding and in information (and communication) equipment, systems (especially national) integration specific information services (databases and subject matter) and in information on local plant communities. Priority needs include: development of geographic information systems; information exchange on techniques, plant communities, ethics and commercialization; national information systems and training in systems; monitoring and early warning systems; and improvement in the quality and quantity of information available.

10.   The 2000 survey showed that countries were attaching greater priority to GPA activities related to the establishment of a comprehensive information system. A number of PGRFA information systems, mainly concerned with conservation, had been adopted since 1998. Few of these had a national dimension. Only 11% of the surveyed countries in Africa and Latin America had a nation-wide information system on PGRFA, while in Europe and Asia 47% of the countries had a national system.

11.   Training in PGRFA data management had been provided in 55 countries world-wide, of which 10 were in Africa, 11 in Asia, 13 in Latin America, 13 in Europe, 5 in the Near East, 2 in the Pacific and 1 in North America.

12.   The survey revealed that 57% of countries had access to international PGRFA information systems, but access varied greatly between the regions. In North America, all countries had access, in Europe 81%, and in Africa and the Pacific only 36% and 25%, respectively.

13.   There has been little or no significant increase or improvement in developing monitoring mechanisms for the sustainable use of PGRFA or for the loss of *ex situ* and *in situ* genetic resources since 1998. *Ex situ* monitoring still outnumbered *in situ* mechanisms.

III. General Considerations and Recommendations for the Development of a Global Information System on PGRFA

14.   The Informal Consultation organized by FAO made a number of general considerations and recommendations for the development of a Global Information System on Plant Genetic Resources for Food and Agriculture.

General Considerations

15.   While significant progress has been made in advancing a coherent Global Information System for PGRFA, more efforts are required to ensure the system will provide the necessary support for the GPA and the International Treaty.

16.   Building a Global Information System under the terms of the Treaty, requires an inventory of existing relevant information systems, including some data mapping, and the identification of the organisations that manage these systems. In addition, sound design and development of a Global Information System requires analysis to determine:

(i)   the primary users of a Global Information System;
(ii)   the user's requirements of the System; and
(iii)   the range of anticipated functions of the System.

Primary users of a Global Information System

17.   The primary users and beneficiaries of a Global Information System on PGRFA are many and diverse, and would include:

- nominated officials (focal points) responsible for PGRFA issues in a particular country;
- policy makers and scientific and technical services in agriculture, education, natural resources, environment and other sectors;
- agricultural development agencies and other civil society organisations;
- collection managers and curators, plant breeders, farmers and gardeners;
- other researchers working in the field of genetic resources; and
- the general public/consumers.

User's requirements of a Global Information System

18.   In terms of user requirements, the following should be taken into consideration to assist the effective implementation of the International Treaty.

a. *Providing information on PGRFA and agricultural biodiversity*, *inter alia* for conservation, plant breeding, broadening the genetic base of crop and increasing the range of genetic diversity available to farmers.

b. *Facilitating the exchange of information on scientific, technical and environmental matters related to PGRFA for benefit of all contracting parties*, not least through improved accessibility to PGRFA cross-cutting issues addressed in both structured and unstructured information (i.e. in data-bases and publications, respectively).

c. *Early warning of depletion/erosion of PGRFA*. Article 17.2 of the treaty specifically mentions provision of early warning of threats to the efficient maintenance of plant genetic resources. Examples of the types of risk might include:

- *displacement of farmers' varieties by modern varieties* and *loss of landraces*;

- *destruction of habitats of wild relatives and of agricultural landscapes and traditional production systems*;

- *breakdown of* in *or* ex situ *collections and on-farm conservation and sustainable use practices*.

The contribution of a Global Information System for PGRFA to early warning mechanisms could be through effective support for methodologies by enabling and facilitating monitoring of bio-indicators relating to loss of landraces and monitoring qualitative and quantitative indicators in sensitive locations of wild habitats.

d. *Facilitate updating and monitoring of the rolling GPA* - The Global Plan of Action addresses twenty priority activity areas defined by Member Countries. A methodology for monitoring the implementation of the Global Plan of Action has been developed based on a set of quantitative and qualitative indicators for each of the 20 priority activity areas (CGRFA-9/02/07). This methodology, which is being tested in 10-15 countries, aims to increase countries' capacity in handling GPA-related information and enhance stakeholders' involvement in the monitoring process. It includes "gap analysis" by monitoring what has and

is being done and what needs to be done, not least in the fields of conservation and sustainable use of PGRFA. It may provide a basis for overall system design.

Since the adoption of the Global Plan of Action, its implementation has been monitored through surveys. Clearly the accuracy and scope of monitoring would benefit a number of countries if they had access to an interactive system which allows them to update returns on their Plan's related activities on-line, or using downloadable electronic forms.

There would be two incentives for taking up such a system. Firstly, the information flow could be continuous. Secondly, the system could act as a shop window of PGRFA activities covered by the GPA. By directly updating the system or by sending batch uploads to the system, countries would be able to present an up-to-date picture. In the case of developing countries this could help to identify funding needs for donor support and assist in the development of aid-funded projects.

e. *Facilitate and strengthen capacity building* - This might especially take the form of tools, training materials and information services to support the establishment and/or development of national programmes for PGRFA through institutional strengthening and human resources development. It might include identifying national, regional and global needs and formulating, promoting and implementing PGRFA projects.

19.   User requirements could be facilitated through a range of anticipated functions of the System including:

- retrieving information on specific thematic areas;
- downloading documents and data-sets for conducting local analyses;
- uploading documents and data-sets for publishing results of PGRFA research and development;
- accessing guidelines and methodologies;
- downloading tools for PGRFA information management, risk analysis or project formulation.

Needs, Challenges and Opportunities

20.   The monitoring of the implementation of the Global Plan of Action has highlighted the need for facilitating the exchange of data and information to ensure the conservation and sustainable utilization of PGRFA. The Global Information System on PGRFA, as foreseen in the Treaty, specifically addresses this need. Its development would involve at least two major exercises viz:

(i)   *Pooling of Existing Information Systems*

This would involve bringing together relevant information systems/services in a manner and/or by means of a mechanism, to allow access the corporate information sources (i.e. the joint information holdings of these information systems/service) and enable and facilitate the exchange of information between these systems/services, and others.

Important sources of structured and unstructured information include those created by the Contracting Parties. Relevant international, regional and national sources in the public sector include those of organisations such as the CGIAR Institutes, the CBD (CHM), ECP/GR, IPGRI, EcoPort, OECD, UPOV and FAO. Private sector sources may include such information as that on seed availability held by FIS and ASSINSEL, whilst various regional organizations and others within civil society may also be contributors.

Problems of unnecessary overlapping, gaps, information uses, incompatibilities and harmonization together with time and cost commitments can be anticipated in forming and fashioning the best possible Global Information System on PGRFA.

The effectiveness of pooling would depend the ease of access to the corporate resources available to the end-user and would be greatly facilitated by the adoption of common basic standards (*lingua franca*).

Individual information systems could be made available to the end-users by means of a Common Portal, including a dynamic directory of information sources organised under appropriate thematic categories. Such a Common Portal could be set up and monitored under the guidance of an expert group to ensure that its form and function effectively meets current and evolving needs.

(ii)   *Building Capacity in Information Management*

This will require the establishment (largely within existing infrastructures) of national mechanisms and building some functions for the gathering, storage, dissemination and exchange of PGRFA information and knowledge in those countries (largely developing nations) presently lacking such mechanisms, and/or strengthening existing mechanisms in these countries as necessary.

In the case of information on PGRFA, what is known and recorded is not always assimilated into and used through any formal information flow system, where it might benefit from the expertise of other stakeholders in terms of evaluation and transfer of knowledge to the end-users. Much more attention needs to be given *inter alia* to gathering information of use to farmers.

To serve its various purposes in support of sustainable agricultural development, food security, conservation and sustainable use of the environment and biodiversity – a national information service needs to be dynamic – ever increasing and improving and developing along with new technologies to be inter-active and linked to other sources. It follows that the system/service, which is also essential for assuring equitable sharing of benefits deriving from PGRFA, must be permanent and needs to be sustained by governments.

The type of service required would need to enable information flow, albeit frequently diffuse and non-linear, in both directions from the wild and farmers' fields through farmers' organizations and the extension sector to the national genebanks and agriculture research centres and onwards to executive and decision making levels of government. It would need to draw in data and knowledge from not only the agricultural sector but also natural resources more widely and the environment, as well as from private/commercial organizations, eg. seed providers, and civil society organizations.

The type of information mechanism envisaged to provide the tools for management of information, needs to be created without any significant extra costs to governments. Models for such mechanisms (dedicated to other activities) already exist, which confirm the validity and effectiveness of this approach.

National Committees for PGRFA and designated Focal Points in individual countries, as well as the institutional entities mentioned above, are all part of national institutional mechanisms and infrastructures. In many developing countries relevant institutes are not as well resourced as necessary. Also individuals involved are not adequately trained in gathering, characterizing, evaluating, processing, storing, disseminating and exchanging information. The existence of the "digital divide" i.e. of the have's and have-nots of access to the Internet was recognised as

being a continuing impediment to access to information in many parts of the developing world.

Capacity building is needed to remove these barriers to information. The existing infrastructures, which are sustained by local governments, offer opportunities for donor-funded programmes on conservation and utilization of PGRFA through institutional strengthening and human resource development programmes. As an alternative to the Internet, a Global Information System on PGRFA might explore how to offer other data delivery services, such as the provision of thematic data sets and documents extracted from existing information systems, via hardcopies and/or CD Roms.

IV.   Paving the way towards the development of a Global Information System

21.   In summary, regardless of what mechanisms are used to create a Global Information System on PGRFA, some means of pooling or connecting existing information systems is essential, and in countries devoid of any or adequate information infrastructure, some programmes for strengthening institutions, training staff and establishing flow and exchange partnerships at national and sub-regional levels are vital.

22.   A Global Information System on PGRFA, as envisaged under Article 17 of the International Treaty, would consist of a decentralised network of systems rather than one single system, with equally decentralised management. It would be a "community of practice" with its information providers and partners being diverse and disparate in the same way as its users. The coming together of this community in terms of access to information sources would evolve through a Common Portal, set-up and monitored by the partners to ensure its effectiveness in meeting users needs.

23.   The process of developing a Global Information System will take due time and effort. Preparatory activities for paving the way towards its development would include collaboration programmes by partnerships of key organisations to identify and characterize the full range of existing information systems and partners, end-user needs, information gaps and new resources needed to satisfy needs and fill gaps.

24.   "Pooling" of existing information systems requires the adoption of common basic standards and a code of conduct with clearly stated principles, to encourage sharing and exchange of information by providers and users.

25.   To accomplish all this, it is imperative at the very beginning to have the benefit of the expertise, experience, good sense and vision of individual key stakeholders and to draw on the wisdom of their corporate deliberations. This may be achievable through a series of systematic consultations involving stakeholders and governments to address issues pertinent to advancing the harmonious and synergistic development of a Global Information System on PGRFA, under the umbrella of World Information and Early Warning System on PGRFA (WIEWS) and the guidance of the Governing Body of the International Treaty on PGRFA, in the *interim*, the Commission on Genetic Resources for Food and Agriculture, acting as Interim Committee for the Treaty.

Annex

Informal Consultation on a Global Information System on PGRFA

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