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COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

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REPORT FROM THE GLOBAL CROP DIVERSITY TRUST TO THE COMMISSION ON 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*". 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 call in the first Global Plan of Action for Plant Genetic Resources for Food and Agriculture (GPA) for the "*development and support of a rational, efficient and sustainable system of genetic resources collections around the world*", re-emphasized in the International Treaty's call for contracting parties to "*cooperate to promote the development of an efficient and sustainable system of ex situ conservation*".

3. 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. It addresses major portions of the International Treaty including Articles 5 and 6, and much of Articles 7, 8, 9, 14, 16, 17.

4. The Commission on Genetic Resources for Food and Agriculture (the Commission) at its Ninth Regular Session welcomed the establishment of the Trust and appealed to donors to support it. At subsequent sessions, the Commission has noted the Trust's efforts in mobilizing funding for *ex situ* conservation and in furthering the aims of the Global Plan of Action, and in particular the objective "*to develop a rational, efficient, goal-oriented, economically efficient and sustainable system of ex situ conservation and use for both seed and vegetatively propagated species*" (Priority Activity 6).

5. Building an efficient and sustainable global conservation system is at the core of the Trust's work. The endowment fund provides long-term stable funding to crop collections of global importance, such as the international collections managed by the CGIAR Centres under Article 15 of the International Treaty. The Trust also funds specific work to further the development of the global system and address challenges for PGRFA conservation and use, such as climate change. The Trust's role in this regard is recognised in the second Global Plan Action.

6. The Trust is pleased to submit this report on the activities of the Trust to the Fourteenth Regular Session of the Commission on Genetic Resources for Food and Agriculture. This report provides an update on both institutional and programme developments.

II. INSTITUTIONAL DEVELOPMENTS

7. The Trust was established by FAO and Bioversity International, acting on behalf of the CGIAR Centres, and jointly hosted by the two organisations in Rome pending a permanent host country agreement. The decision to accept the headquarter agreement offered by the government of Germany was taken by the Trust's Executive Board after a thorough study of proposals submitted by a number of different countries. Accordingly, in January 2013 the Trust started operating from its new offices in Bonn. The offices are adjacent to the UN campus, which houses, among others, the Secretariat of the UN Framework Convention on Climate Change, the Secretariat of the UN Convention on Desertification and the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES). Four staff members are still temporarily working from Rome, and the Trust will indeed retain office space at FAO into the future.

8. There have been recent major changes in both the Executive Board and Management of the Trust. The new Board Chair is Ambassador Fust from Switzerland, former head of the Swiss Agency for Development and Cooperation. In March, Ms Marie Haga takes up the position of Executive Director, following the retirement of Professor Cary Fowler in 2012. Ms Haga has held three ministerial positions in Norway and was a member of the Trust's Board from 2010 to 2012. Other changes in the membership of the Executive Board and staff of the Trust are described on the Trust website at: www.croptrust.org.

9. The members of the Executive Board are nominated by the Governing Body of the International Treaty and the Trust's Donors' Council. In addition there are non-voting members appointed by FAO and the CGIAR. The Board generally meets twice a year and reports of its decisions are available on the Trust website. Donors who have contributed USD 25,000 or more are invited to join the Trust's Donors' Council. The Council meets annually and provides financial oversight and advice to the Executive Board. The Council's reports and the complete list of donors can be found on the Trust website.

10. The Trust has a broad and important mandate consistent with the requirements of the International Treaty and the Global Plan of Action, but financial resources are limited. The Trust focuses its funding on activities that provide maximum global benefits, are cost-effective, efficient and sustainable. The Trust operates on the basis of a Fund Disbursement Strategy, which was adopted by the Trust's Executive Board in 2009 after consultation with the Governing Body of the Treaty and Donors. The Funding Strategy can be viewed on the Trust website¹.

11. To date, the Trust has raised USD 232 million, of which c. USD 130 million are for the endowment². However, the Trust is still far from reaching its endowment target 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.

12. In 2012, the CGIAR Fund Council approved the Trust-CGIAR Consortium five-year programme for the management and sustainable funding of the collections of plant genetic resources managed by 11 CGIAR Centres. This five-year funding commitment for the international collections includes management oversight by the Trust and the Consortium office and aims to increase efficiencies, ensure accountability, nurture collaboration between genebanks, and most importantly, improve long-term stability of funding. The programme agreement calls for the commitment to "phase-out" annual funding while simultaneously building the Trust's endowment, thus ensuring true sustainability.

¹ Funding Strategy can be accessed online:

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

² An update on funds raised can be seen online: <http://www.croptrust.org/content/funds-raised>

13. The Trust contributes significantly to implementation of the International Treaty and the Second Global Plan of Action. 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 its endowment fund.

III. PROGRAMME DEVELOPMENTS

Long-term conservation and availability of crop diversity

14. 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 ...*” and Priority Activity 6 of the Second Global Plan of Action has as an objective “*to develop a rational, efficient, goal-oriented, economically efficient and sustainable system of ex situ conservation and use for both seed and vegetatively propagated species*”. At the core of the Trust is the endowment fund, created to provide financial security to globally important collections of crop diversity in perpetuity.

15. As the endowment fund grows, the income it generates is used to provide in-perpetuity funding to collections of crop diversity of global importance that are conserved at international standards and available in accordance with the terms and conditions of Part IV of the International Treaty.

16. To date, the Trust has approved long-term grants to nine CGIAR genebanks and the genebank of the South Pacific Community. The funding is supporting the conservation and availability of 20 international collections of 17 major crops³. The supported collections serve an exclusively international role as the backbone of the rational, efficient and effective global system. In addition, the Trust funds the annual operating costs of the Svalbard Global Seed Vault.

17. Long-term grants now total USD 2.34 million annually and since their initiation in 2006, USD 9.29 million has been disbursed from the Trust endowment.

18. In 2012, the funding for the CGIAR-held international collections has been stabilised for the next five years with the initiation of the new Trust-Consortium programme of management and sustainable funding, as described above.

Regeneration of threatened collections

19. In 2007, the Trust initiated a large-scale project aimed at furthering the development of a global system for the long-term conservation and availability of crop diversity. A high priority was the rescue and safeguard of threatened, unique (not duplicated) accessions of 22 major crops that are included in Annex 1 of the International Treaty.

20. In furtherance of the International Treaty (Articles 5.1(e)(f), 5.2, 7.2(a)(b)) and the Second Global Plan of Action (Priority Activity 7), the Trust partnered with developing countries and countries with economies in transition, in some cases through crop and regional networks, to support the regeneration of at-risk accessions in 246 collections held by 86 institutes in 77 countries. The work involved the characterisation of the accessions and their duplication into international genebanks for safety and availability. It included the provision of storage and regeneration equipment and capacity building as needed, and the production of multilingual guides on regeneration and descriptor lists⁴.

21. Over 76,000 accessions have been successfully regenerated. Partners report over 12,000 accessions as not being viable, underlining the timeliness of this rescue effort and importance of

³ 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

⁴ Regeneration guidelines (available in Arabic, English, French, Portuguese, Russian and Spanish): http://cropgenebank.sgrp.cgiar.org/index.php?option=com_content&view=article&id=48&Itemid=206

safety duplication. About 40,000 accessions for which stocks are sufficient and the logistical and phytosanitary conditions could be met, have been sent under the SMTA to the appropriate international genebank for long-term safeguard and availability.

22. At a meeting in April 2012 that brought together 30 national project partners, it was clear that genebanks are starting to recognise and address the problems that the regeneration initiative exposed. They are planning collecting expeditions to replace material that has been lost and may still be in farmers' fields. They are upgrading the documentation on their collections, thinking more about users and use, and collaborating more, including with CGIAR genebanks. This shows movement towards more cooperation and the development of a truly global system.

Safety duplication

23. The International Treaty cites the need "*to take appropriate steps to minimize or, if possible, eliminate threats to PGRFA*" (Article 5.2) and the Second Global Plan of Action has as an objective "*to provide for the planned replication and safe storage of materials not currently safety duplicated*". Safety duplication is recognized as an essential element of good genebank management practice aimed at minimizing risk to *ex situ* collections. The regeneration project aimed to produce enough seed for the creation of safety duplicates at cooperating genebanks meeting international standards for conservation and availability, as well as (in the case of orthodox seeds) at the Svalbard Global Seed Vault.

24. The Trust also supports the duplication under black-box conditions of unique accessions of the world's most important crop collections at the Svalbard Global Seed Vault, in Norway, as an ultimate safety net. This has included the deposit of 530,000 accessions from the international collections managed by the CGIAR Centres, representing 75% of the total holdings.

25. The Seed Vault, welcomed unanimously by the then 172 Members plus EU of the Commission, 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 17 occasions, and now holds a total of 774,600 accessions, of which the deposit of 75% was funded by the Trust.

26. The Trust is contributing funding on an ongoing basis for the management and operation of the facility.

Evaluation of collections and promoting the availability and use of crop diversity

27. Article 5 of the International Treaty and Priority Activity 8 of the Second Global Plan of Action emphasize the need for evaluation to promote use of PGRFA. As part of its project to further the global system, the Trust supported a competitive grant scheme for evaluation of collections aimed at identifying accessions with traits of significance to poor farmers in the context of climate change.

28. Three calls for proposals between 2008 and 2010 resulted in 43 projects that evaluated 59 collections of 20 crops for some 143 important agronomic traits, such as drought and heat tolerance, and resistance to pest and diseases. The projects involved 58 national research institutes and 8 CGIAR Centres in 43 countries. The data and findings will become publicly available through partners' web sites, publications and the project's web site, which is under construction.

