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Item 4 of the Provisional Agenda

COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

INTERGOVERNMENTAL TECHNICAL WORKING GROUP ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

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PREPARATION OF THE DRAFT REVISED *GENEBANK STANDARDS*

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I. INTRODUCTION

1. The Commission on Genetic Resources for Food and Agriculture (Commission), at its Twelfth Regular Session, agreed on the need for revising the *Genebank Standards* in order to ensure that plant genetic resources are conserved under conditions that meet recognized and appropriate standards, based on current and available technological and scientific knowledge. It requested FAO, in cooperation with the International Treaty on Plant Genetic Resources for Food and Agriculture (International Treaty), the Consultative Group on International Agricultural Research (CGIAR) and other relevant international institutions, to undertake this review for consideration by the Intergovernmental Technical Working Group on Plant Genetic Resources (Working Group), at this session.¹

2. The Governing Body of the International Treaty, at its Third Session, invited the Commission to commence and coordinate the process for the revision of the *Genebank Standards* and requested its Bureau to coordinate with the Bureau of the Commission the agendas of the respective bodies for the purpose of discussing modalities for such revision and the ways and means for input of the Governing Body in the process.²

3. This document provides information on the process for the revision of the *Genebank Standards*. It describes the background and rationale for the revision of the *Genebank Standards*. The draft revised *Genebank Standards* are presented in Draft revised *Genebank Standards for the Conservation of Orthodox Seeds* (CGRFA/WG-PGR-5/11/Inf.3).

II. BACKGROUND AND RATIONALE FOR THE REVISION OF THE GENE BANK STANDARDS

4. The *Genebank Standards* were published in 1994, developed to respond to the need for appropriate standards for international *ex situ* conservation and concerned solely with the storage of seeds of orthodox species.³ The Commission, at its Fourth Session in 1991, agreed to convene a panel of technical experts to work together with FAO and the International Board for Plant Genetic Resources (IBPGR – now Bioversity International) to redefine genebank standards.⁴ At its Fifth Session, the Commission endorsed the standards in order that they might acquire universal value and be more easily adopted by countries.⁵

5. Since the publication of the *Genebank Standards*, a significant number of policy and technical advances have occurred in the fields of conservation and sustainable use of plant genetic resources that make it imperative to revisit them. Most of the policy-related changes arise from the adoption and implementation of global instruments of relevance to plant genetic resources, including the *Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture (Global Plan of Action)*, the Convention on Biological Diversity (CBD), the new International Plant Protection Convention (IPPC) and, most recently, the International Treaty.

6. With the adoption of the International Treaty, Contracting Parties shall, subject to their national legislation, ‘cooperate to promote the development of an efficient and sustainable system of *ex situ* conservation, giving due attention to the need for adequate documentation, characterization, regeneration and evaluation ...’ and ‘monitor the maintenance of the viability,

¹ CGRFA-12/09/Report, paragraph 28.

² IT/GB-3/09/Report, *Appendix A*, paragraph 20-21.

³ CPGR/93/5 Annex.

⁴ CPGR/91/Report, paragraph 61.

⁵ CPGR/93/Report, paragraph 30.

degree of variation, and the genetic integrity of collections of plant genetic resources for food and agriculture'.⁶ The International Agricultural Research Centres (IARCs) of the Consultative Group on International Agricultural Research (CGIAR) which hold *ex situ* collections of plant genetic resources for food and agriculture are to 'undertake to manage and administer these *ex situ* collections in accordance with internationally accepted standards, in particular the *Genebank Standards* as endorsed by the FAO Commission on Genetic Resources for Food and Agriculture'.⁷

7. Revising the *Genebank Standards* is also important for the Global Crop Diversity Trust (GCDT) to assist in the long-term maintenance of *ex situ* collections as well as in the context of the updated *Global Plan of Action* in developing future activities in the priority activity areas of *ex situ* conservation. In addition, as legal measures have evolved for access and benefit sharing of biodiversity and phytosanitary issues at the national level, they have to be taken into account in the genebank operations.

8. On scientific and technical fronts there have been rapid advances. While the overall technical tenet of maintaining seeds at low temperature and low humidity to reduce metabolic rates remains valid, there have been significant changes in the context of plant genetic resource conservation and use, especially with the advances in the application of biotechnologies. Most of the technical advances are species-specific, as elaborated for some food crops within the Global Public Goods Project- Phase 2.⁸ There are also significant advances in areas of activity allied to conservation efforts, particularly in the fields of documentation systems and communication.⁹ These advancements are central to improving genebank management and optimizing use of resources.

9. Moreover, as documented in *The Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture (SoWPGR-2)*¹⁰ there is an increase in the number of genebanks around the world and the range of plant genetic resources stored in them. In addition to orthodox seeds of major crops, several genebanks report increasing collections of crop wild relatives, neglected and underutilized species, medicinal plants and wild species. Conservation of recalcitrant seeds, clonally-propagated planting materials and fruit trees require different strategies and approaches and have evolved with the increased experience and scientific and technical knowledge.¹¹ Conservation of these species is becoming increasingly important given current concerns about the effects of climate change. Therefore, availability of standards can provide an internationally accepted framework to monitor the viability and the genetic integrity of the variety of collections held by genebanks.

III. PREPARATION OF THE DRAFT REVISED GENE BANK STANDARDS

10. As requested by the Commission, FAO revised the *Genebank Standards* in cooperation with the International Treaty, Bioversity International, other CGIAR centres, GCDT and other relevant international institutions. In addition, through technical consultations, FAO sought and received inputs from various experts from national, regional and international genebanks.

