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Item 11 of the Provisional Agenda

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

Tenth Session

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SUBMISSIONS FROM INTERNATIONAL ORGANIZATIONS AND INSTRUMENTS

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INTRODUCTION

1. The Commission, at its Seventeenth Regular Session, thanked the international instruments and organizations for providing information on their policies, programmes and activities relevant to its prioritized themes. The Commission requested its Secretary to continue seeking inputs on prioritized themes of the regular sessions from international instruments and organizations and to make them available for its information.¹
2. In March 2020, FAO invited international organizations and instruments to report activities undertaken in relation to plant genetic resources for this session of the Intergovernmental Technical Working Group on Plant Genetic Resources for Food and Agriculture (Working Group). As the Tenth Session of the Working Group, originally planned for June 2020, was postponed to 22-24 June 2021, in April 2021 FAO invited international organizations and instruments to report or to update their report.
3. The reports from the Global Crop Diversity Trust,² the International Treaty on Plant Genetic Resources for Food and Agriculture,³ the International Seed Federation (ISF),⁴ and the International Union for the Protection of New Varieties of Plants (UPOV)⁵ are presented as annexes to this document.

¹ CGRFA-17/19/Report, paragraphs 101-102.

² Submission of 18 May 2021.

³ Submission of 31 May 2021.

⁴ Submission of 7 May 2020.

⁵ Submission of 7 May 2020.

ANNEX I

REPORT FROM THE GLOBAL CROP DIVERSITY TRUST

I. INTRODUCTION

1. Established in 2004 as an independent international organization, the Global Crop Diversity Trust (Crop Trust) operates from Bonn, Germany within the framework of the International Treaty on Plant Genetic Resources for Food and Agriculture (the Treaty), in accordance with the overall policy guidance provided by the Governing Body (GB) of the Treaty. The Crop 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 Crop Trust is pleased to present this report to the Tenth Session of the Intergovernmental Technical Working Group on PGRFA.

II. SCIENTIFIC AND TECHNICAL MATTERS

A. Global crop conservation strategies

2. "Breathing new life into the Global Crop Conservation Strategies" is a new 3-year project that started in July 2019, funded by the Government of Germany (BMEL), through its Federal Office for Agriculture and Food (BLE). The global crop conservation strategies promote the prioritization and rationalization of conservation efforts at global level for specific gene pools. The GB has recognized that they are key guiding documents for collaboration among national and international genebanks (Resolution 8/2015), and for the further development of the global system of *ex situ* conservation and the Treaty's Multilateral System (MLS).

3. The [project](#) will update five of the existing global crop conservation strategies and also deliver 10 new strategies. The selection of the crops to be covered (Table 1) was discussed at the beginning of the project by 23 experts from around the world and in collaboration with the Secretariat of the Treaty. The project is mobilising communities of crop experts and other stakeholders to develop the strategies. We are also using updated information on the status of crop diversity collections available through the Global Information System on PGRFA (GLIS), Genesys, the Global Biodiversity Information Facility (GBIF), country reports to the World Information and Early Warning System (WIEWS) on the implementation of the Second Global Plan of Action (GPA) and SDG Target 2.5, and specifically tailored surveys.

4. To examine the composition of genebank collections and identify gaps, we are capitalising on the methods and results of the CGIAR Genebank Platform and the CWR Project. The former identified gaps in the conservation of landrace diversity for 22 crop gene pools, while the latter identified gaps in the conservation of the wild relatives of 81 crops. We are also integrating into the strategies information from the study "The Plants that Feed the World," which is attempting to quantify the contribution of some 350 cultivated plants to global food security and sustainable agriculture. The study is a collaboration led by the Treaty Secretariat, and funded by NORAD, also involving the Alliance of Bioversity and CIAT and the Crop Trust. In 2020, a separate collaboration with FAO was able to expand the sections on *in situ* conservation and on farm management of four crop strategies (potato, millets, groundnut, and yams).

