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COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

Item 8 of the Provisional Agenda

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

Sixth Session

Rome, 14 - 16 November 2012

REPORT FROM THE GLOBAL CROP DIVERSITY TRUST TO THE INTERGOVERNMENTAL TECHNICAL WORKING GROUP ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

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I. INTRODUCTION

1. Established in 2004 under international law as an independent international organization, the Global Crop Diversity Trust (the Trust) operates within the framework of the International Treaty on Plant Genetic Resources for Food and Agriculture (the Treaty) as an essential element of its Funding Strategy and in accordance with the overall policy guidance provided by its Governing Body. The Trust's objective as stated in its Constitution is "*to ensure the long-term conservation and availability of plant genetic resources for food and agriculture with a view to achieving global food security and sustainable agriculture.*" The Constitution further states that "*the Trust shall in particular, without prejudice to the generality of the foregoing,*

- *endeavour to safeguard collections of unique and valuable plant genetic resources for food and agriculture held ex situ, with priority being given to those that are plant genetic resources included in Annex I to the International Treaty or referred to in Article 15.1(b) of the International Treaty;*
- *promote an efficient goal-oriented, economically efficient and sustainable global system of ex situ conservation in accordance with the International Treaty and the Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture (hereinafter referred to as "the Global Plan of Action");*
- *promote the regeneration, characterization, documentation and evaluation of plant genetic resources for food and agriculture and the exchange of related information;*
- *promote the availability of plant genetic resources for food and agriculture; and*
- *promote national and regional capacity building, including the training of key personnel, with respect to the above."*

2. The Relationship Agreement between the Trust and the Governing Body of the International Treaty recognizes the Trust "*as an essential element of the Funding Strategy of the International Treaty in relation to ex situ conservation and availability of plant genetic resources for food and agriculture*".

3. It notes that the Trust established an endowment with the objective of "*providing a permanent source of funds to support the long-term conservation of the ex situ germplasm collections on which the world depends for food security*". In this regard, the Agreement highlights the FAO Global Plan of Action's call for the "*development and support of a rational, efficient and sustainable system of genetic resources collections around the world*".

4. The Global Plan of Action recognizes *in situ* and *ex situ* as complementary conservation strategies. The Trust, in accordance with its Constitution and the Relationship Agreement with the Governing Body, focuses on *ex situ* (genebank) conservation and availability of plant genetic resources for food and agriculture. The Trust addresses major portions of the International Treaty including Articles 5 and 6, and much of Articles 7, 8, 9, 14, 16, 17.

5. The Commission at its Eleventh Session noted the Trust's success in mobilizing funding for *ex situ* conservation and at its Twelfth Session emphasized "*the need to continue close cooperation with the Global Crop Diversity Trust and the CGIAR and encouraged them to take the Multi-Year Programme of Work into account in the implementation of their respective mandates and agendas*". The Working Group at its Fifth Session in 2011 recognized the important role and support given by the Trust in a number of key areas for work in *ex situ* conservation in the Draft Updated Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture. In particular, the report stated the role identifying gaps in global holdings, increasing efficiencies and its role in the Trust plays to "*place genebank operations on a scientifically sound and financially stable basis.*"

6. Recognizing the threat that climate change poses to PGRFA conservation, the Trust initiated specific work to address the challenges of climate change. Many of the Trust's activities with partners-collecting, screening, information systems, etc. - are aimed at building collective capacity for plant

breeders and farmers to breed crops adapted to climate change. This is particularly true of Trust's work to build a strong, secure global genebank conservation system.

7. In 2006, the Trust initiated a set of projects aimed at preparing agriculture for climate change and better positioned to strengthen future food security. These projects were carried out in partnership with 143 institutes in 88 countries. These activities have included: (1) collection, (2) rescue of threatened genebank accessions through regeneration, (3) screening of targeted collections for important traits, (4) development of information systems for better managing collections and improving visibility and availability to users, (5) basic research to develop better and more cost-effective conservation techniques, and (6) the provision of on-going support to certain internationally important and highly-accessed collections.

8. The Trust is pleased to submit this report on the activities of the Trust to the 6th Session of the Intergovernmental Working Group on Plant Genetic Resources. This report provides an update on both institutional and programme developments.

II. INSTITUTIONAL DEVELOPMENTS

9. The Executive Board of the Global Crop Diversity Trust held two Executive Board meetings (eighth and ninth) in Rome, Italy (June 2011 and October 2011 respectively).

