Food and Agriculture Organization of the United Nations

The International Treaty ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

Item 17.4 of the Provisional Agenda

SEVENTH SESSION OF THE GOVERNING BODY

Kigali, Rwanda, 30 October – 3 November 2017

Reports from Institutions that have Concluded Agreements with the Governing Body under Article 15 of the International Treaty

Executive Summary

The document contains the Reports provided by the Centres of the Consultative Group on International Agricultural Research and one other International Institution that have concluded agreements with the Governing Body pursuant to Article 15 of the International Treaty, for the information and consideration of the Governing Body. The reports are provided, as they were received by the Secretariat, in the Appendices to this document.

The document also provides update on activities carried out by the Secretariat and some recent developments, during the biennium, in regard to international germplasm collections that are held under Article 15 of the Treaty, whose continued maintenance has been reported to be experiencing major difficulties or are under threat.

Guidance Sought

The Governing Body is invited to consider the reports and the information provided in this document, and provide further guidance, taking into account the elements for a possible Resolution provided in *Appendix* 1 to this Document.

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Other documents can be consulted at http://www.fao.org/plant-treaty/meetings/meetings-detail/en/c/888771/

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I. INTRODUCTION

1. The agreements concluded under Article 15 of the International Treaty, provide that the signatory international institutions are to make available plant germplasm of Annex 1 crops held in the respective collections in accordance with the provisions of Part IV of the International Treaty (i.e. those of the Multilateral System). The Governing Body regularly receives reports from the relevant institutions, in relation to the management and distribution of germplasm under the terms of the Multilateral System. For this Session, the Secretariat received two reports, one prepared collectively by the Centres of the Consultative Group on International Agricultural Research (CGIAR Centres), and another from the Secretariat of the Pacific Community (SPC). The two reports are presented, as they were received, to the Governing Body in *Appendices* 1 and 2 to this document.[1]

2. This document provides a synthesis of the content of the two reports. It also contains updates on activities that the Secretary carried out in the biennium in the exercise of his responsibilities under the Article 15.1(g), and in accordance with the terms of the agreements concluded under its provisions, for collections that have been reported as being under threat. It further outlines efforts made towards the possible conclusion of new agreements with interested international institutions.

II. SUMMARY OF THE REPORTS RECEIVED

3. The report of the CGIAR Centres that have signed agreements under Article 15 of the Treaty describes the revised structure and governance of the CGIAR system. The report also provides some information the new Genebank Platform coordinated by the Global Crop Diversity Trust, which provides support and coordination to the genebanks of the CGIAR Centers.

4. The report informs about the holdings, distributions and acquisitions of germplasm. Updated distribution data up to December 2016 bring the total number of samples of PGRFA distributed with the standard material transfer agreement (SMTA) to 4 million. All the CGIAR Centres have reported on concluded SMTAs through Easy-SMTA.

5. The report also describes the use of the SMTA for non-*Annex* 1 crops, as decided by the Governing Body, and the current practices regarding PGRFA under Development. Further details regarding this latter topic is provided in another working document for this Session.[2] The issue appears to be of particular significance in view of the CGIAR data for year 2015. According to the report, approximately three quarters of the germplasm distributed by the CGIAR comes from their breeding programs.

6. The report presents CGIAR activities on characterization and breeding in partnership with both public institutions and private sector entities, which develop improved varieties from CGIAR genebank or breeding lines. The report also includes information on pre-breeding, phenotyping and gene sequence information as included in CGIAR Centers' breeding work on most of their mandate crops. The report refers to a separate analysis of how such activities have contributed to generating and sharing non-monetary benefits collectively, and to reinforcing Farmers' Rights.[3]

7. The report further summarizes the engagement of the CGIAR, both as a System and at the level of individual Centres, with inter-sessional activities, *inter alia*, for the implementation of the Global Information System under Article 17 of the Treaty, the process for the enhancement of the

[1] The CGIAR provided additional information on plant breeding impacts, non-monetary benefit-sharing and contributions to Farmers' Rights, in a separate information document (IT/GB-7/17/Inf.20).
[2] Document, IT/GB-7/17/11, *Report on the Practice of the CGIAR Centers for Plant Genetic Resources under Development*.
[3] See footnote n. 1 above.

Multilateral System, and with national capacity building for mutually supportive implementation of the Nagoya Protocol on Access and Benefit-sharing and the International Treaty.

8. The report by the CGIAR Centers contextualises the distribution of germplasm under the terms of the Multilateral System, including the distribution of PGRFA under development, within extensive characterization and breeding work conducted by the Centers, and with the impacts of such work on the generation of non-monetary benefits. This holistic approach to germplasm distribution is reinforced by the expanding engagement by the Centers with established work tracks of the International Treaty, such as the Global Information System, Farmers' Rights, the harmonious relationship with the Nagoya Protocol. Such expanding engagement by the CGIAR offers an opportunity for the Governing Body to provide informed policy guidance, as foreseen in under Article 15 of the Treaty and related agreements, in relation to the *ex situ* collections that the CGIAR Centres hold. Such policy guidance is, in practice, constituted by the different Resolutions that the Governing Body adopts for all areas of work relevant to the agreements concluded under Article 15 of the Treaty, as illustrated in the CGIAR report.

9. The report by the SPC contains updated information on genebank holdings, distributions within the region and transfer practices. The report illustrates how genebank activities are fully streamlined into bilateral and multilateral technical cooperation activities, including those financed by the Benefit-Sharing Fund, that address food security within broader regional priorities (e.g. climate change). The report also informs of on-going cooperation between SPC and the Global Crop Diversity Trust, including for the sharing of information through Genesys.

10. Given the increasing level and scope of engagement by relevant institutions with multiple work tracks of the International Treaty, it appears advisable that the provisions of the agreements under Article 15 on regular consultations between the Secretary and the signatory institutions on implementation of the agreements, be fully operationalised, subject to the availability of financial resources, and reported to the Governing Body. In regard of the CGIAR Centres, such consultations could take place on an annual basis in the context of meetings, for instance of the new Genebank Platform of the CGIAR, in order to maximize synergies and optimize resources.

III. OTHER RELEVANT DEVELOPMENTS AND ACTIVITIES CARRIED OUT BY THE SECRETARY

11. The agreements concluded under Article 15 of the Treaty foresee that, in cases where the orderly maintenance of the *ex situ* collections is impeded or threatened by whatever event, including force majeure, the Secretary, with the approval of the host country, is to assist in its evacuation or transfer, to the extent possible. In accordance with the agreements, the signatory international institution undertake to manage and administer these *ex situ* collections in accordance with internationally accepted standards. Upon request by the signatory international institutions, the Secretary of the International Treaty endeavours to provide appropriate technical support.

12. Pursuant to the above provisions, the Secretariat has taken action or initiated consultations and remedial processes in relation to three *ex situ* collections, namely those of the Tropical Agricultural Research and Higher Education Center (CATIE), the International Coconut Genebanks for African and the Indian Ocean, and International Coconut Genebanks for the South Pacific.

13. In April 2017, the Management of CATIE informed of the decision to discontinue the operation of the genebank cold room, housing the collections under the purview of the International Treaty, due to severe resource constraints. After preliminary assessment of the reasons and possible impact of such a decision, the Secretary consulted with host government of Costa Rica, and facilitated the establishment of a joint task force composed of a few, jointly agreed, officials and independent experts. The terms of reference of task force include an updated assessment of the status of the collection, including its legal status, and the recommendation of practical measures to either guarantee continued maintenance or the relocation the collection. The initiative has met the full support by the

host government. The Global Crop Diversity Trust, as a partner to the initiative, has also mobilized expertise, including advisory support, to contribute to the any remedial processes or relevant follow-up actions. At the time of the preparation of this document the deployment of the task force is being initiated.

14. In June 2017, the Government of Ivory Coast, which hosts the international coconut collection, approached FAO in order to clarify its responsibilities for the collection, which is reportedly under threat. At the time of this document, the Secretariat is tentatively exploring the possibility of a field mission of staff and technical experts in order to assess the status of the collection and liaise with the government and other partners with a view to finding appropriate long-term solutions, including through setting up a similar task force as described above.

15. Additionally, the other coconut collection that is under the purview of the International Treaty, i.e. the International Coconut Genebank for the South Pacific, is also reported as being under persistent threat. At the time of preparation of this document, the Secretary was in the process of establishing contact with the host government of Papua New Guinea. The Secretariat is also holding consultations with some donor countries, regional organizations and other possible partners in order to establish measures and find the means for securing these collections, including through the revitalization of the International Coconut Genetic Resources Network to which the coconut collections under the Article 15 agreements belonged. The Secretary continues to monitor the relevant developments in order to exercise the responsibilities as may be necessary.

16. With regard to new initiatives under Article 15, the International Center for Biosaline Agriculture (ICBA) has expressed interests and commenced discussions with the Secretariat in May 2017 to explore the possibility of concluding an agreement with the Governing Body. After initial round of discussions, additional consultations are being scheduled in order to assess the legal status of the germplasm that ICBA holds and the feasibility of concluding an agreement in regard to the collection.

IV. GUIDANCE SOUGHT

17. The Governing Body is invited consider the reports and the information provided in this document and provide further guidance, taking into account the elements for a possible Resolution provided in *Appendix* 3 to this Document.

Appendix 1 Report from CGIAR

Executive Summary

The CGIAR System report to the Seventh Session of the Governing Body constitutes this main section to be included in a Working Document assembled by the Secretariat, and an Information Document: IT/GB-7/17/Inf. 20. The two documents should be read together.

The CGIAR System has recently adopted new governance arrangements and a new research portfolio. Since January 2017, the Genebank Platform Policy Module coordinates representation of the CGIAR at the Governing Body meetings.

The report provides information on the eleven CGIAR Centers with Article 15 agreements with the Governing Body that, currently host over 736,000 accessions of crop, forage and tree germplasm which they make available under the SMTA. During the first 10 years of their operation under the ITPGRFA framework, from January 2007 to December 2016 inclusive, the Centers' genebanks and breeding programs combined distributed over 3.9 million PGRFA samples under 47,810 SMTAs. 34% was sent to recipients in Asia, 19% to recipients in African, 16% to recipients in Latin America and the Caribbean, 15% to the Near East, and 11%, 4% and 1% to Europe, North America and South West Pacific respectively.

The report provides an overview of the Centers' plant breeding efforts over the last four years, including details about crops, breeding objectives and geographical focus. The report describes the different modalities through which the Centers distribute improved materials (which may constitute PGRFA under Development in the lexicon of the ITPGRFA).

There is a link between the objectives of breeding programs, distribution modalities and the kinds of additional terms and conditions that Centers sometimes require for recipients (along with the SMTA) when distributing PGRFA under Development. The CGIAR system has adopted Guiding Principles that govern how the Centers exercise their discretion as Providers of PGRFA under Development under the ITPGRFA Framework. The CGIAR publishes annual reports concerning Centers' practices and compliance with these Guiding Principles.

The report provides details (in Information Document IT/GB-7/17/Inf. 20) about the impacts of CGIAR crop improvement programs. The report also details other kinds of non-monetary benefits – technology transfer, information exchange, capacity strengthening - that CGIAR Centers generate and share with partners, farmers, national programs and the international community.

CGIAR has also adopted a policy to promote Farmers Rights. That policy and related implementation guidelines are included in Information Documents: IT/GB-7/17/Inf. 20. So too are a number of case studies of how Centers have promoted farmers rights.

Centers are increasingly taking advantage of technological advances to generate and analyze genetic sequence data as part of their research and development programs, in this way contributing to the conservation, and sustainable use of plant genetic resources and benefit-sharing. The CGIAR Centers are preparing a report on this issue for submission to the CBD, and will make copies of that report available during the Seventh Session of the Governing Body.

The CGIAR Centres have participated actively in a number of processes under the ITPGRFA framework including the development of the Global Information System (GLIS), the Working Group to Enhance the Functioning of the Multilateral System, and the FAO/Bioversity/Treaty Secretariat Joint Program to strengthen capacities to implement the multilateral system.

I. Introduction

CGIAR routinely makes reports to the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), with respect to both the execution of the responsibilities of some Centres pursuant to their 2006 Article 15 agreements with the Governing Body, and their contributions to the implementation of the ITPGRFA more generally[4]. For this Seventh Session of the Governing Body, the CGIAR submits this report for inclusion in the Working Document prepared by the Secretariat regarding Article 15 organizations along with one complementary Information Documents which should be read in conjunction with this report: Supplementary information for CGIAR report: non-monetary benefit-sharing, contributions to Farmers' Rights and plant breeding impacts, IT/GB-7/17/Inf. 20.

II. Revised CGIAR structure and governance

CGIAR revised its governance model to operate under a 'CGIAR System' with effect from 1 July 2016 [5]. The new structure was implemented through the adoption of a CGIAR System Framework and a Charter of the CGIAR System Organization, which define the roles, responsibilities and accountabilities of the various bodies comprising the CGIAR System. The revised governance structure maintains many of the fundamental elements of the previous structure and key components include: CGIAR Research Centres; a CGIAR Trust Fund;[6] a System Council;[7] a System Management Board;[8] a CGIAR System Organization;[9] the Independent Evaluation Arrangement (IEA);[10] the Independent Science and Partnership Council (ISPC);[11] a Partnership Forum;[12] and a General Assembly of the Centres.[13]

The CGIAR's Strategy and Results Framework and the UN's Sustainable Development Goals (SDGs) underpin the overall strategic direction of the CGIAR. The CGIAR Research Portfolio 2017-2022 is structured around two interlinked clusters of challenge-led research: 1) Innovation in 'Agri-Food Systems' which involves adopting an integrated, agricultural systems approach to advancing productivity, sustainability, nutrition and resilience outcomes at scale; and 2) Four cross-cutting 'Global Integrating Programs' framed to work closely with the Agri-Food Systems Programs within relevant agro-ecological systems. These clusters are supported by three research support 'Platforms' which underpin the research of the whole system (see Figure 1)[14].

The Genebank Platform is coordinated by the Global Crop Diversity Trust and provides support and coordination to the genebanks of the CGIAR Centres that have signed agreements with the Governing Body pursuant to Article 15 of the ITPGRFA. It also provides support and coordination to the Germplasm Health Units, which maintain health of the seed and propagation material meant for conservation and distribution in line with the phytosanitary regulations of the International Plant Protection Convention (IPPC). The Genebank Platform consists of three modules: Conservation, Use

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[4] CGIAR reports to the Second, Third, Fourth and Sixth Sessions of the Governing Body are available at http://www.fao.org/3/a-be157e.pdf, http://www.fao.org/3/a-be109e.pdf, http://www.fao.org/3/a-be118e.pdf and http://www.fao.org/3/a-mo439e.pdf respectively.

[5] An overview of the new governance structure is available at http://www.cgiar.org/about-us/our-governance/

[6] Provides a pooled funding mechanism to serve as a multi-donor funding mechanism used to support the 'CGIAR Portfolio' and system-wide actions and entities

[7] Operates as a governing body representing donors

[8] Operates as a governing board elected by the Centres

[9] Operates as an independent international organization which facilitates coordination between various bodies and functions of the new CGIAR System

[10] Advises the System Council through the conduct of independent, external evaluations of performance of the CGIAR System

[11] Advises the System Council on science and research and partnership matters

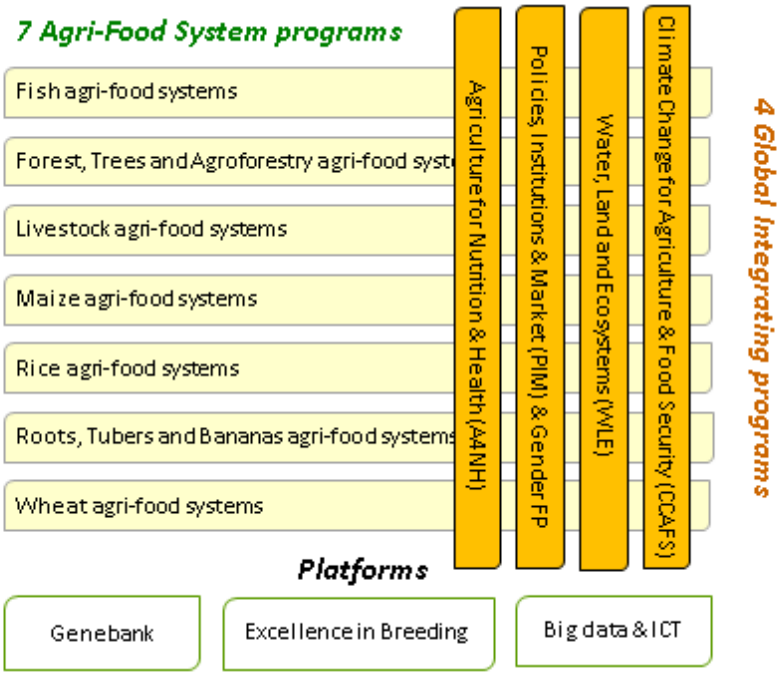
[12] Provides direct interaction between Funders of the CGIAR System and the CGIAR Centres

[13] Constituted by the Board Chairs and Directors General of the 15 CGIAR Centres

[14] Further information concerning these Programs is available at http://www.cgiar.org/about-us/our-programs/

and Policy. The Policy Module coordinates representation of the CGIAR in intergovernmental fora dealing with genetic resources policy issues, including the Governing Body of the International Treaty. Governance for the Policy Module in particular is provided by the General Assembly of the Centres and the System Management Board.

Figure 1: CGIAR Research Portfolio 2017-2022: 11 Programs + Platforms



All the CGIAR Centers and associate research programs work in partnership with national agricultural research systems, universities and other advanced research institutes, public and private organizations, farmers, students, the civil society at large and donor organizations. Reference to a Center or CGIAR research program indicates where this program resides. The CGIAR wishes to explicitly acknowledge the tremendous partnership with national governments, farmers, philanthropic organizations, civil society at large, public and private sector organizations that enable the work undertaken, innovations being co-created, and impact being achieved.

III. Holdings, distributions and acquisitions of PGRFA under the ITPGRFA framework

A. Holdings

The eleven CGIAR Centres that signed agreements with the Governing Body of the ITPGRFA in 2006 currently conserve and make available (under the SMTA) a total of 736,111 accessions of crop, tree and forage germplasm. Details concerning the Centres, crop collections and numbers of accessions available for distribution under the SMTA are included in Table 1.

Table 1: PGRFA conserved and made available by CGIAR Centres' genebanks pursuant to their Article 15 agreements with the Governing Body

Centre	Crop	Accessions available with SMTA
AfricaRice	Rice	21,300

Bioversity	Banana	1,500
CIAT	Beans	37,987
	Forages	23,140
	Cassava	6,643
CIMMYT	Maize	28,193
	Wheat	154,744
CIP	Andean roots and tubers	1,173
	Potato	6,527
	Sweet potato	5,328
ICARDA	Lentils	11,635
	Grasspea	4,193
	Forages	25,556
	Fababean	9,900
	Chickpea	14,238
	Barley	31,554
	Pea	6,105
	Wheat	41,181
ICRAF	Multipurpose trees	5,594
	Fruit trees	3,600
ICRISAT	Chickpea	19,266
	Groundnut	15,039
	Pigeon pea	13,482
	Pearl millet	23.057
	Small millets	11,365
	Sorghum	39,264
IITA	Cowpea	15,115
	Cassava	3,398
	Maize	1,561
	Misc. legumes	6,623

	Banana	321
	Yam	5,839
ILRI	Forages & fodder	18,627
IRRI	Rice	123,019
TOTAL		736,111

B. Distribution data

As required by SMTA Article 5.e, and pursuant to guidance provided by Governing Body Resolution 5/2009,[15] the CGIAR Centers report their PGRFA transfers using the SMTA to the Governing Body of the Treaty. Most of the Centers provide such updates annually; one Centre provides the information in 'real time' using EasySMTA. The CGIAR requested the Treaty Secretariat to provide the aggregate data on distributions by the CGIAR that is included in this section of the report (based on each Centre's individual transfer reports to the GB). We express our appreciation of the Secretariat's responsiveness in this regard.