5. As of May 2021, work is underway for eight of the new strategies and four of the updates (Table 1).

CROP	Lead author	Survey	Data analysis	Draft strategy	Expert review of draft strategy	Final layout
PEA	M. Ambrose	Completed	Completed	In revision	To be initiated	To be initiated
YAMS	V. Lebot	Completed	Completed	Completed	Completed	To be initiated
POTATO	M. Nagel	Open	Ongoing	Ongoing	To be initiated	To be initiated
CUCURBITACEAE	A. Ebert	Completed	Completed	Completed	Completed	To be initiated
TEMPERATE FORAGES	M. Dodd	Completed	Completed	Completed	Ongoing	To be initiated
VANILLA	P. Bramel	Completed	Completed	Completed	Ongoing	To be initiated
MILLETS	P. Bramel	Completed	Completed	Completed	Ongoing	To be initiated
GROUNDNUT	D. Williams	Open	Completed	Completed	Ongoing	To be initiated
SUNFLOWER	E. Drummond	Design phase	Ongoing	To be initiated	To be initiated	To be initiated
CITRUS CROPS	G. Volk	Design phase	Ongoing	To be initiated	To be initiated	To be initiated
SORGHUM	P. Bramel	Design phase	Ongoing	To be initiated	To be initiated	To be initiated
EGGPLANT	S. Solberg	Design phase	To be initiated	To be initiated	To be initiated	To be initiated
BRASSICA	TBD	To be initiated	To be initiated	To be initiated	To be initiated	To be initiated
CAPSICUM	TBD	To be initiated	To be initiated	To be initiated	To be initiated	To be initiated
VIGNA	TBD	To be initiated	To be initiated	To be initiated	To be initiated	To be initiated

Table 1. Summary of progress by crop and activities for each global crop conservation strategy to be developed in this 3-year project.

B. Long-term conservation and availability of crop diversity

1. At the core of the Crop Trust is an endowment fund, created to provide financial security to globally important collections of crop diversity in perpetuity. To date, the Crop Trust manages long-term agreements supported by the endowment fund and donors with nine of the CGIAR genebanks and the genebank of the Pacific Community (SPC). The funding is partially supporting the

conservation and availability of 20 international collections of 17 crops.⁶ These collections serve an international role as crucial components of a rational, efficient and effective global system, as recognized under Article 15 of the Treaty. In addition, the Crop Trust funds the annual operating costs of the Svalbard Global Seed Vault, another key component of the global system. Since 2006, support amounting to USD57 million has been provided by the Crop Trust endowment income and bilateral donors for essential genebank operations in conjunction with CGIAR Windows 1 and 2 funding.

C. CGIAR-Crop Trust partnership on genebanks

2. The work of the 11 CGIAR genebanks (AfricaRice, Alliance-Bioversity, Alliance-CIAT, CIMMYT, CIP, ICARDA, ICRAF, ICRISAT, IITA, ILRI, IRRI) is supported through the partnership of CGIAR and the Crop Trust in the [Genebank Platform](#), which is organized in three modules: Conservation, Use and Policy. The Platform allows the dovetailing of overall oversight of the CGIAR genebanks with the Crop Trust's monitoring of long-term grants. It also supports a significant body of related activities, including some undertaken by the Crop Trust, such as the maintenance and development of information systems, strengthening of genebank Quality Management Systems (QMS), impact studies, and analysis of diversity in *ex situ* collections. The total annual expenditure for the Platform in 2020 was USD 26 million which was provided by the Crop Trust, CGIAR Windows 1 and 2 donors and also bilateral donor support from the European Commission and Finland.

D. Supporting genebank operations

3. Each CGIAR genebank is working towards reaching or maintaining key performance targets of 90 percent availability and safety duplication. The 2020 status of these genebanks against performance targets is summarized below (see also Figure 1):

- **Availability:** The CGIAR genebanks manage 736,210 accessions, including 26,224 held *in vitro* and 32,930 in the field. Approximately 82 percent of these are immediately available for international distribution. Six genebanks have now reached targets.
- **Safety duplication:** Of the seed accessions, 60 percent is secured in safety duplication at two levels, 78 percent is duplicated at the Svalbard Global Seed Vault (SGSV), and 72 percent of accessions of clonal crop collections is safety duplicated in the form of *in vitro* or cryopreserved samples.
- **Information:** 100 percent of the accessions have passport or characterization data accessible online; 99 percent have a Digital Object Identifier (DOIs).
- **Distribution:** 43,530 germplasm samples were provided by CGIAR genebanks to users in 2020, 75 percent of which went to users outside the CGIAR. Distributions from CGIAR Centers represent the bulk of worldwide germplasm movement using the Standard Material Transfer Agreement (SMTA) of the Treaty. In 2020, CGIAR genebanks sent germplasm to advanced research institutes and universities (42 percent), NARS (31 percent) and to farmers, NGOs, and the private sector (25 percent) in 78 countries.
- **Quality Management:** In 2020, 146 Standard Operating Procedures (SOPs) have been audited and externally validated for conformity with the FAO Genebank Standards and other relevant standards. Genebanks and GHUs have documented more than 300 SOPs as part of their QMS.

