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Unidas
para la
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y la
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PROGRESS REPORT ON THE WORLD INFORMATION AND EARLY WARNING SYSTEM ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

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PROGRESS REPORT ON THE WORLD INFORMATION AND EARLY WARNING SYSTEM ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

I. Introduction

1. The World Information and Early Warning System on Plant Genetic Resources (WIEWS) was established in conformity with Articles 7.1 (e) and (f)¹ of the International Undertaking. The WIEWS collects, disseminates and facilitates the exchange of data and information on plant genetic resources conservation and utilization. It is also intended to alert the international community regarding hazards threatening the loss of *ex situ* and *in situ* plant genetic resources for food and agriculture.
2. During its Seventh Session, in 1997, the Commission on Genetic Resources for Food and Agriculture recalled a recommendation of the Fourth International Technical Conference on Plant Genetic Resources (Leipzig, Germany, 1996), "that the efficiency, purpose and value of the World Information and Early Warning System on Plant Genetic Resources for Food and Agriculture (WIEWS) be evaluated with a view to improving its performance, taking advantage of the recent developments in information management technologies and concepts". The Commission "welcomed the arrangements made by the Secretariat for an external review of the system, which would be undertaken in the latter part of 1997. The Commission recommended that the future of the WIEWS should be seen in the light of existing information systems, such as national germplasm systems, FAO's World Agricultural Information Centre (WAICENT) and the Consultative Group on International Agricultural Research's SINGER,² and await the results of the review".
3. This progress report focuses on the external review, and outlines the state of development of the WIEWS and plans for its further development in this context. The final report of the review is available to the Commission on request.

II. External Review of the World Information Early Warning System (WIEWS)

4. The review was carried out by a panel of three experts, who met in Rome in September 1997. By its terms of reference, the panel assessed the relevance of the objectives of the WIEWS; the coherence and appropriateness of its scope and design; the efficiency of its operation and management; the nature, scope and quality of its achievements to date and the identification of factors facilitating or impeding its effectiveness and efficiency. The panel was to make recommendations for the future development of the System, in order to ensure its relevance, utility and effectiveness.
5. The Panel accordingly addressed all the WIEWS activities related to the gathering, synthesis and dissemination of information on plant genetic resources for food and agriculture, through the WIEWS. The Panel examined the historical evolution of the information system in the light of its

¹ (e) "a global information system, under the coordination of FAO, relating to plant genetic resources maintained in the afore-mentioned collections, and linked to systems established at the national, sub-regional and regional levels, will be developed on the basis of relevant arrangements that already exist;" (f) "early warning will be given to FAO, or to any institution designated by FAO, of any hazards that threaten the efficient maintenance and operation of a centre, with a view to prompt international action to safeguard the material maintained by the centre."

² System-Wide Information Network for Genetic Resources.

objectives; the role and organization of the unit in FAO managing the WIEWS; relationships with other relevant programmes in FAO; collaboration with other international organizations; and software and data produced and publications, including those produced in collaboration with other programmes, in and outside FAO.

The objectives

6. In examining the objectives of the WIEWS, the Panel concluded that the programme remains relevant within the context of the Food and Agriculture Organization of the United Nations mandate, the work of the Commission itself and FAO's collaboration with the Secretariat of the Convention on Biological Diversity and the International Plant Genetic Resources Institute. It noted that several activities within other departments of FAO were relevant to the WIEWS, and recommended that there be greater cooperation with other in-house activities related to plant genetic resources for food and agriculture, and in strengthening FAO's information dissemination.

The Early Warning Mechanism/System

7. In regard to the Early Warning Mechanism/System, the panel reported that, while there is provision for documentation of potential threats by national focal points, there are no agreed threshold levels, or procedures to monitor and evaluate the threats. The Panel considered that this was not the fault of the programme, but resulted from inadequate scientific research and policy guidance. The panel noted that there is currently no mechanism for tracking actions that were taken when threats have been identified. It therefore recommended several steps towards an efficient Early Warning Mechanism:

- scientific research is needed to identify data parameters and threat thresholds;
- countries should implement systems to gather data on these parameters continuously;
- the international community should develop policies and procedures to take action once threats have been identified;
- FAO, in accordance with its mandate, and in coordination with other scientific institutions particularly IPGRI, should take a leadership role in promoting research related to loss of plant genetic resources diversity.

Coherence and scope of the WIEWS

8. The Panel noted that the WIEWS lacks coherence and is not adequately integrated. It identified, in particular, the need for a data model that shows how separate data sets are related to each other, and to external systems, and how FAO should participate in the flow of data through the global community. The Panel stressed the need for Member Countries to make a strong commitment to providing data on a regular basis, in order to maintain the system current. International Agricultural Research Centres holding *ex situ* collections under the auspices of FAO should take the leadership, and set an example, by providing regular summaries of their collections; regional *ex situ* collections, regional plant genetic resources networks and crop-oriented networks should also collaborate and co-ordinate activities, in order to facilitate the flow of data. Moreover, the Panel reported that the question of decentralization needed to be re-examined, in the context of the recent advances in computer and telecommunications technology.

Efficiency of operations, and achievements of the System

9. The Panel reported that the programme was very efficient, and had done much with minimal staff and resources. The WIEWS had gathered data from many sources, and established a network of country correspondents, in order to provide data and take part in the system development. Moreover, the WIEWS had made a valuable contribution, in analysing the Country Reports on plant genetic resources for food and agriculture prepared in the context of the Fourth International Technical Conference, and had contributed data to *Report on the State of the World's Plant Genetic Resources for Food and Agriculture*. It recognized that the WIEWS had provided assistance to researchers in many aspects of plant genetic resources for food and agriculture and it had developed software to share information. The panel noted that the WIEWS' potential user-base is wide and includes:

- breeders and other scientists interested in locating collections and identifying the material they hold;
- national programme administrators considering areas of potential cooperation with other nations, or assessing the needs for further exploration; and
- regional and international organizations producing statistics, and wishing to contact relevant institutions, organize discussion groups, and exchange information on regional and global issues.