10. Since its establishment in 2004, the Trust has been hosted in Rome, Italy on an interim basis hosted by FAO and Bioversity International. In 2011, and after an elaborate process set to explore and study various proposals submitted by different countries, the Executive Board finalized the decision for a permanent Headquarters for the Trust by accepting the German offer to relocate the Trust to Bonn. The German offer included expanded location, significant renovation costs, and financial support for the Trust's projects. It also included commitment to provide high-level political leadership and support for Trust's fundraising in efforts to complete the endowment fund. The Trust plans to move to Bonn at the beginning of 2013.

11. Two new Board Members were selected by the Trust's Donors' Council: Professor Klaus Topfer from Germany (to begin his term in 2012) is the former Executive Director of the United Nations Environment Programme (UNEP) and has served as the Under Secretary General of the United Nations. He served as a member of the German Bundestag and held office as the Federal minister for the Environment, Nature Conservation and Nuclear Safety, as well as Federal minister of Regional Planning, Building, and Urban Development. Ambassador Tim Fischer from Australia (to begin his term in 2012) served as Leader of the National Party, Minister for Trade and Deputy Prime Minister. His most recent appointment was as Australian Ambassador to the Holy See.

12. The number of countries (developed and developing), associations, foundations, and companies that have contributed funds to the Trust is 37. Donors who have contributed 25,000 USD or more are invited to join the Trust's Donors' Council. The Council meets annually¹ and provides financial oversight and advice on such matters to the Executive Board. In addition a number of individuals have contributed to the Trust. The complete list of donors can be found online².

13. The Trust has a broad and important mandate consistent with the requirements of the International Treaty and Global Plan of Action, but limited financial resources. The Trust focuses its funding on activities that provide maximum global benefits that are cost-effective, efficient and sustainable. The Trust operates on the basis of a Fund Disbursement Strategy, which was adopted by

¹ Donor meeting reports can be found online at: <http://www.croptrust.org/content/donors-council>

² Donors list: <http://www.croptrust.org/content/donors>

the Trust's Executive Board in 2009 after consultation with the Governing Body of the Treaty and Donors. The Funding Strategy can be viewed online³.

14. The Trust has raised a considerable amount of money for its endowment fund for the purpose of providing stable, on-going financial support to key genebank collections. To date, funds raised have reached USD 230 million, of which c. USD 130 million is for the endowment⁴. However, the Trust is still far from reaching its endowment goal and the programmatic goals recognized in its Relationship Agreement with the Governing Body and set out for itself in its Constitution and Fund Disbursement Strategy.

15. In 2012, the Trust was selected by the CGIAR Fund Council to lead a comprehensive 5-year CGIAR Research Program for the management and sustainable funding of the collections of plant genetic resources held by 11 members of the CGIAR Consortium. This five-year funding commitment for the CGIAR-held collections includes management oversight by the Trust in order to increase efficiencies, ensure accountability, nurture collaboration between genebanks, and most importantly, improve long-term funding sustainability. The agreement calls for the commitment to "phase-out" annual funding by building the Trust's endowment to ensure true sustainability. This is the first effort of its kind that oversees international genebanks while also seeking to provide long-term financial support.

16. Full funding of the Trust's endowment would contribute significantly to implementation of the International Treaty. The Trust thus appeals to countries and donor agencies to summon the political will at the highest level to make the investment needed to secure crop diversity through the Trust's endowment fund.

III. PROGRAMME DEVELOPMENTS

Long-Term Conservation and Availability of Crop Diversity

17. Article 5.1e of the International Treaty requires that Contracting Parties "*cooperate to promote the development of an efficient and sustainable system of ex situ conservation ...*" At the core of the Trust is the endowment fund, created to provide financial security to globally important collections of crop diversity in perpetuity.

18. The endowment fund of the Trust seeks to provide annual guaranteed funding required to ensure that crop diversity is safe and available forever.

19. As the endowment fund grows, income it generates is used to provide in- perpetuity funding for the operations of all the world's most important collections of crop diversity. Long-term financial support is provided to priority collections held and managed in accordance with international standards.

20. In 2011, two new crop collections were brought under the financial protection of the Trust's endowment. Agreements were signed for the sweet potato collection maintained at the International Potato Centre (CIP) in Peru, and the chickpea collection maintained at the International Crops Research Institute (ICRISAT) in India. To date, the Trust has approved long-term grants to nine CGIAR genebanks and one regional genebank, thus providing long-term financial support to ensure the conservation and availability of international collections of 17 major crops in 20 collections⁵. In addition, the Trust provides an ongoing grant for the operations of the Svalbard Global Seed Vault.