29. The Trust partnered with the FAO-led Global Partnership Initiative for Plant Breeding Capacity Building (GIPB) on furthering the GIPB workplan, including training 134 scientists in pre-breeding techniques, developing an online e-course and supporting 6 pre-breeding projects selected by GIPB.

30. Through a set of 6 projects focused on 3 countries of West Africa (Ghana, Mali and Nigeria) and 4 crops (cowpea, pearl millet, sorghum and yam), the Trust and national institutes undertook a series of pilot activities aimed at strengthening the links between genebanks and users of crop diversity. This work was undertaken in part in response to donor calls for a clearer

demonstration of the efficacy of the pipeline through which conserved diversity reaches farmers. The activities brought together conservation programmes with breeders, and in some cases farmers, to agree common conservation and breeding priorities, and, among other activities, collect to fill gaps in collections and generate further information on collections through participatory evaluation.

Information and information systems

31. 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. Priority Activity 15 of the Second Global Plan of Action calls for “*Constructing and strengthening comprehensive information system for plant genetic resources for food and agriculture*”. The Trust has supported the implementation of two initiatives to enhance the management and availability of information about PGRFA:

- The Trust partnered with the US Department of Agriculture (USDA) and Bioversity International to develop and deploy a state-of-the-art genebank data management software package, GRIN-Global. Version 1.0 was released at the end of 2011 and an improved Version 2.0 is about to be released. The system was introduced to 38 genebanks for evaluation and eventual adoption. More information can be found at: www.grin-global.org
- The Trust and Secretariat of the International Treaty supported the Centres of the CGIAR, under Bioversity’s leadership, to develop a global on-line portal to accession-level germplasm information. The portal, Genesys⁵, builds on existing collaborative information systems, namely SINGER, EURISCO and GRIN. It allows searching across multiple genebank databases online and currently contains data on 2.3 million accessions held in some 356 genebanks, including evaluation data from USDA and some CGIAR Centres.

32. In furtherance of Article 17.1 of the International Treaty and Priority Activity 15 of the Global Plan of Action, the Trust will continue to support to the development of Genesys as a fundamental component for an effective global conservation system. It will also continue to assist genebanks with the adoption of GRIN-Global and making information on their collections available through Genesys, and thereby contribute to the global system.

Research to develop conservation protocols for vegetative propagated crops

33. Under Article 5.1(e) of the International Treaty, 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.*” An objective under Priority Activity 6 of the Second Global Plan of Action is “*to develop management strategies for ex situ conservation of vegetatively propagated species....*”. To promote the implementation of the International Treaty and Global Plan of Action in this area, the Trust has supported a number of research activities. These include making improvements to existing embryo culture techniques in partnership with the coconut network (COGENT), and furthering the development of cryopreservation methodologies for cassava, sweet potato, taro and yam. The research was aimed at providing more robust and cost-effective methods to conserve and make available germplasm of these difficult crops.

⁵ Genesys can be accessed online: <http://www.genesys-pgr.org/>

Adapting agriculture to climate change: collecting, protecting and preparing crop wild relatives

34. The Commission at its Thirteenth Regular Session highlighted the importance of both *in situ* and *ex situ* conservation of wild relatives to enable adaptation to climate change. In 2011, the Trust launched a 10-year project to collect high-priority diversity of the wild species related to 29 Annex 1 crops, to secure diversity for the long-term, and to use it to prepare materials useful to breeding programmes around the world in adapting these crops to climate change. The project is funded by the Government of Norway and guided by an Advisory Group comprising experts and representatives of the Secretariat of the International Treaty and CGIAR Centres. It is being implemented in partnership with the Millennium Seed Bank (MSB) of the Royal Botanic Gardens, Kew, UK and with specialist institutes and national and international conservation and pre-breeding programmes around the world.

35. The crop wild relatives (CWR) in a total of 92 genera, including the project's target 29 focal crops, have been catalogued and the database is searchable at the portal Crop Wild Relatives & Climate Change (<http://www.cwrdiversity.org>). A dataset containing about 4 million records has been assembled, representing the largest and most comprehensive resource on the geographic distribution of the wild relatives of the world's major crops.

36. The dataset is being analysed to identify high priority species and regions for collecting. The collecting will be funded through grant agreements with the Trust which will recognize all relevant national laws and international agreements and be carried out by national institutions with technical back-stopping provided as necessary by staff of the Millennium Seed Bank and CGIAR Centres. Country-specific field identification guides are being developed by MSB to support national partners in their collecting activities, and will represent a long-term resource and important contribution to capacity building.

In preparation for the pre-breeding phase of the project, crop-specific consultations are being held with a wide range of breeders and other researchers who have experience in the use of CWRs. Consultations held so far have focused on: potato, beans, sunflower, cereals, eggplant, sweet potato, alfalfa, lentil, banana, apple and cowpea. Two case studies on pre-breeding are underway, on rice and sunflower. These crops were chosen because considerable CWR diversity already exists in genebanks (though some gaps do also remain) and because the crops provide an interesting contrast in terms of level of past investment in breeding.