Over the first 10 years of their operation under the ITPGRFA framework – from January 2007 to December 2016 -- the CGIAR Centers distributed almost 4 million samples of PGRFA with over 47,000 SMTAs.

Details about how much material was distributed by each Center during this ten year period (January 2007 to December 2016) is set out in Table 2 below. These figures include PGRFA distributed by Centers' genebanks and their breeding programs (if they have breeding programs).

Center	SMTAs	Samples	PUD	From	To
AfricaRice	483	46,440	28,492	2007-03-05	2017-01-05
Bioversity	386	6, 109	653	2007-01-24	2016-12-22
CIAT	2,547	246,650	36,034	2007-01-05	2017-05-05
CIMMYT	18,127	1,986,228	0	2007-03-16	2016-12-28
CIP	560	15,391	10,183	2007-01-19	2017-05-08
ICARDA	12,977	779,390	698,110	2007-02-13	2016-12-14
ICRAF	154	679	0	2011-09-03	2016-12-04
ICRISAT	3,885	159,362	34,313	2009-11-11	2017-01-19
IITA	728	29,792	0	2007-03-07	2017-04-28
ILRI	777	9,390	0	2007-02-22	2016-11-30
IRRI	7,186	635,090	379,491	2007-01-04	2017-05-18
	Total SMTAs: 47810	Total Samples: 3,908,412			

[15] Resolution 5/2009: Procedures for the Third Party Beneficiary

The proportion of materials distributed by CGIAR Centres' genebanks and breeding programs varies from year to year; in general approximately 1/5-1/4 of the materials distributed each year is from the genebanks.[16]

Most of the 3.9 million samples distributed by the CGIAR Centers was to recipients in developing countries and countries with economies in transition, mostly to public sector research organizations, universities, regional organizations, germplasm networks and other gene banks. Figure 2 provides a break-down of regional distributions of materials from the CGIAR Centers. As a representative example, Figures 3 and 4 represent CIMMYT's and IRRI's distributions to recipients world-wide for the two year period of 2015-2016 inclusive.

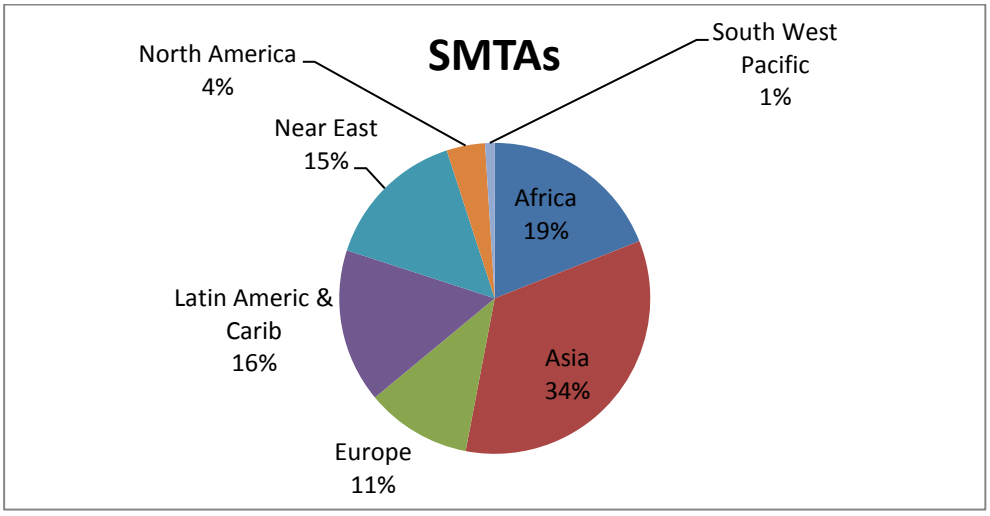


Figure 2: Regional distribution of SMTAs from the CGIAR Centres, Jan 2007-Dec 2016

Figure 3: CIMMYT's distributions world-wide, 2015-2016. Countries in yellow received from 1 to 100 samples. Countries in pale grey received from 101 to 1000 samples. Countries in medium grey received from 1001 to 10,000 samples. Countries in dark grey received from 10,001 to 20,000 samples. Countries in black received from 20,001 to 40,000 samples.

[16] See note 1 above for links to previous CGIAR reports to the Governing Body

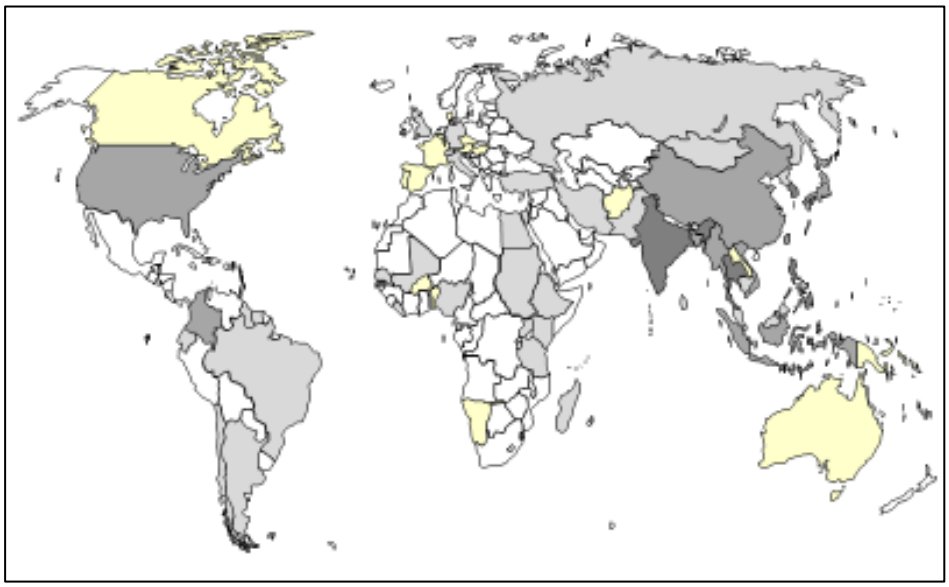


Figure 4: IRRI's distributions world-wide, 2015-2016. Countries in yellow received from 1 to 100 samples. Countries in pale grey received from 101 to 1000 samples. Countries in medium grey received from 1001 to 10,000 samples. Countries in dark grey received from 10,001 to 20,000 samples. Countries in black received from 20,001 to 40,000 samples.

C. Non-annex 1 material distributions

Only 1% of the material distributed by the Centers belongs to non-Annex 1 crops. The pattern of distribution is generally consistent with that of Annex 1 crops, that is, mainly to public sector recipients in developing countries.

Following the decision of the Second Session of the Governing Body in 2009, the CGIAR Centers have been using the SMTA to distribute non-Annex 1 materials from their in trust germplasm collections and other materials acquired with permission from the providers for the Centre to make it available using the SMTA. Since that time, the CGIAR Centers have communicated to the Governing Body that they would like to continue this practices. While the amount of non-annex 1 materials distributed by the Centers is small, transaction costs associated with maintaining systems for distributing non-Annex 1 materials with a different instrument would be significantly greater. The Centers appreciate the administrative efficacy of being allowed to use the same transfer instrument for both Annex 1 and non-Annex 1 materials.

D. Distribution modalities[17]

The CGIAR Centres transfer Centre-improved materials for breeding, research and training for food and agriculture through a number of modalities. These modalities include:

- direct transfer from genebank or breeding program;
- international evaluation and performance nurseries;
- specialized networks created for sharing, evaluating and characterizing improved materials (e.g. INGER-Asia, INGER-Africa, IWIN-Global);
- consortia developed to support breeding and dissemination of hybrids (e.g. IRRI's Hybrid Rice Development Consortium (HRDC) and ICRISAT's pigeon pea, pearl millet and sorghum Hybrid Parents Research Consortium (HPRC)); and

[17] This subsection is reproduced from the CGIAR report to the Sixth session of the Governing Body, 2015

- decentralized or collaborative breeding programs, primarily with national programs in developing countries.

E. Distributing PGRFA under Development

When the improved materials incorporate PGRFA from the MLS, transfers for conservation and use for breeding, research and training for food and agriculture are always effected using an SMTA. Some Centres (e.g., IRRI, AfricaRice) have adopted the policy of always identifying such materials, if not ready for commercialization, as PGRFA under Development and listing incorporated materials from the MLS in annex 1 of the SMTA, whether they include additional terms and conditions or not. Other Centres (e.g. CIMMYT) have opted not to identify such materials as PGRFA under Development, because they do not add additional terms and conditions, and simply make the material available using the SMTA (without additional conditions). Since they do not identify the materials as PGRFA under Development, they do not need to include details about MLS ancestry from which the materials were derived in annex 1 of the SMTA.

As included in its report to the 6th session of the GB, the following is a summary of the kinds of conditions that Centres may add, if and when they request additional conditions when transferring PGRFA under Development. They include obligations upon recipients to

- share characterization, evaluation, research data;
- acknowledge the sources of materials if/when research findings and data are published;
- obtain approval before passing the material to subsequent recipients;
- either notify, or obtain approval before seeking to register or commercialize new varieties incorporating the PGRFA under Development;
- provide a sample of any released varieties to the genebank;
- acknowledge the provider when derived material is commercialized;
- not commercialize the material in the form received; and
- acknowledge that the PGRFA under Development is the intellectual property of the Provider.

In the interim period between the 6th and 7th sessions of the Governing Body, in response to a request from the Secretariat (following GB resolution 1/2015), each of the relevant Centres provided the Secretariat with additional details concerning their text of additional terms and conditions they require for some of their PGRFA under Development transfers, including templates that they have developed for that purpose. The Secretariat will prepare a separate report for the Seventh Session of the GB based on its findings.

In addition to needing to comply with the ITPGRFA and the SMTA, the Centres' management (including distribution) of PGRFA under Development also must be compliant with the CGIAR Principles on the Management of Intellectual Assets (IA Principles).[18] The IA Principles underscore that access to PGRFA must be facilitated in accordance with the ITPGRFA and provide guidance on how the CGIAR Centres can exercise the discretion they have as Providers of PGRFA under Development under the ITPGRFA; in particular, the IA Principles address (and limit) the kinds of restrictions that Centres can place on Centre-improved materials and establish threshold criteria for justifications that Centres must satisfy for creating such restrictions.

Three types of restrictions are potentially permitted pursuant to the IA Principles. First, Centres may grant exclusive rights to third parties to commercialize the materials they have (co)developed, provided the exclusivity is limited in scope (e.g. country specific, time limited), and the restrictive arrangement is necessary for the further development or to maximize the scale and scope of impact, of

[18] The IA Principles, effective as of 7 March 2012, are available at https://library.cgiar.org/handle/10947/4486. The Implementation Guidelines for the CGIAR IA Principles on the Management of Intellectual Assets are available at https://library.cgiar.org/handle/10947/4487

the materials concerned. Very importantly, the IA Principles require that the materials that are subject to a limited exclusivity arrangement continue to be made available to public research organizations for non-commercial research and breeding, and for emergency use. Second, the acquisition of third party materials on terms that restrict the global accessibility of products or services resulting from the use of the CGIAR Center materials into which they are incorporated for commercialization, research and development is permitted provided equivalent materials are not available from alternative sources under less restrictive conditions and the products and services in question will further CGIAR's mission in the countries in which they are made available. Third, a Center may file or authorize a third party to file a patent or plant variety protection over CGIAR Center materials provided such protection is necessary for the further development or to maximize the scale and scope of impact, of the materials concerned. In each instance the restriction is permissible only if it furthers the CGIAR Vision.[19]

The CGIAR Centres make annual reports to the CGIAR System Organization concerning their implementation of the IA Principles; the Boards of Trustees of each Centre must also provide an annual statement that their Centre is in compliance with IA Principles. The System Organization and a three-member Intellectual Property Group appointed by the System Council (SCIP Group)[20] review the restrictive arrangements and justifications reported by Centres and assess whether such arrangements comply with the IA Principles.

The System Organization publishes an annual report concerning the CGIAR Centres implementation of the IA Principles.[21] Delegates and observers to the Governing Body meeting are encouraged to review those reports, to gain further insight into the governance arrangements related to PGRFA under Development in the CGIAR, and to learn more about CGIAR Centre practices concerning the restricted arrangements discussed above.

F. Acquisitions of PGRFA through the MLS by the CGIAR Centres

The CGIAR Centres' reports to the Governing Body in 2007, 2009 and 2011 included data on PGRFA that the Centres acquired through the multilateral system. Since the Centres now rely on aggregate data from the Secretariat based on Providers' reported transfers, it has not been possible to obtain an accurate picture of materials received by the Centres, a result of time lags in reporting by Providers, especially for more recent years. To attempt to address this issue, at least partly, the Centres have compiled their own data to include in this report concerning the materials they received under the SMTA during the four year period between 2013-2016. This data includes materials received by Centres' genebanks and breeding programs. In the time available to prepare this report, it was not possible to assemble all the relevant data from all the Centres, so the figures here under-represent the total actual amount of materials received during the four year period.

Between 2013-2016 inclusive, the Centres' genebanks and breeders received at least 17,426 PGRFA samples, under at least 190 SMTAs, from providers in at least 53 countries.

Table 3: Materials received by CGIAR Centres under SMTAs from regions (excluding other CGIAR Centres) 2013-2016

Regions	Number of SMTAs	Number of samples
Africa	54	7055

[19] Defined in the policy as "a world free of poverty, hunger and environmental degradation"
[20] Constituted by funders of the CGIAR System as indicated in section 2 above.
[21] The 2012, 2013, 2014, 2015 CGIAR Intellectual Asset Reports are available at http://library.cgiar.org/bitstream/handle/10947/2887/CGIAR%20Intellectual%20Asset%20(IA)%20Report%202012.pdf?sequence=1; https://library.cgiar.org/handle/10947/3404; https://library.cgiar.org/handle/10947/3977; and https://library.cgiar.org/bitstream/handle/10947/4372/2015%20CGIAR%20IA%20Report.pdf?sequence=4 respectively

Asia	88	4277
Latin America and the Caribbean	12	2913
Near East	3	43
North America	11	1082
Southwest Pacific	3	360
Europe	19	1696

IV. Characterization and breeding in the CGIAR

From 2012 to 2016, crop breeding work in the CGIAR has taken place in the framework of the following CGIAR research programs: MAIZE, WHEAT, RICE (previously known as the Global Rice Science Partnership- GRiSP), Dryland Cereals, Grain Legumes, Roots, Tubers and Bananas and Livestock (for forages). Table 4 presents the crop and geographical coverage of these programs, and their main objectives. CGIAR breeding work takes place in partnership with public and private organizations in the target countries. These organizations develop improved varieties derived from CGIAR lines, release these varieties through public and private sector partners, and catalyze deployment of the seed of the improved varieties in the target geographies.

Table 4: Summary of recent CGIAR breeding efforts (2012-2016)

CGIAR Research Program	Crop	Centre	Target countries and regions	Breeding objectives
MAIZE	Maize	CIMMYT IITA	Sub-Saharan Africa, Latin America and Asia	High grain yield, drought tolerance, heat tolerance, nitrogen use efficiency, resistance to major diseases, including tar spot complex, maize streak virus, Turcicum leaf blight, Gray leaf spot, etc., resistance to stem borers and post-harvest insect-pests, increased protein quality (QPM), increased pro-vitamin A content, increased kernel-Zinc content, superior stover fodder quality
			Eastern Africa	Resistance to maize lethal necrosis, drought tolerance
			East and West Africa	Resistance to Striga, drought tolerance
DRYLAND CEREALS	Sorghum	ICRISAT	India (Deccan Plateau)	Drought tolerance, delayed foliar senescence (stay-green), stover fodder quality
			Burkina Faso, Mali, Nigeria,	Increased grain yield, high stover quality, drought tolerance and Striga resistance.
			Ethiopia, Eritrea, Tanzania, South Sudan, Kenya, Malawi, Zimbabwe	Shoot fly resistance, high nutrient content (Fe and Zn), leaf disease resistance and Striga resistance

	Finger millet	ICRISAT	Ethiopia, Kenya, Tanzania, Uganda, Malawi	Resistance to blast, resistance to Striga, tolerance to drought, high nutrient content (Ca, Fe and Zn).
	Barley	ICARDA	North and East Africa, Central, West and South Asia	Improved nutritional (Zn, Fe, and β-Glucan) and malting qualities, drought tolerance, resistance to powdery mildew, resistance to stem gall midge, resistance to net blotch, and resistance to yellow dwarf virus.
	Pearl millet	ICRISAT	West Africa	Increased grain yield, resistance to downy mildew, head miner and Striga hermonthica, improved nutrition characteristics, and stay-green types
			India	Increasing genetic base, Downy mildew resistance in popular hybrids. Resistance to blast disease caused by Magnaporthe grisea. Resistance to downy mildew pathotype. High bio-mass.
			India, South Asia	Resistance to blast disease, improved fodder and forage, heat tolerance, high iron
			Eastern and Southern Africa	Resistance to blast disease, improved forage, heat tolerance
GRAIN LEGUMES	Common bean	CIAT	Eastern and Southern Africa	Tolerance to drought and low soil phosphorus
			South America Africa	Heat tolerance
			Africa	Greater potential of symbiotic nitrogen fixation
	Cowpea	IITA	West Africa Burkina Faso, Ghana, Mali, Niger, Nigeria	Tolerance to drought, heat and low soil phosphorus Pest and disease resistance (including aphids, thrips, bacterial blight and viruses) Striga tolerance
			Eastern and Southern Africa Mozambique, Tanzania, Zambia	Pest and disease resistance (including aphids, thrips, bacterial blight and viruses) , resistance to Alectra
	Soybean	IITA	Sub-Saharan Africa	Resistance to pests and diseases. Tolerance to abiotic stress. Increased yield.
	Groundnut	ICRISAT	Eastern and Southern Africa, West and Central Africa, South Asia	Short duration, low aflatoxin incidence, drought tolerance, rosette resistance, leaf spots resistance, high fodder quality
	Chickpea	ICRISAT	India	Heat tolerance (for late sown cultivation)
			India, Bangladesh, Ethiopia, Kenya	Early maturing and short duration varieties

			Turkey, Lebanon, Tunisia, Georgia, Azerbaijan, Iran, Kazakhstan, Russia, India.	Machine harvestable varieties, resistance to ascochyta blight, resistance to fusarium wilt
			North Africa, Central Asia, South Asia	Tolerance to herbicides
			South Asia Africa	Greater potential of symbiotic nitrogen fixation (SNF) under limited soil phosphorus
	Pigeonpea	ICRISAT	India	Early and medium maturity, resistance to Fusarium wilt and Sterility mosaic disease, drought tolerance, pod borer tolerance
			Kenya, Tanzania, Malawi, Mozambique, Uganda, Zambia	Medium maturity, photoperiod insensitivity, resistance to Fusarium wilt and Cercospora leaf spot, pod borer and pod fly tolerance, grain quality, drought tolerance
	Lentil	ICARDA	Bangladesh, Nepal and India	Early maturing and short duration varieties. Extra early maturing varieties for rice-lentil-boro rice systems
			North and East Africa	Tolerance to herbicides, resistance to asochyta blight, tolerance to Orobanche spp (parasitic weed)
	Faba bean	ICARDA	North and East Africa	Tolerance to herbicides, tolerance to Orobanche spp (parasitic weed), tolerance to various diseases.
RICE	Rice (sativa and glaberrima)	IRRI AfricaRice CIAT	World wide	High grain yield, superior grain quality (taste, texture, shape); tolerance to major rice pests and diseases; increased iron and zinc content
		IRRI	South Asia, South East Asia	Tolerance to drought, submergence, salinity, high temperature, low temperature, low solar radiation, tolerance to region-required combination of abiotic stresses, earliness and mechanized dry direct seeded and alternate wetting and drying, high straw quality, tolerance to major diseases- blast, bacterial blight, sheath blight, false smut, tolerance to major insects- brown plant hopper, stem borer, region preferred grain and cooking quality traits- low chalkiness, medium to high amylose content, high head rice recovery, export oriented segmented market quality traits.

		CIAT	Latin America	High grain yield, superior grain quality, tolerance to major rice diseases, good performance under reduced light
		AfricaRice	Africa	Tolerance to drought, submergence, salinity and low temperatures, tolerance to major biotic stresses, region preferred grain and cooking quality traits
WHEAT	Wheat (Bread and Durum)	CIMMYT, ICARDA	World wide	More durable yellow, stem, leaf rust resistance based on combinations of minor, slow rusting genes Resistance to other diseases of global importance (7 diseases) High Zinc and Iron content Industrial/bread-making quality
			Central Asia (Aral Sea and Fergana Valley)	Resistance to frost, salinity and yellow rust
			South America South Asia Ethiopia, Nigeria, Sudan	Heat tolerance
			South America South Asia	Resistance to various diseases, including wheat blast, Septoria leaf blotch, leaf rust, and Fusarium head blight
			North Africa and Middle East	Tolerance to Septoria tritici blotch in durum wheat Resistance to fusarium (FHB), nematodes and root diseases
ROOTS, TUBERS AND BANANAS	Sweetpotato	CIP	Sub-saharan Africa	Pro-vitamin A orange flesh, increased yield and earliness, Sweetpotato virus disease (SPVD) resistance, storability , high dry matter, non-sweet, adaptation to drought-prone environments, dual purpose use for pig feed
			South and South East Asia	Increased yield and earliness, Pro-vitamin A orange flesh, high dry matter content
	Banana and plantain	IITA Bioversity	Worldwide	High yield, resistance to Black Leaf Streak
			East Africa	Earliness, drought tolerance, resistance to nematodes and weevils, Fusarium wilt resistance, Banana Xanthomonas Wilt resistance.
			West and Central Africa	Earliness, drought tolerance, resistance to nematodes and weevils.
			Latin America and Asia	Resistance to Black Sigatoka complex and Fusarium Wilt
	Cassava	CIAT, IITA	Worldwide	Yield, high dry matter

			West and Central Africa	Cassava Mosaic Disease resistance, high carotenoids content, preemptive Cassava Brown Streak Disease resistance, improved poundability, low cyanogenic potential..
			East Africa	Cassava Mosaic Disease and Cassava Brown Streak Disease resistance, preferred culinary attributes
			Latin America	High carotenoids content, value-added starch functional properties, resistance to Cassava Bacterial Blight and green mites.
			Asia	New starches, resistance to Cassava Witch's Broom Disease, earliness for multi-cropping systems
	Potato	CIP	Worldwide	Earliness
			African & Andean highland tropics	Drought tolerance, late blight resistance, Fe & Zn biofortification, table-potato preference
			African & Asian mid-elevation tropics	Resistance to late blight and Potato Virus Y, chipping ability, heat tolerance, low anti-nutrient content
			Asian subtrotpical lowlands (Indo-gangetic Plains, Indochina)	Virus resistance, heat tolerance, long dormancy period, cold chipping ability, high dry matter content
			Central Asia temperate lowlands and mid-altitude	Photoperiod insensitivity, drought tolerance, salinity tolerance, virus resistance, red skin
	Yam	IITA	Worldwide	Yield, earliness, anthracnose resistance
			West Africa	High dry matter, nematode resistance
			Asia, East Africa, Latin America & the Pacific	Tuber quality, yam mosaic virus resistance
Livestock	*Urochloa decumbens U.brizantha ruziziensis*	CIAT	Global tropics	Tolerance to biotic (Spittlebug, Rhizoctonia) and abiotic (drought, water-logging, aluminium, soil fertility) stresses, productivity, Water Use Efficiency, Nutrient Use Efficiency, Nutritive Quality, seed yield
	Urochloa humidicola	CIAT	Global Tropics	Nutritive Quality, Biological Nitrification Inhibition, Tolerance to biotic (Spittlebug, Rhizoctonia) and abiotic (drought, water-logging, aluminium, soil fertility) stresses, productivity, Water Use Efficiency, Nutrient Use Efficiency, seed yield
	Megathyrsus maximus	CIAT	Global Tropics	Tolerance abiotic (drought, water-logging, aluminium, soil fertility)

	stresses, productivity, Water Use Efficiency, Nutrient Use Efficiency, Nutritive Quality, seed yield

Breeding programs are part of CGIAR's holistic approach to crop production challenges. All the mentioned CGIAR research programs include, in addition to breeding, other activities related to sustainable use of PGRFA, such as improving agronomic practices, strengthening seed systems, delivery of clean seed and planting material, developing markets for target crops and crop based products, and integrating and empowering women and youth in crop research, development and market chains. Most of the breeding work oriented towards bio-fortification has taken place under the umbrella program HarvestPlus.

A. Pre-breeding

Much work has taken place at the pre-breeding stage, where efforts have concentrated on identifying desirable characteristics and/or genes from unadapted materials that cannot be used directly in applied breeding and to transfer these traits to intermediate materials that breeders can use further in producing new varieties for farmers. These are necessary steps in the use of diversity contained in wild relatives and landraces and allow breeders to broaden the genetic base of crops. In the last decade, CGIAR pre-breeding work has increased attention to traits and genes that will allow crops to respond and adapt to climate change, increased demand for nutritious food and soil degradation. Characteristics such as heat and drought tolerances, improved nutritional values, adaptation to poor soils and increased potential of nitrogen fixation (of legumes) are the focus of a number of pre-breeding activities that aim to develop and test interspecific lines with valuable traits that can be later integrated in CGIAR Centres' and national partners' breeding programs. Examples include CIAT's work on heat tolerant bean lines crossing the wild relative Phaseolus acutifolius (source of heat tolerance) with Phaseolus vulgaris, ICRISAT's work for introgressing genes/alleles conferring botrytis grey mold (BGM) resistance from chickpea wild relatives into early maturing but BGM susceptible chickpea cultivars, CIP's work for the incorporation of novel late blight resistance from wild potatoes of Piurana series to cultivated potato and CIMMYT and ICARDA's work to use diploid wheat ancestors to broaden the genetic basis of wheat given the evolutionary bottleneck possibly created due to its hexaploid nature.

B. Phenotyping

Phenotypic characterization has continued to be the basis for plant selection in CGIAR breeders' work and CGIAR Centres have continued their efforts to set up and maintain robust phenotyping platforms based on global partnerships. Phenotypic evaluation remains by far the most expensive and time-consuming activity for breeding programs. In order to accelerate high throughput phenotyping with enhanced accuracy lower costs, some CGIAR research programs have started to implement improvements such as remote and ground sensing, increased efficiency in routine physico-chemical laboratory analysis, and mechanization and automation of seed preparation, and field and greenhouse trials. One example is the high-throughput phenotyping platform called LeasyScan that has been recently established in ICRISAT to assess the dynamics of leaf development and leaf conductance, traits that are the focus for plant drought adaptation. Examples of large phenotyping efforts in the period 2012-2016 are ICRISAT's work on finger millet in East African countries (phenotyping for nutrient concentration, resistance to various diseases and drought tolerance), on pearl millet in India (for resistance to blast disease), on groundnut in West and Central Africa (for tolerance to drought and reduced presence of aflatoxin), and CIP's work to identify sources of heat tolerance in potato and improve iron content in Andean- and commercial-type potatoes. Over the years, CIMMYT has put in place an extensive phenotyping network in sub-Saharan Africa, Asia and Latin America for screening and improving maize and wheat under managed drought and heat stress, and establishing precision phenotyping capacities for newly emerging, devastating diseases such as maize lethal necrosis, rusts, or wheat blast.

C. Gene sequence information

Genotyping and genome sequencing information are increasingly available for use in pre-breeding and breeding. For most target crops, DNA sequencing of thousands of accessions have generated a critical mass of data to create more accurate crop phylogenies and link genomic regions to traits. This research has shed new light on the relationships among crop varieties, landraces and wild relatives in collections and has helped breeders identify materials with desired traits. Genomic information has been extensively used and combined with classic breeding for guiding selection, crossing and evaluation in ongoing breeding programs for several crops. For example, promising cowpea lines resulting from marker assisted selection at IITA are currently being screened by the Institut de l'Environnement et de Recherches Agricoles in Burkina Faso, the Eduardo Mondlane University in Mozambique and the Institut Sénégalais de Recherches Agricoles, Senegal covering a specifics set of target traits in each country, including grain yield, drought tolerance, heat tolerance, Striga resistance and Macrophomina resistance.

Genomic work has allowed to identify genes that control important traits. For example, under the RICE program, researchers have identified an anaerobic germination gene that enhances rice germination under anaerobic conditions. Tolerance of anaerobic soil during germination enables uniform germination and seedling establishment under submergence, and is a key trait for the development of tropical direct-seeded rice, which represents a means of intensification and economization of rice production. ICRISAT researchers have identified the molecular markers for quantitative trait loci controlling grain iron and zinc content in sorghum, with the long range potential impact of combatting malnutrition in sorghum producing and consuming countries. Researchers working under the CGIAR program on Roots, Tubers and Bananas have identified quantitative trait loci associated with resistance to cassava green mite, cassava mosaic disease and cassava brown streak disease, as well as those associated to high pro-vitamin A or dry matter content in storage roots. MAIZE researchers have developed and deployed breeder-ready production markers for pro-vitamin A content, maize streak virus resistance, maize lethal necrosis resistance, and high haploid induction rate. CIAT work on forages has led to the identification of the genomic region associated with apomixis in Urochloa species which allows accelerating the breeding cycles and therefore faster achievement of high quality grasses.

Genomic work is now included to varying degrees in CGIAR centres' breeding work on most of the CGIAR mandate crops as listed in Table 4 above. It involves partners (mainly public research organizations) from many countries including India, China, Mexico and the US. CIMMYT, ICRISAT, IITA, ILRI and IRRI have facilities for engaging in genomic work. Some of these facilities provide genomic services to organizations in the region, like for example the KALRO (Kenyan Agriculture and Livestock Research Organization)/ CIMMYT facility for screening maize germplasm of public and private sector partners against MLN under artificial inoculation, established in 2013 at the KALRO Naivasha research station in Kenya’s Rift Valley. The Bioscience Centre at IITA (Ibadan, Nigeria) serves a regional hub for national programs and Universities. Most genomic sequencing information and genomic tools are made publicly available through online platforms and databases. Examples of these platforms and databases are the one maintained by the International Rice Informatics Consortium (http://iric.irri.org/), the Sweet Potato Gene Index (https://cipotato.org/sweetpotato_gene_index), the Cassava Genome Hub (http://www.cassavagenome.org/) and the Banana Genome Hub (http://banana-genome-hub.southgreen.fr/). Genomic work is directly linked to, and feeds into breeding programs at the CGIAR Centres and in partner organizations.

The CGIAR Centres are preparing a report on this issue for submission to the CBD, and will make copies of that report available during the Seventh Session of the Governing Body. That report will highlight particular cases where the generation and use of genomic sequence information has

contributed to the conservation and sustainable use of plant genetic resources and sharing benefits associated with the use of those resources.

In general, data and information flows are increasingly important aspects of breeding programs. Recent developments such as CassavaBase, YamBase and Breeding for Results (B4R) at CIMMYT and IRRI improve data management and sharing and facilitate collaboration in breeding. GRIN Global and GeneSys are also being deployed globally for genebanks to broaden their reach to clients and partners.

Due to word limits, it is not possible to include information about the actual impacts of CGIAR breeding activities in this Working Document. Therefore, we have included information about those impacts in Section 3 of Information Document IT/GB-7/17/Inf. 20. We urge delegates and observers to read that document, along with this report, as the impacts of CGIAR plant breeding and research are directly relevant to the objectives and implementation of the ITPGRFA.

V. Generating and sharing non-monetary benefits

In the period 2012-2016, CGIAR Centres engaged in a range of activities that contributed to non-monetary benefit-sharing as set out in Article 13.2 of the ITPGRFA: that is, exchange of information, access to and transfer of technology, and capacity building for the conservation and sustainable use of plant genetic resources. Again, due to word limitations for this Working Document, we have included further information about the CGIAR Centres contributions in these regards in section 1 of Information Document IT/GB-7/17/Inf. 20.

VI. Contributions to the recognition and implementation of farmers' rights

1 The CGIAR Intellectual Assets Principles (referred to in section 3 above) includes a section on Farmers Rights which states:

> 3.1 CGIAR recognizes the indispensable role of farmers, indigenous communities, agricultural professionals and scientists in conserving and improving genetic resources.
>
> 3.2 CGIAR seeks to be respectful of national and international efforts to protect and promote farmers' rights as envisaged by the Treaty and support the development of appropriate policies and procedures for their recognition and promotion.[22]

The Implementation Guidelines for the CGIAR Principles on the Management of Intellectual Assets elaborate on these articles and provide a list of practical actions that Centres should take to promote Farmers' Rights as described in Article 9 of the ITPGRFA. The relevant sections of those Guidelines are reproduced in Information Document IT/GB-7/17/Inf. 20, section 2. Some of the ways that CGIAR Centres contribute to the recognition and implementation of Farmers' Rights include repatriation of landraces, involvement of farmers in breeding programs and national policy consultations, enhancement of local seed systems, sharing knowledge and enhanced germplasm with farmers, and creating markets for food products based on local crops. Information Document IT/GB-7/17/Inf. 20 presents more in-depth case studies.

VII. CGIAR participation in initiatives under the ITPGRFA framework

The CGIAR Centres have participated in a number of initiatives and meetings under the ITPGRFA framework over the last biennium, including those associated with:

- creation of the Global Information System (GLIS) pursuant to Article 17 of the ITPGRFA
- the Ad Hoc Open-ended Working Group to Enhance the Functioning of the Multilateral System of Access and Benefit-sharing

[22] See IA Principles, note 15 above

- the Ad hoc Technical Committee on Sustainable Use
- the development of the Funding Strategy (i.e., two special events held prior to the Funding Strategy Working Group meetings)
- the Platform for the co-development and transfer of technologies
- the Global Consultation on Farmers Rights
- The Treaty Secretariat/GFAR Joint program on Farmers' Rights
- Workshop for Strengthening national capacities on plant genetic resources in the Near East Region in the context of the Global Information System
- Seminario Regional sobre la aplicación del Tratado Internacional sobre los Recursos Fitogenéticos para la alimentación y la agricultura
- Community Seed Bank Workshop

Work on the GLIS has focused on the development of Digital Object Identifiers (DOIs) as permanent unique identifiers for PGRFA, in close collaboration with the Treaty Secretariat. Through the Genebank Platform, GRIN-global and Genesys will be enhanced to accommodate DOIs and link with the server. The CGIAR genebanks plan to assign DOIs to all CGIAR genebank accessions by 2018. Through the RICE CRP, Breeding for Results (B4R) is also being enhanced to accommodate DOIs and link with the server, in this case for breeding and research materials. Through the Excellence in Breeding Platform, DOIs are being considered for more general adoption by breeders and researchers. This Platform is helping further Centers to implement DOI functionality.

In addition, under the framework of the FAO/Bioversity/Treaty Secretariat Joint Program to strengthen capacity of the national partners to implement the multilateral system, the CGIAR Centres were involved in the following activities. Two workshops entitled i) Embedding Mutually Supportive Implementation of the Plant Treaty and the Nagoya Protocol in the Context of the Broader National Policy Goals – A Workshop for National Teams of Policy Actors, 16th – 20th November 2015, hosted by ILRI, Ethiopia and ii) Workshop for Nagoya Protocol and Plant Treaty National Focal Points in South and Southeast Asia, 27 to 30 March 2017, hosted by IRRI, The Philippines. Bioversity International, the Secretariats of the ITPGRFA and CBD, the ABS Capacity Development Initiative, African Union Commission and ASEAN Center for Biodiversity (ACB) worked together to organize these workshops. The same partners (minus ACB) constitute the Expert Guidance Committee for a three year Darwin Initiative funded project entitled "Mutually Supportive Implementation of the Plant Treaty and Nagoya Protocol in Madagascar and Benin". Finally, with support from the Government of the Netherlands, Bioversity coordinated a five year project supporting implementation of the multilateral system, linked to sustainable use, climate change adaptation and farmers rights with national partners in Costa Rica, Guatemala, Cote D'Ivoire, Burkina Faso, Uganda, Rwanda, Nepal and Bhutan.

Appendix 2 Report from SPC

1. BACKGROUND

In 2009, the Pacific Community (SPC) through its Land Resources Division signed the 'Article 15' agreement with the Governing Body of the International Treaty. The agreement signifies a regional recognition of the importance of conserving and putting into good use the plant genetic resources of the Pacific currently held in the ex situ collections hosted by SPC's Centre for Pacific Crops and Trees (CePaCT) based in Suva, Fiji. This mutual partnership has without doubt brought positive developments in the region in the area of plant genetic resources conservation, utilization and improvement. Since the signing of this agreement, SPC has been the key 'agent' in assisting Pacific countries with the implementation of the Treaty.

This report provides an update on the implementation of the agreement as well as on related activities and initiatives in the Pacific Region for the period of November 2015 – June 2017.

2. CONSERVATION

As of June 2017, CePaCT holds 2,151 accessions of 17 crops in its in vitro collections. Another 37 unique accessions of breadfruit (20), bele (10), pineapple (2), taro (2) and yam (1) are maintained in the field and/or screen house (see Table 1 for details).

About 52% of the total accessions are taro, making it the largest taro collection in the world. This unique taro collection of Southeast Asian and Pacific heritage, its edible aroids family of alocaisa, swamp taro and xanthosoma, and the yam collection are now supported under a Long Term Grant (LTG) agreement with the Crop Trust. This is one of the Centre's unique achievements following the partnership with the global forum of plant genetic resources for food and agriculture, as SPC is the only non-CGIAR centre to be supported by the Crop Trust. Since 2009, the Centre has been receiving around 50,000 USD per year from the Crop Trust under the LTG agreement.

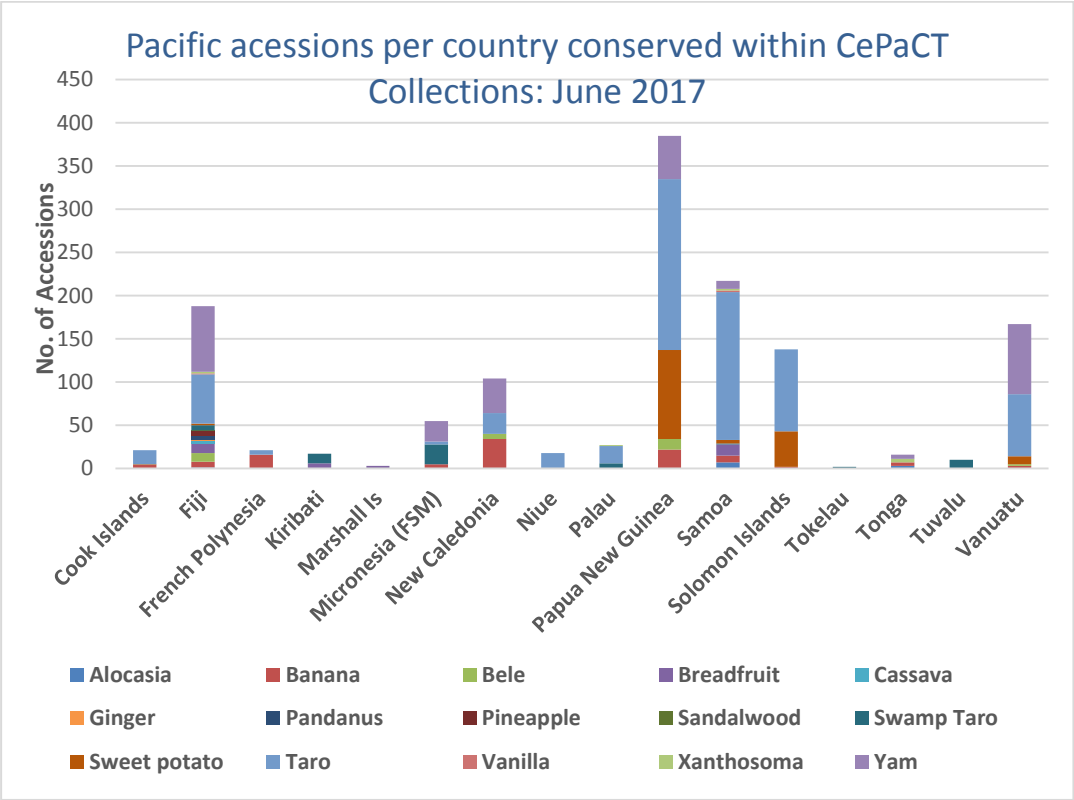
Table 1: CePaCT in vitro crop collections as at June 2017

	Crop	Species	No. Accessions In vitro	Field/SH
1	Alocasia	A. macrorrhizos	11	0
2	Banana	Musa spp.	157	0
3	Bele	A. manihot	10	10
4	Breadfruit	A. altilis	13	20
5	Cassava	M. esculenta	16	0
6	Swamp Taro	C. chamissonis	66	0
7	Ginger	Z. officinale	1	0
8	Pandanus	P. tectoris	5	0
9	Pineapple	A. comosus	7	2
10	Potato	S. tuberosum	54	0
11	Sandalwood	S. album	1	0
12	Sugarcane	Saccharum spp.	5	0
13	Sweet Potato	I. batatas	324	0
14	Taro	C. esculenta	1136	2
15	Vanilla	V. fragrans	4	0

16	Xanthosoma	X. sagittifolium	11	0
17	Yam	Dioscorea spp.	330	1
	TOTAL		2151	35

In terms of Pacific and non-Pacific accessions in the collections, around 65% of total accessions originate from the Pacific. Sixteen Pacific countries have accessions in the collections conserved by CePaCT. Eleven of these countries (namely; Cook Islands, Fiji, Kiribati, Marshall Islands, New Caledonia, Palau, Papua New Guinea, Samoa, Tonga and Tuvalu) are current Contracting Parties to the International Treaty. Papua New Guinea has the highest number (>300) of accessions while Tokelau has the least (<50). Graph 1 shows the status of countries and the number of accessions currently maintained by CePaCT.

Graph 1:

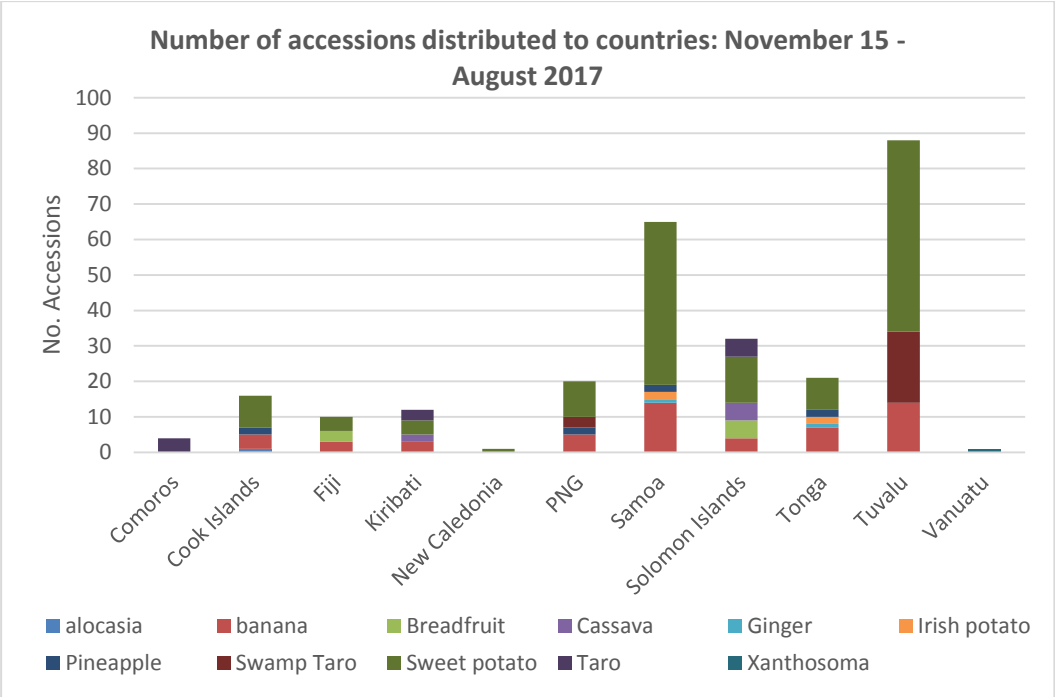


3. DISTRIBUTIONS OF PGRFA USING THE SMTA

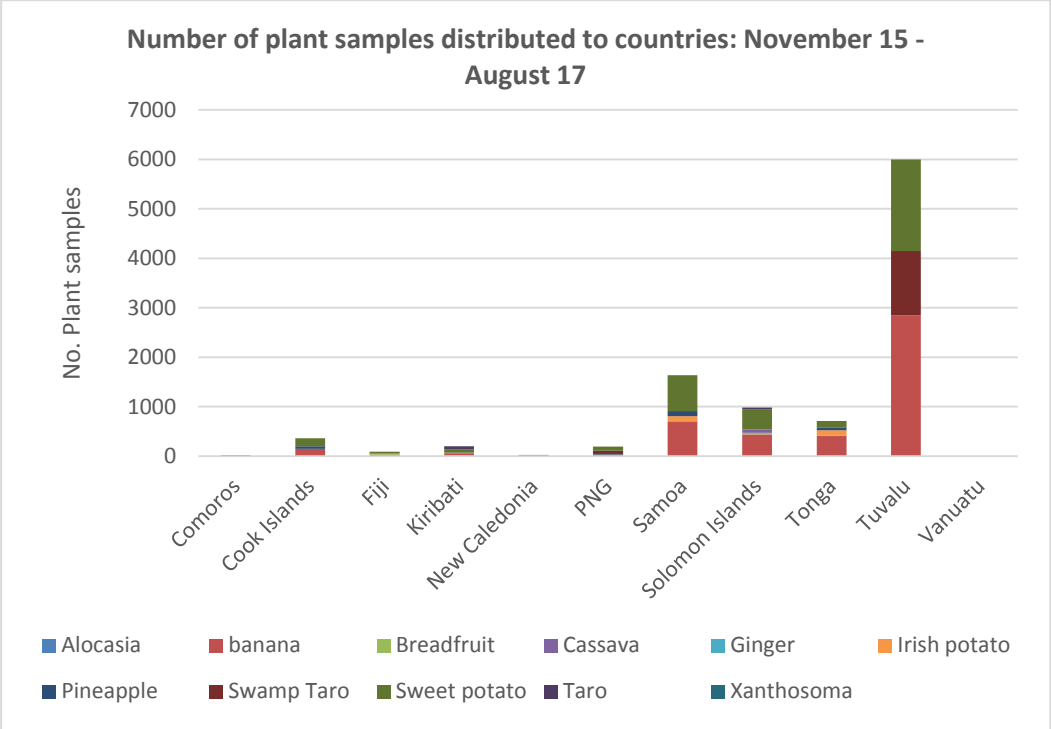
CePaCT distributed 271 accessions totalling to 10,247 tissue culture samples of 11 crops to 11 countries during the period of November 2015 – August 2017. A total of 169 PGRFAs and 89 PGRFAs under development were distributed and were covered under 18 SMTAs.

All of CePaCT's material transfers are covered under the SMTA irrespective of countries being Contracting Parties to the International Treaty. Graphs 2 and 3 below provide more details on accessions and plant samples distributed, per crop and per country.

Graph 2:



Graph 3:



Tuvalu received the highest number of accessions and plant samples mostly as part of Cyclone Pam rehabilitation work under an FAO Technical Cooperation Project (TCP/TUV/3502), which targeted the delivery of 6,000 plantlets of sweet potato, swamp taro and banana. Samoa received the second highest number of accessions as part of the EU-IACT (EU-Increasing Agricultural Commodity Trade) and the EU-PAPP (EU-Pacific Agriculture Policy) projects.

Most of the other distributions to Pacific countries were for evaluation for food security purposes. Taro accessions were sent to Comoro Islands in response to a request for Taro Leaf blight resistant/tolerant varieties.

4. TRANSFER MODALITIES AND PRACTICES CONCERNING CENTRE-IMPROVED MATERIALS IN PARTICULAR

CePaCT's crop distributions are mostly to its Pacific Agricultural Plant Genetic Resources Network (PAPGREN). This network consists of country focal points mostly located in the Research branch of the countries' Agriculture ministry or departments.

Funding wise, most of these germplasm transfers are funded by relevant bilateral projects (e.g. FAO TCPs) or regional projects (e.g. EUPAPP, EUIACT). The Centre mostly consults with requesting countries or project coordinators on the number of crops to be produced, costs involved, timing of the release of materials and other logistics before an agreement is reached, and documentation (including SMTA, import permits and phytosanitary certficates) and shipping are processed.

For PGRFA under development sourced from the IARCs of the CGIAR which the Centre had obtained under the SMTA with additional conditions, the Centre follows suit when transferring the same accessions to member countries. The same applies for PGRFA under development obtained under the SMTAs only without additional conditions.

Most of the Centre-improved materials are the new breeding lines of taro developed from the SPC-led Taro Breeding Programme currently based in Samoa. There are currently over two hundred and sixty new breeding lines developed from breeding programmes based in PNG, Vanuatu and Samoa, with the programme in Samoa solely focused on new lines resistant or tolerant to TARO Leaf Blight (TLB).

Under an Australian Climate Change project (ICCAI 1&2) and a recently completed Benefit-Sharing Fund (BSF) project (PR-83-Fiji) of the International Treaty, new taro breeding programmes have been established and are now progressing well in Fiji, Cook Islands and Tonga.

All taro breeding lines are distributed by CePaCT under the conditions of the SMTA without additional conditions.

Some few newly generated open pollinated seeds of sweet potato and cassava were also developed under the Treaty BSF project and these are currently being evaluated for further selection and characterisation before unique varieties are identified and shared with CePaCT.

5. CONTRIBUTIONS TO NON-MONETARY BENEFIT SHARING

Several activities for the benefit of regional members, combining capacity building, information sharing and technology transfer, have been initiated or continued under the aegis of the Centre.

- Capacity Building through associated projects: Under the first Pacific BSF project of the International Treaty (PR-83-Fiji) titled, Strengthening the resilience of Pacific agricultural systems to climate change through enhancing access to and use of (crop) diversity, capacity building sessions on the Treaty mechanisms and other relevant obligations were conducted for

6 participating countries (5 project countries and 1 newly joined Treaty country). As illustrated in the final project report that SPC delivered, these activities received multiple media coverage and exposure..

- Technical trainings / capacity building: The Centre has also been active in its support to its member countries in the area of capacity building, in the form of training provided for scientists from CARDI, Wallis and Futuna and staffs from the Ministry of Agriculture of Fiji. These trainings include plant tissue culture hands-on training, process of transfer of tissue culture materials to soil and other areas related to the Centre's association to the International Treaty and the obligations that the Article 15 agreement covers. Extensive reports on such activities were merged into the LRD Results report that was compiled for the SPC's results reporting for year 2016.
- Visitations to the Centre: There has been an increase in the number of high profile visitors to the Centre partly because of improved outreach by the organisation but also due to the Centre's own collaborations and outreach. Some of these high profile visits include Ministers from Australia, French Polynesia, Palau, Fiji and Samoa. Also included was a visit by Fiji's President to CePaCT. All of these provided opportunities to create awareness on SPC's collaboration with the International Treaty, and specifically on the Pacific countries' obligations under the Article 15 of the Treaty. Press releases covered these high-level visits to CePaCT (see http://www.fijitimes.com/story.aspx?id=392146 and http://www.spc.int/blog/pacific-community-hosts-australias-minister-for-the-pacific/)
- CePaCT data published on Genesys: An agreement was signed between SPC and the Crop Trust to allow CePaCT's database system to be uploaded to the Genesys Global Information system and linking to SPC portals. Linking to global information systems would also facilitate information exchange between stakeholders, researchers and farmers on crops and services of CePaCT and thus encourage utilisation of germplasm available for food security purposes. This work has been completed in late 2016 in collaboration with the Crop Trust.

6. OTHER ACTIVITIES OF RELEVANCE TO THE ITPGRFA FRAMEWORK

The strong partnership between SPC and the Crop Trust has concretized in two other work streams.

- CePaCT genebank review by the Crop Trust: as part of a strong relationship with the Crop Trust, CePaCT had its first audit of its genebank by the Crop Trust (July 31st – 4th August, 2017). While the official report is soon to be released for this process, the review was an important development in the efforts of the organisation to identify key gaps on every level necessary for the upgrade or scaling up CePaCT activities in the region as the a flagship area of SPC. A 3-member review team led by the Crop Trust visited CePaCT, Samoa and Fiji to review some of the work between SPC and the member countries on PGRFAs.
- Strengthening CePaCT post Cyclone Winston: in March 2017, under a new project with the Crop Trust titled, Strengthening Crop Conservation post cyclone Winston, CePaCT will continue to work with countries on sourcing unique diversity for safekeeping in CePaCT. Other activities of this smaller project deal directly with improving infrastructural, equipment and other useful systems that are deemed reliable and safe for keeping duplicates of the collections when disasters strike. The project will run for a year only.

SPC has facilitated the streamlining of regional technical activities into the framework of the International Treaty.

- **PAPGREN Coordination**: with the frequent onslaught of climate change induced disasters in the Pacific Region, CePaCT strives to work more closely with its member countries through the PAPGREN network and other relevant partners (e.g. farmer organisations, NGOs) to identify unique and resilient diversity that are being and mostly likely to be threatened by the effects of climate change and other disasters. The Centre has been pivotal in its efforts to not

only establish but also to continue adding value to a collection of crops and varieties with proven/ demonstrable traits to different climatic conditions such as drought, salinity, heat, waterlog etc. In 2016, under a recent ACIAR project (see below), CePaCT has worked with 5 countries (Fiji, Samoa, Marshall Island, Kiribati and Vanuatu) to source 27 new breadfruit diversity for safe keeping and DNA fingerprinting at the Centre. In addition, the promotion of plant genetic resources policies and guidelines in Pacific Island Countries and Territories has continued. SPC has liaised and updated PAPGREN members on progress of projects and other relevant issues via the PAPGREN mailing list. Marshall Islands, Papua New Guinea, Tonga, Tuvalu have now signed up to the Treaty since 2013 taking the number of countries to 10 from the 6 countries (Australia, Cook Islands, Fiji, Kiribati, Palau and Samoa) that had already joined the Treaty before the signing of the Article 15 agreement in 2009. SPC-LRD continues to support five countries, namely the Federated States of Micronesia, Nauru, Niue, Solomon Islands and Vanuatu towards accession to the International Treaty. The process also included liaising with the FAO Treaty Secretariat in Rome and with the PAPGREN national focal points in these five countries.

- **EU INEA**: SPC continued coordination with 20 global partner member countries on project administration and acquittals. This project wrapped up in December 2016 after 6 years of implementation including a 1-year no-cost extension. The project saw CePaCT distributed over 100 lines of traditional taro and new taro breeding lines from CePaCT to 16 countries from all corners of the world. In 2017, CePaCT has embarked on confirmed importations of new taro materials from some of the INEA countries such as Ghana, Portugal and India. These new taro lines are expected to be transferred under the SMTA conditions and will add new taro diversity to the taro collections at the Centre. The materials are also expected to be shared to Pacific island countries under the SMTA and after virus indexing with the Centre.
- **New diversity of breadfruits**: CePaCT is part of a new project, the ACIAR funded "Enhanced fruit production and postharvest handling systems for Fiji, Samoa, and Tonga", which is administered by the University of the Sunshine Coast for four years (2016 – 2019). This project will support the development of resilient tropical fruit value chains in Fiji, Samoa, and Tonga, based on the following five regionally significant fruit crops: papaya, pineapple, mango, breadfruit, and citrus. Overall, the project aims to increase the economic and disaster resilience of selected tropical fruit value chains. CePaCT, in partnership with the University of Sunshine Coast and the University of Queensland of Australia, is responsible for the 2nd project objective, that is, to improve climatic resilience of breadfruit through improved canopy management and investigating the diversity of breadfruit tree form. The project increases opportunities for crop improvement, collection and identification of unique accessions, which will then be added to the regional collections to be accessed by all.

7. THE COCONUT GENEBANK IN PNG

Safety duplication of the coconut genebank in PNG has been initiated through a new three-year project, 'Upgrading and Broadening the New South-Pacific International Coconut Genebank'. The project aims to conserve Pacific coconut genetic resources for current and future generations, and is funded by the Darwin Initiative, a UK government grants scheme which helps protect biodiversity worldwide. Coconut is an important food security and livelihood crop for Pacific farmers, and the project is timely in addressing national and regional concerns and aspirations to protect Pacific coconut diversity and associated livelihoods from climate change impacts and devastating pests and diseases. Not all-representative coconut biodiversity is conserved, and in many Pacific islands, this is already seriously threatened by soil salinization and climate change impacts, with potential sea level rise a looming threat. SPC-LRD's role in the project includes: (i) spearheading activities in the identification of endangered Pacific areas (linked to previous GIS and climate studies); (ii) coordinating collection missions for coconut cultivar accessions in Fiji and Samoa; and (iii) building the capacity of genebank staff and Pacific scientists in coconut breeding and conservation. As the

Pacific regional hub for the the International Treaty on Plant Genetic Resources for Food & Agriculture, SPC-LRD will facilitate, in collaboration with the International Coconut Genetic Resources Network (COGENT) and Asia Pacific Coconut Commission (APCC), the drafting of updated and new MOAs between ITPGRFA, Bioversity International/COGENT and the Governments of Fiji and Samoa. The project's first inception meeting took place in June 2016 in Lautoka, Fiji. In attendance were SPC-LRD and all project partners, namely Bioversity International, COGENT, the South Pacific International Coconut Genebank (ICG-SP), the Cocoa Coconut Institute (CCI) in PNG, the French Agricultural Research Centre for International Development (CIRAD) as well as representatives from the governments of Fiji, Papua New Guinea and Samoa. Other project partners are the Crop Trust and the Asia Pacific Coconut Community (APCC).

Appendix 3 Elements for a Resolution

Elements for a possible Resolution (to be integrated into DRAFT RESOLUTION **/2017 on Cooperation with International Bodies and Organizations)

THE GOVERNING BODY:

Recalling the provisions of Article 15.1 of the International Treaty;

1) ***Takes note*** of the information provided in the reports by institutions that have concluded agreements under Article 15 of the International Treaty and ***commends*** those institutions that submitted reports for the valuable contents, and ***urges*** them to continue to provide similar information to future sessions of the Governing Body;

2) ***Invites*** those institutions that have not submitted any report, to do so at the Eighth Session of the Governing Body and ***requests*** the Secretary to communicate this invitation to such institutions;

3) ***Requests*** the Secretary, subject to the availability of financial resources, to hold regular or periodic consultations with institutions that have concluded agreements under Article 15 of the Treaty, on implementation of the agreements and policy guidance, and report to the Governing Body at each Session;

4) ***Takes note*** of the ongoing efforts to secure the international collections whose orderly maintenance is at risk or threatened, and ***requests*** the Secretary to continue to exercise his responsibilities under the Article 15 of the Treaty, in close collaboration with host governments, as applicable, and in partnership with other interested governments and relevant institutions that are capable of providing technical and other necessary support to these efforts;

5) ***Invites*** Contracting Parties, donors and other stakeholders to provide necessary financial and material support to facilitate these efforts;

6) ***Requests*** the Secretary to continue in his efforts to secure agreements with other relevant international institutions that meet the requirements of Article 15 of the International Treaty.