⁶ Crops supported by the Crop Trust through long-term grants are: banana/plantain, barley, bean, cassava, chickpea, edible aroids, faba bean, forages, grasspea, lentil, maize, pearl millet, rice, sorghum, sweetpotato, wheat, and yam.

- **Risk Management:** In 2020, genebanks in the Genebank Platform worked with Yorgos Solomos (Senior Adviser for risk management at the CGIAR System Office) and Janny van Beem (Crop Trust QMS expert) to identify and mitigate risks related to COVID-19. One-on-one meetings were held with genebank managers to assess specific threats and implement concrete actions.
- **Germplasm Health:** In 2020, the CGIAR Germplasm Health Units (GHUs) health-tested 295,742 samples from both genebanks and breeding programs in the CGIAR for approximately 400 seed-borne pests and pathogens using a total of 1,056,417 diagnostic assays. GHUs facilitated 1,415 germplasm and some non-plant exchanges with 123 countries.

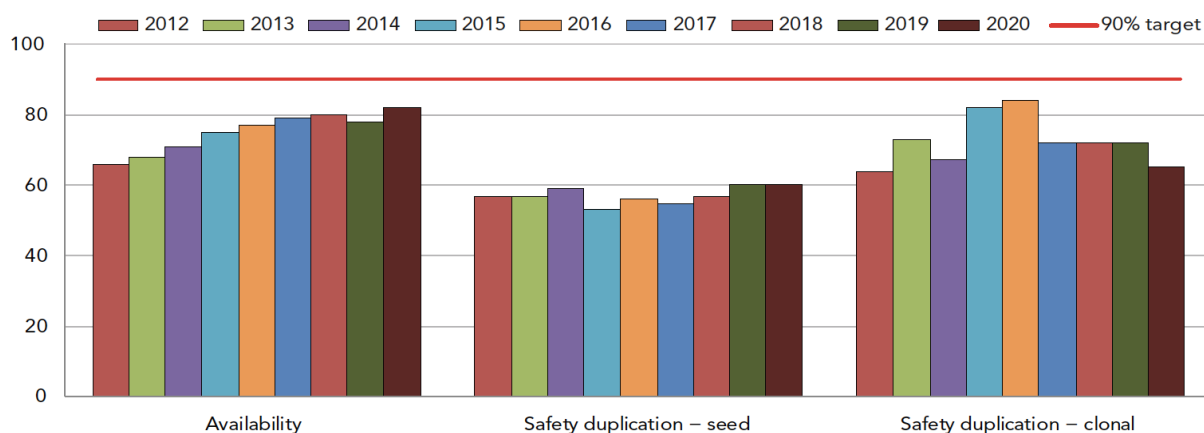


Figure 1. Status of availability and safety duplication of CGIAR genebanks, 2012 to 2020.

- As collections are growing and seed stocks are gradually being used or losing viability, sustaining or reaching performance targets depends on keeping up an optimal rate of operation to ensure collections remain adequately stocked. Despite the lockdowns' effect on operations, the numbers of available accessions increased in all genebanks in 2020 except IRRI, which sustained its 90 percent target. Six out of 10 seed collections have now reached the 90 percent availability target. AfricaRice, Alliance-CIAT and IITA genebanks also improved safety duplication status.
- This progress against the backdrop of very challenging working conditions is noteworthy. Particular mention should be made of the staff of CIP and Alliance-CIAT, who adapted processes and worked around the clock to prevent significant losses from the large tissue culture collections that they manage, despite experiencing the longest and most severe lockdowns. While accession losses were prevented in 2020, the level of safety duplication in these collections is now reduced, exposing them to greater risk in 2021.
- According to reported data, seed collections managed by Alliance-CIAT and IITA will, for the first time, reach performance targets in 2021, which will render them eligible for Long-term Partnership Agreements (LPA) with the Crop Trust (the only current LPA is with IRRI). Collections managed by AfricaRice, CIMMYT, ICRISAT and ICARDA can also reach eligibility in the next two years if planned inventory work, regeneration, disease-cleaning and safety duplications are successfully completed. The other genebanks making more gradual progress towards performance targets are those which manage more challenging clonal crop collections, trees and forages.

E. Complementary activities

- There are various activities underway under the Genebank Platform which complement and support the basic operations of the genebanks. Of those activities carried out by the Crop Trust itself, the following achievements in 2020 may be highlighted:

- **Diversity analysis:** