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**Item 5 of the Draft Provisional Agenda**

# COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

## WORKING GROUP ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

First Session

Rome, 2 - 4 July 2001

# 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

## 1. INTRODUCTION

1. The World Information and Early Warning System (WIEWS) on Plant Genetic Resources for Food and Agriculture (PGRFA), was established pursuant to Articles 7.1 (e) and (f) of the International Undertaking on Plant Genetic Resources to foster the exchange of information among member countries, to support the periodic assessment of the *State of the World's PGRFA* and to alert the international community about threats of erosion of PGRFA. Since its establishment, WIEWS has been developed under the guidance of the Commission on Genetic Resources for Food and Agriculture and has been part of the Commission's *Global System on Plant Genetic Resources.*

2. Following a recommendation of the Fourth International Technical Conference on Plant Genetic Resources,[1] reiterated by the Commission at its Seventh Session,[2] an external review of WIEWS was carried out in 1997. The review, and the follow-up actions undertaken by the Secretariat, were presented to the Eighth Session of the Commission.[3] The review itself concluded that WIEWS was relevant both to the work of the Commission, and to FAO's collaboration with the Secretariat of the Convention on Biological Diversity (CBD) and with the International Plant Genetic Resources Institute (IPGRI). It urged the Secretariat to improve the integration of the System with other in-house PGRFA-related activities, and to enhance data-accessibility, taking advantage of Internet technology. It also stressed the need for member countries to collaborate actively, through officially-nominated correspondents, in periodically providing current data to WIEWS.

3. In response to these recommendations, a web-based application that makes WIEWS available on the Internet, was released in April 1998, through the FAO World Agricultural Information Centre (WAICENT). The application, designed as a textual and maps-based information retrieval tool, improved accessibility to the information contained in WIEWS at that time, such as on *ex situ* collections; germplasm-holding institutions and contacts; storage facilities; and quantitative information on germplasm holdings at species level. In early 1999, a trial remote update function was introduced, in order to allow users to directly manage their own information via an Internet connection to the WIEWS databases.

4. In addition, a global information network of WIEWS correspondents was initiated in 1998, to improve PGRFA information exchange, and regional meetings were held in West and Central Africa, South/South-East Asia, and West Asia and North Africa to strengthen network activities and build capacity in the use of the System.

## 2. DEVELOPMENT ACTIVITIES SINCE THE LAST PROGRESS REPORT

5. WIEWS' role as an information tool within the Commission's *Global System on PGRFA* requires that it be continuously adapted to the changing needs of national PGRFA programmes and of the Commission. The main thrust, since the last report to the Commission, has been to

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1 *Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture*, para. 287.

2 CGRFA-7/97/REP, para. 23.

3 CGRFA-8/99/6, para. 4-11.

develop, test and release a new web-based interface,[4] designed to be (i) flexible and able to be broadened without major restructuring; (ii) directly responsive to the governmental officials providing information, by giving them direct control over their own data; and (iii) integrated within on-going national and international PGRFA information and knowledge delivery and exchange processes.

6. The development of WIEWS over the past biennium has focused on improving five main issues: data content, data accessibility, data and system integration, data consistency and system sustainability, following the discussions on WIEWS at the last regular session of the Commission.[5]

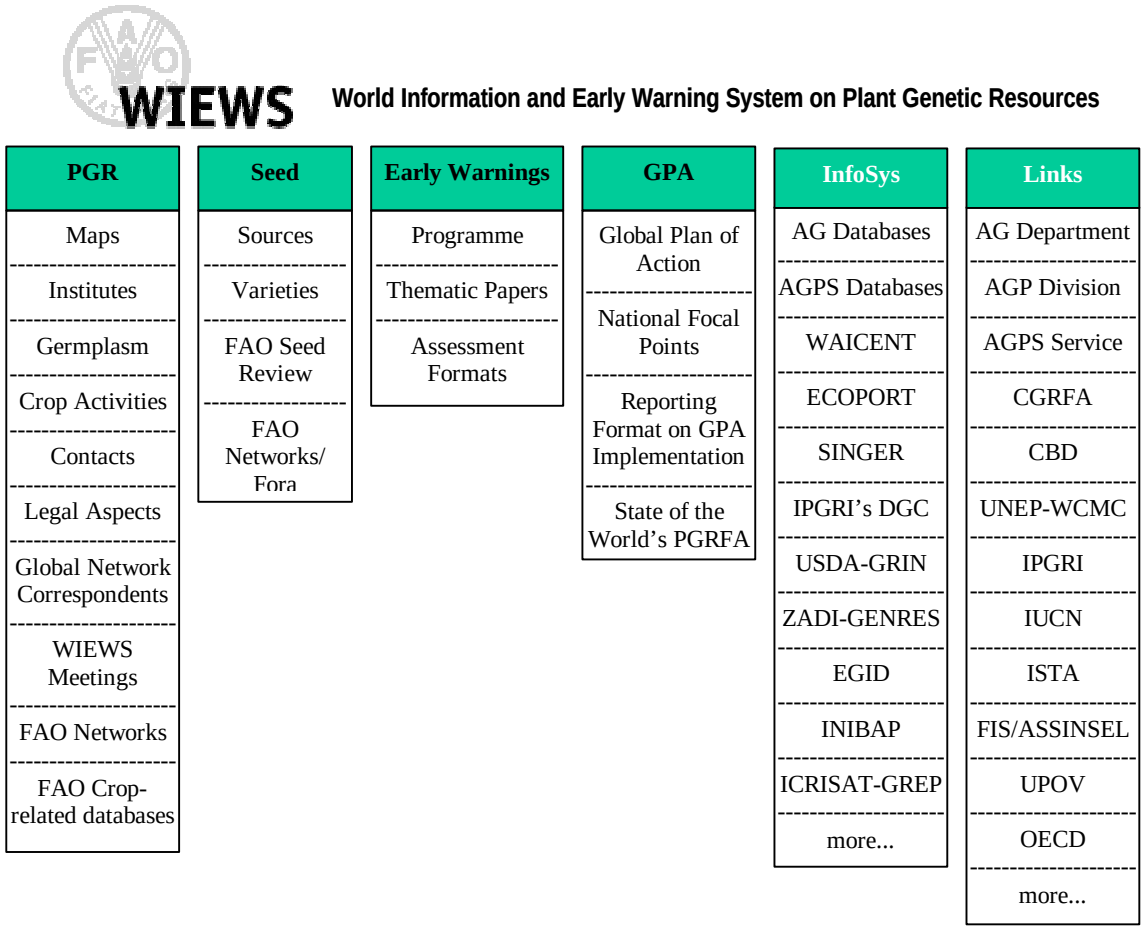


**Figure 1.** The structure of the 2000 web-based version of WIEWS.

[4] The new version of WIEWS can be accessed at http://apps3.fao.org/wiews/.

[5] CGRFA-8/99/REP, para. 20.

*Data Content*

7. Four main, inter-related sections have been created within WIEWS (see Figure 1), covering information related to:

- *Plant Genetic Resources*;
- *Seed*;
- *Early Warning of Genetic Erosion*; and
- *the Global Plan of Action for the conservation and sustainable utilization of PGRFA.*

8. The *Plant Genetic Resources* (PGR) section contains - in addition to the information on *ex situ* germplasm collections maintained under the original WIEWS databases[6] - information on national laws and regulations related to PGRFA,[7] and the proceedings of WIEWS meetings which have been carried out during the last four years.

9. The *Seed* section includes the World List of Seed Sources database, as well as a new sub-section for the periodic reporting of the activities of the FAO regional networks, and of forums on seed policies and programmes. Seed-related information is being strengthened, with the integration of the crop varieties database and the seed sector country profiles, based on data collected through the *FAO Seed Review* during the past biennium.

10. The *Early Warning of Genetic Erosion* section includes proceedings of a technical meeting on this subject, held in Prague in 1999, and assessment formats for reporting cases of genetic erosion in *ex situ* collections, *in situ* populations of wild crop relatives and on-farm conserved local varieties.

11. The *Global Plan of Action* (*GPA*) section makes available: the *Plan* in English, French and Spanish; the list of officially nominated National Focal Points for the implementation of the *Plan*; the comprehensive and short versions of the *State of the World's PGRFA*; and the reporting formats and completed questionnaires for the 2000 survey on the implementation of the *Plan* in member countries.[8] This section is being further developed, with the incorporation into WIEWS of the web site developed for the International Technical Conference, which includes the Country Reports.

*Data Accessibility*

12. The WIEWS interface has been redesigned to provide: (i) a flexible framework for future development; (ii) a more user-friendly approach, including a multi-language function;[9] and (iii) faster response in data-retrieval and page-downloading. A number of customisable, dynamically generated data-reporting formats have been developed, covering all the WIEWS databases. Dynamic lists of key information-providers and users, such as National Focal Points for the implementation of the *Global Plan of Action* and WIEWS Correspondents, have been implemented, within the *PGR* and *GPA* sections, respectively.