Factors impeding the WIEWS' effectiveness and efficiency

10. The panel noted that the primary factors impeding the programme were limited resources, the lack of input and poor data from Member Countries, and a focus on software of limited utility. The programme is negatively affected by missing, incomplete, and out-of-date data, and this can only be remedied by greater commitment and participation by the Member Countries.

Future development

11. The panel concluded that FAO needs to improve the collection of current data from existing electronic and other sources, using WIEWS correspondents, and make the WIEWS data available on the Internet, as well as to build links to other international, regional, and national databases on plant genetic resources for food and agriculture. It noted the need to integrate WIEWS into FAO's corporate World Agricultural Information Centre (WAICENT), and develop better coordination and collaboration inside and outside FAO. The Panel recommended improving the stand-alone WIEWS software, which can be used by non-Internet clients.

III. Development of the WIEWS since the External Review

Activities

- The WIEWS has taken a number of steps to address the Panel's recommendations: FAO launched the WIEWS on the Internet through WAICENT in April 1998, to provide information on national programmes on conservation and utilisation of plant genetic resources for food and agriculture (<http://apps.fao.org:8080/wiews.new/>). The system is configured as a number of databases with information retrieval software, including map presentation of the location of 1400 of the world's *ex situ* plant genetic resources collections. The Country Profile Module presents a register of institutions involved in plant genetic resources for food and

agriculture, with a list of key scientists in each institution, and a list of the crops and activities they deal with. In each country profile, all institutions are hierarchically identified in the structure of the national plant genetic resources programme. The *Ex Situ* Collections Meta-database provides a summary record of each collection's holdings. The data include: species name and number of accessions; type of material held (wild, landrace, advanced cultivar, breeder's material, mutants, *etc.*); the geographical distribution of accessions; and place of safety duplication. For each collection, the technical storage parameters (such as temperature, humidity, moisture-content and type of container) are recorded. Descriptor lists and coding systems have been harmonized throughout the Multi-Crop Passport Descriptor List, developed in co-operation with IPGRI. An Update function in the WIEWS system was implemented at the beginning of 1999. This provides a facility for the direct updating of data by the end-user, through the Internet, which assures country ownership of the data provided.

- Decentralization of the WIEWS has been pursued through links to national Internet-based documentation systems, in order to ensure a better integration of data.
- In order to improve data exchange, a network of WIEWS correspondents is being established. Sixty-five countries had nominated WIEWS country correspondents by the end of 1998. Three regional meetings were organized in order to strengthen network activities for West and Central Africa, held in Cameroon; for South/South-East Asia, held in India; for West Asia and North Africa, held in Morocco. The Latin American and the Caribbean meeting will be held in the later part of 1999. Work is currently underway to develop the WIEWS system, in the light of regional platforms and databases, and closer cooperation between the WIEWS and FAO crop-related networks has been established. The WIEWS system has been linked to the CBD's Clearing House Mechanism. The decentralization of the WIEWS has been implemented, so-called "hot links" to national and institutional plant genetic resources documentation systems are provided on the Internet, when these exists. The development of the Early Warning Module of WIEWS is underway, in the form of reports on possible genetic erosion in the natural environments and *ex situ* collections.
- A mechanism and procedures have been agreed, in the framework of the further development of the SINGER system (<http://noc1.cgiar.org>), so as to provide the WIEWS system with updated summary information on *ex situ* collections of the CGIAR.
- In response to the recommendation that there be greater cooperation with other relevant data-systems in FAO, the WIEWS has been linked to the Global Plant Protection Information System and to the Crop Information System (<http://pppis.fao.org>). References to botanical species and to the location of germplasm and institutions have been harmonized.

IV. Guidance Requested from the Commission

12. The External Review raised a number of matters, that it felt required clarification by the Commission:

- Further clarification as to whether the WIEWS should develop summary information about all plant genetic resources for food and agriculture throughout the world; or only on material held in national, regional, and international collections and designated *in situ* locations; and what level of detail there should be about accessions in *ex situ* collections. Such clarification will help define what constitutes the official data needed from countries.

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- The World Information System was developed to comply with the Commission's request for a database of databases, to monitor the activities in the documentation and dissemination of information. The Seed Information System, Cultivar Database, and the Database of databases were devised in this context: How should objectives and data requirements be updated in the light of changing technology?
 - Maintaining an up-to-date list of persons active in plant genetic resources for food and agriculture is important, and replicated by many information systems. However, tracking changes, detecting duplicates, and maintaining computer programmes in both FAO's and national governments' systems is costly: How could it be managed more efficiently?
 - In the context of the Early Warning Mechanism, the Commission requested FAO to develop a means to record and track threats to plant genetic resources, so that the Commission be notified and actions could be taken to preserve genetic diversity. As currently implemented, the Early Warning Mechanism requires considerable data-input for each threat, including detailed information on facilities, seed management, *ex situ* collection personnel and the topology and climate of *in situ* locations. What scientific advice is required to rationalize such data-requirements?
 - Further clarification is sought as to what kind and level of summary information on national programmes, *ex situ* conditions, and national capacities should be gathered at national level .
 - The Seed Information System, which deals with cultivars in production, contains useful information but many of the varieties documented are commercial, and would not be in national collections: How best can such data be integrated with summary information about national programmes? In this context, more information is needed on what commercial ventures, countries, and international organizations (such as OECD) are planning, in order to avoid duplication.