³ Funding Strategy can be accessed online:

<http://www.croptrust.org/documents/WebPDF/GCDT%20Fund%20Disbursement%20Strategy%20FINAL.pdf>

⁴ Updated funds raised can be accessed online: <http://www.croptrust.org/content/funds-raised>

⁵ Crops supported by the Trust through long-term grants are: banana and plantain, barley, bean, cassava, chickpea, edible aroids, faba bean, forages, grass pea, lentil, maize, pearl millet, rice, sorghum, sweet potatoes, wheat, and yam

The supported collections serve an exclusively international purpose as the backbone of the rational, efficient and effective global system. Collectively they provide more access to more plant breeders, researchers and farmers than any other institutions in the world.

21. In 2011, Trust long-term grants totalled USD 2.34 million annually. Since 2006 USD 9.29 million has been provided through Trust long-term grants.

22. Despite this substantial support underpinning the largest and most used collections in the world, significant additional resources will need to be placed in the Trust's endowment if the Trust is to meet its goal of providing stability, security and sustainability to these collections.

Regeneration of Threatened, Globally-Important Crop Diversity

23. In 2007 the Trust initiated a large-scale project aimed at putting in place or strengthening key components of a Global System, a large amount of unique (non-duplicated) crop diversity was threatened.

24. With developing country partners, and in furtherance of the International Treaty (Articles 5.1(e)(f), 5.2, 7.2(a)(b)), the Trust embarked on funding the regeneration of threatened priority collections of 22 Annex I crops held in developing countries and countries with economies in transition..

25. The regeneration targeted approximately 90,000 accessions in 246 collections of 22 crops. It involved partnerships with 86 institutes in 77 different countries, and included the development of multilingual guides for proper regeneration procedures⁶. However, during the course of the project, it was discovered that a significant amount of material targeted for regeneration was in fact already dead (12,255 accessions, or 13% of targeted accessions). This loss underlines the importance and urgency of the Trust's work to safely conserve and maintain crop collections.

26. The Trust is pleased to report that the overwhelming number of collection holders – 86 institutes – have partnered with the Trust in this historic endeavour, which is arguably the largest single effort ever to save and conserve crop diversity. By the end of 2011, 74,410 accessions (61,969 seed and 12,441 vegetative accessions) were successfully regenerated. The Trust believes that most unique and threatened crop diversity of the 22 crops have been rescued and secured at the conclusion of the project.

Safety Duplication

27. The International Treaty cites the need “*to take appropriate steps to minimize or, if possible, eliminate threats to PGRFA*” (Article 5.2). Safety duplication of accessions stored in genebank collections is a recognized element of good management practices aimed at minimizing risk and threats to *ex situ* collections. The regeneration work funded by the Trust also produces enough seed for the creation of safety duplicates, which are sent to appropriate cooperating genebanks as well as (in the case of orthodox seeds) the Svalbard Global Seed Vault.

28. The Trust also supports the duplication under black-box conditions of unique accessions of the world's most important crops at the Svalbard Global Seed Vault, in Norway, as an ultimate safety net.

29. The Seed Vault, welcomed unanimously by the 172 Members plus EU of the FAO Commission on Genetic Resources, was officially launched in February 2008 and provides virtually fail-safe security for duplicate samples of PGRFA. Since it opened its doors in 2008, the Vault has accepted deposits on 15 occasions, and now holds a total of 716,523 accessions, of which the deposit of 540,353 (75%) was funded by the Trust.

⁶ Regeneration guidelines (available in Arabic, English, French, Portuguese, Russian and Spanish): http://croptgenebank.sgrp.cgiar.org/index.php?option=com_content&view=article&id=48&Itemid=206

30. The Trust is contributing funding on an ongoing basis for the management and operation of the facility. The Executive Secretary of the Trust currently serves as the Chair of the Seed Vault's International Advisory Council, whose membership also includes the Chair of the Governing Body of the International Treaty.

31. Currently, and in addition to a number of significant in-kind services, the Trust provides USD 132,000 annually in direct support for the operations of the Svalbard Global Seed Vault.