*Data and System Integration*

13. In addition to the incorporation of the *Seed Information System* under WIEWS (see para. 9), data-integration with other in-house, crop-related databases relevant to PGRFA,

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6 See CGRFA-8/99/6 for more details.

7 Information on Laws and Regulations related to PGRFA and Seed is recorded for 80 countries under the *Legal Aspects* sub-section.

8 CGRFA/WG-PGR-1/01/3, *Monitoring the Implementation of the Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture*, para. 8-11.

9 Arabic, English, French and Spanish.

such as the *Cultivars and World-wide Collections of Olive Germplasm* database,[10] is underway. To foster integration with existing information systems inside and outside FAO, two auxiliary sections, *InfoSys* and *Links*, have been created under the new interface, which provide links to on-line, searchable information systems related to PGRFA, and to web sites and portals of international partners and relevant international organizations, respectively (see Figure 1). Further integration is also being pursued through direct links to national Internet-based documentation systems.[11]

*Data Consistency*

14. The scientific botanical species nomenclature recorded under WIEWS has been reviewed and inconsistencies attributable to data-input mistakes have been corrected. Further controls are being carried out, through contacts with data providers. The structure of various tables has been modified, to allow full names instead of unfriendly abbreviations, and existing abbreviations have been replaced by extended names.

*System Sustainability*

15. The information available in WIEWS relies on:

i. direct contributions from member countries;

ii. routine data collecting activities (such as the *FAO World Seed Review* and surveys for monitoring *GPA* implementation); and

iii. event-related data-collecting activities (such as country reports for the Fourth International Technical Conference on PGR; WIEWS regional meetings; seed networks and *forum* meetings).

The network of national WIEWS correspondents, initiated in 1998, now includes 71 officially appointed members. As part of the activities aimed at strengthening network activities at regional level, a meeting for Latin America and the Caribbean is being organized during 2001. The Commission may wish to encourage member countries, which had not already done so, to nominate national correspondents to participate in the information network and to collaborate in updating the information within WIEWS.

16. Data-gathering is increasingly being decentralized, including through the introduction of remote data-access and update functions, and the adoption of electronic formats for country reporting during surveys. The number of persons and institutions providing information for WIEWS is progressively increasing, with positive implications for the overall sustainability of the System, and the amount and quality of the information available. Since the 2000 release of WIEWS, 86 users out of 275, who have been granted writing privileges, have provided new information to the System.

17. Summary data on CGIAR genebanks holdings is being periodically updated from the System-wide Information Network for Genetic Resources (SINGER).

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[10] The database contains information on over 1,200 olive cultivars, compiled from about 800 published sources: list of olive cultivars with a short description of their characteristics and information on their geographical distribution, and a world-wide list of olive collections.

[11] There are currently more than 200 direct links to national Internet-based documentation systems.

## 3. FUTURE PERSPECTIVES

*WIEWS' Role in Updating the State of the World's PGRFA and in Monitoring the Implementation of the Global Plan of Action*

18. One of the main, original objectives of WIEWS was to periodically provide detailed information on which to base the report on the *State of the World's PGRFA*.[12] WIEWS contributed extensive information for the preparation of the first *State of the World's PGRFA*[13] for the Fourth International Technical Conference on PGR (Leipzig, 1996) and it will be a key resource in future updatings of the report.[14]

19. Following the Commission's request, at its Seventh Regular Session,[15] that FAO play a proactive and creative role in facilitating and monitoring the implementation of the *Global Plan of Action*, a standardized monitoring approach was successfully adopted during the 2000 survey on the implementation of the *Plan* in member countries.[16] Within the framework of a continuing monitoring process,[17] this approach will be comprehensively developed, in order to gather detailed quantitative information (comparable both spatially and temporally), regarding the 20 priority activity areas of the *Plan*. This will establish an efficient data-collecting, analysis and delivery mechanism, and set the basis for the utilization of a web-based information system for monitoring the implementation of the *Plan*, with built-in remote updating, searching and reporting functions.

20. Document CGRFA/WG-PGR-1/01/3, *Monitoring the Implementation of the Global Plan of Action for the Conservation and Sustainable Utilization of PGRFA*, reports on the monitoring methodologies tested to date, and makes a proposal for the use of WIEWS in systematic further monitoring.

21. As a dynamic information tool, WIEWS provides a natural framework for hosting the proposed web-based information system of the *Plan*'s monitoring mechanism. This is evident from the role that WIEWS can play in the preparation of the *State of the World's PGRFA* (see para. 18), and the complementarity between the periodic updating of the *State of the World's PGRFA*, and the monitoring of the *Plan*'s implementation.[18] The integration of the monitoring system and WIEWS would reduce the costs of implementation, through the sharing of the physical and logical resources already in WIEWS.

22. With the implementation of a *Global Plan of Action* monitoring system, WIEWS might therefore become a common repository among member countries for exchanging experiences, tracking achievements, and highlighting constraints and needs, in the context of the *Plan*'s implementation process. It could serve as a virtual bridge between the Commission and national PGRFA programmes.

23. Support to National Focal Points in the establishment of national clearing-house mechanisms for monitoring the *Plan*'s implementation, either by hosting such mechanisms or providing linkages among them, as well as by participating in the capacity-building process

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12 CPGR/93/REP, para. 21.

13 ITCPGR/96/REP, para. 14.

14 CGRFA/WG-PGR-1/01/4, *Updating the Report on the State of the World's Plant Genetic Resources for Food and Agriculture*, para. 2 and 6.

15 CGRFA-7/97/REP, para. 19.

16 CGRFA/WG-PGR-1/01/3, *Monitoring the Implementation of the Global Plan of Action*, para. 11.

17 CGRFA/WG-PGR-1/01/3 para. 21 and Annex, and CGRFA/WG-PGR-1/01/Inf.1.

18 CGRFA-7/97/REP para. 22.

through its network of correspondents, would concretize WIEWS' further contribution to both the implementation and monitoring processes of the *Global Plan of Action*.

*Early Warning System on Plant Genetic Erosion*

24. The development of the Early Warning System on Plant Genetic Erosion was discussed during a technical meeting, in Prague, in June 1999.[19] Further research on general models of genetic erosion, to define key indicators applicable by field-workers, is required. In addition, national PGR programmes could build links to community-level conservation efforts, so as to develop a network of community-based early warning indicators of genetic erosion, and to provide regular inputs to WIEWS.

25. The potential of Geographical Information Systems (GIS) technology for early warning of genetic erosion should be explored further, particularly as a tool for the identification and mapping, on a crop species basis, at national level, of zones where highest diversity of PGRFA occurs, in order to concentrate monitoring efforts in the most vulnerable zones, to promptly alert national programmes and the international community to genetic erosion threats, and to take the necessary action.

26. Data on the collection sites of accessions stored in national gene-banks could be used to map geographic distributions of national germplasm holdings on a per species basis. Existing tools for the management and spatial analysis of genetic resources data[20] could be more systematically used by National Programmes for the identification of areas of high diversity, as well as for the selection and design of *in situ* conservation sites. Ultimately, by correlating meteorological and pedological information with available geographical coordinates of collected samples, it could be possible to identify new potentially diversity-rich areas, which might deserve attention in future germplasm exploring and collecting missions, and in monitoring genetic erosion.

27. In addition, remote sensing technology could play a role complementary to GIS in providing information on macroscopic events of natural or human causality, with either direct or potential impact on identified diversity-rich areas, and provide a basis for better ground-level monitoring of genetic erosion. This would enhance monitoring capacity at local and national levels.

28. In this regard, the Working Group may wish to advise the Commission to recommend strengthening capacity in the use of GIS technology for the development of the monitoring of genetic erosion through collaboration among National PGRFA Programmes, WIEWS, the World Conservation and Monitoring Centre (WCMC) of the United Nations Environment Programme (UNEP), the International Plant Genetic Resources Institute (IPGRI), and other Centres of the CGIAR system.

## 4. GUIDANCE REQUESTED FROM THE WORKING GROUP ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

29. The Working Group may wish to provide guidance on actions to be taken by the Secretariat, in relation, *inter alia*, to:

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[19] *Proceedings of the Technical Meeting on the Methodology of WIEWS*, Research Institute of Crop Production, Prague, Czech Republic, 21 - 23 June 1999, FAO, 89 pp.
Internet address: http://apps3.fao.org/wiews/Prague/tabcont.htm

[20] *WorldMap version 4.20.05*, developed by the Natural History Museum, UK;
*DIVA version 1.2*, developed by the International Potato Centre (CIP) and IPGRI;
*FloraMap version 1.01*, developed by the International Centre for Tropical Agriculture (CIAT).

- the role of WIEWS in

    i. the forthcoming assessment of the *State of the World's PGRFA*, and the establishment of a web-based information system for monitoring the implementation of the *Global Plan of Action* (para. 18-21); and

    ii. providing support to National PGRFA Programmes for the establishment of a Clearing-House Mechanism on the implementation of the *Global Plan of Action* (para. 22);

- the possible further development of the Early Warning System on Plant Genetic Erosion (para. 23-25).