⁶ Article 5 e, f.

⁷ Article 15.1 d.

⁸ SGRP2010, Global Public Goods Project- Phase 2. Final Report. System wide Genetic Resource Programme (SGRP) Bioversity International, Rome, Italy (<http://sgrp.cgiar.org/?q=node/158>).

⁹ Rao, N.K., Hanson J., Dulloo, M.E., Ghosh, K., Nowell, D. and Larinde, M.. 2006. Manual of seed handling in genebanks. Handbooks for Genebanks 8. Bioversity International, Rome, Italy.

¹⁰ FAO 2010. *The Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture*.

¹¹ Crop Genebank Knowledge Base (<http://cropgenebank.sgrp.cgiar.org>)

11. A first draft of the revised *Genebank Standards* was shared, through a Circulate State Letter (AGP/GPA 11) with all National Focal Points for plant genetic resources, including the National Focal Points for the International Treaty, for comments and inputs and further distribution to relevant stakeholders.¹²

12. The consultations provided valuable inputs so that current scientific knowledge and changes in the conditions for *ex situ* conservation of orthodox seeds could be reflected in the revised version. The importance of active management of collections to optimize resource availability with the demands of germplasm maintenance was highlighted. The need for consideration of standards for non-orthodox seeds and associated conservation practices was also identified.

13. The status of revision of the *Genebank Standards*, was reviewed at the Second Joint Bureau Meeting of the Commission and the International Treaty held on 13 November 2010. The Bureaus agreed with the approach taken to limit the review, in a first step, to the original scope of the standards (i.e. orthodox seeds) and to consult the Commission on possible further steps to elaborate additional standards for plant species that cannot be maintained under relatively uniform conditions.

14. In response to the Commission's request to coordinate the agendas of the Commission and of the Governing Body of the International Treaty, for the purpose, inter alia, of the revision of the *Genebank Standards* and discussing modalities for the input of the Governing Body in the process of this revision,¹³ the Joint Bureau Meeting concluded that the revised *Genebank Standards* would be made available to the Fourth Session of the Governing Body (14-18 March 2011), as an information document. Any inputs of the Governing Body relevant to the updating of the *Genebank Standards* would then be submitted to the Working Group as well as to the Commission.

IV. KEY FEATURES OF THE DRAFT REVISED GENE BANK STANDARDS

15. The draft revised *Genebank Standards*, like the previous edition, is composed of separate sections. However their structure and presentation have been improved to provide more specificity. The Standards contain four main sections: Introduction, Underlying Principles, Standards and Appendices. The 'Introduction' covers the context of the revision and scope of the Standards. It is followed by the 'Underlying Principles', which provide a framework for setting the Standards and serve as the overarching principles of genebank management. The section on 'Standards' provides the specificity to adhere to the underlying principles. These Standards are presented upfront in a straightforward manner, followed by a narrative on technical aspects, contingencies and selected references. As in the earlier edition, these standards are essentially targets to aim for and remain nonbinding and voluntary in nature.

16. The draft revised *Genebank Standards* solely concern the conservation of seeds of orthodox species, including wild species, i.e. those species whose seed can survive considerable desiccation, and for which longevity can be improved by reducing seed storage moisture content and/or temperature. These standards should not be used for non-orthodox seeds or clonally-propagated material.¹⁴

¹² <http://www.fao.org/agriculture/crops/core-themes/theme/seeds-pgr/itwg/5th/en/>

¹³ CGRFA-12/09/Report, paragraph 91.

¹⁴ Orthodox seeds include many food crops, annual, biennial and horticultural species including grains, pulses, vegetables and temperate fruit and forest trees. Non-orthodox seeds also known as recalcitrants include aquatic habitats species, tropical fruit species, underutilized plants and temperate woody perennials.

17. The draft revised *Genebank Standards* ‘ provides one set of standards’¹⁵, in contrast to the two levels- ‘preferred’ and ‘acceptable’ standards, used in the previous edition, mainly to avoid ambiguity or unnecessary duplications and optimize the use of limited resources. The revised standards take into account the changes in *ex situ* conservation conditions, diversity in storage requirements, purpose and period of germplasm conservation, ranging from temperate to tropical provenances. The revised standards are provided for nine areas that cover acquisition, seed drying and storage, viability monitoring, regeneration, characterization, documentation, distribution, safety duplication and security/personnel.

18. The draft revised *Genebank Standards* can be aimed at by all genebanks for conserving orthodox seed collections; however, in light of the continuous technological advances in conservation methods, much of it species-specific, they should be used in conjunction with species-specific information.

V. GUIDANCE SOUGHT

19. The Working Group may wish to:

- Review and, as appropriate, revise the draft revised *Genebank Standards*;
- Recommend that the Commission endorse the standards, in order that they acquire universal value and are more easily adopted by countries;
- Recommend that the Commission request FAO to develop genebank standards for germplasm not covered by the draft revised *Genebank Standards*, in cooperation with the International Treaty, the CGIAR and other relevant international institutions; and
- Request the Commission to urge FAO Members to provide the necessary budgetary resources for full participation of developing countries in the process.

¹⁵ The Standard defines that lowest level of performance of a routine genebank operation below which there is a very high risk of losing genetic integrity (e.g. a probability of five percent or more of losing an allele in an accession).