Collecting

32. At the end of 2010, the Trust received a significant grant from the Government of Norway for a major climate change adaptation initiative. The project will work with the wild relatives of 26 Annex 1 crops of major importance to food security. It will: (1) identify those crop wild relatives that are missing from existing collections, are most likely to contain diversity of value to adapting agriculture to climate change, and are most endangered; (2) collect them from the wild; (3) provide them to genebanks for conservation; prepare them (pre-breeding) for use in breeding crops for new climates; (4) evaluate them for useful traits; and (5) make the resulting information widely available. The project will therefore introduce a range of new and exciting adaptive options for agriculture that might otherwise have been lost, whilst helping protect biodiversity from disappearing.

33. In 2011 the Trust and partners embarked on the first steps in implementing this 10-year initiative. This was, in particular, the use of advanced spatial analysis techniques to identify crop wild relative (CWR) diversity. Over the past year, the Trust worked with partners to develop a list of the plants closely related to each of the target crops. The results for each crop were then put through an expert validation process, resulting in a checklist of plants that will be widely useful to CWR conservation, both ex situ and in situ. More information on this initiative can be found on the CWR website: <http://www.cwrdiversity.org/>

Evaluation of Collections

34. The Trust embarked on an initiative to support evaluation of collections, to assist in identifying material with particular, important agronomic traits and adaptations.

35. The Trust has completed three calls under a competitive grants scheme for evaluation. These projects cover 59 collections of 20 crops for 113 traits of significance to the poor in the context of climate change. They involve 58 different national/regional research institutes and 8 CGIAR Centers, in 43 countries. Information will be placed in publicly accessible databases, and the genetic resources themselves made available under the terms of the Treaty's SMTA.

Information and Information Systems

36. Article 17.1 of the International Treaty requires that Contracting Parties "*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.*" Articles 13.2(a) and 12.3(c) address requirements to make information available. The Trust has embarked on a number of significant activities to enhance information about PGRFA and information systems:

- The Trust partnered with the US Department of Agriculture (USDA) and Bioversity International to develop and deploy a state-of-the-art genebank management program, GRIN-Global. Launched at the end of 2011, GRIN-Global was announced at a White House event commemorating breakthrough innovations. More information can be found at: www.grin-global.org

- The Trust has been collaborating with the Secretariat of the International Treaty and Bioversity International to develop a global on-line portal to accession-level germplasm information, GeneSys⁷. This builds on existing collaborative information systems such as SINGER and EURISCO. The system, which allows searching across multiple genebank databases is online and contains 2.3 million accessions held in some 356 genebanks, including evaluation data from USDA and some CGIAR Centers. There are plans to develop GeneSys further to better meet its goal as a platform for the sharing of accession level information globally.

Research to Develop Conservation Protocols for Vegetative Propagated Crops

37. Under Article 5.1(e) Contracting Parties agree to “*Cooperate...to promote the development and transfer of appropriate technologies*” for the purpose of promoting the development of an “*efficient and sustainable system of ex situ conservation.*” To promote the implementation of the International Treaty in this area, the Trust has embarked on a number of research activities. These include making improvements to existing embryo culture protocols in partnership with the coconut network (COGENT), and developing cryopreservation methodologies for cassava, sweet potato, taro and yam. The research is aimed at providing more robust and cost-effective methods to conserve and make available germplasm of these crops. The Trust is also supporting the application of cryopreservation to the international banana collection managed by Bioversity International. Work to cryopreserve 200 accessions is well underway, with 150 accessions completed by end of 2011.

Other Activities

38. In addition to the major activities above, the Trust has been involved in smaller projects with the aim to conserve vital crop diversity through (1) increasing availability, (2) upgrading centers in order to overcome backlogs in essential operations; and (3) building capacity. These include:

- Support a set of pilot projects to strengthen links between programs that conserve crop diversity and users of the diversity – such as farmers and plant breeders. This initiative focused on three countries (Ghana, Mali, and Nigeria) and on four crops (cowpea, pearl millet, sorghum, and yam), resulting in a portfolio of 44 activities to be carried out over the next two years.
- Supporting pre-breeding efforts through efforts channelled through the Global Partnership Initiative for Plant Breeding Capacity Building (GIPB) of FAO. Efforts include training 134 scientists in pre-breeding techniques and a development of an online⁸ e-course.
- Project to upgrade the N.I. Vavilov Institute in Russia through the digitization of catalogues and field books.

⁷ GeneSys can be accessed online: <http://www.genesys-pgr.org/>

⁸ Course can be accessed online: <http://km.fao.org/gipb/e-learning/gipb-pre-breeding-course/en/>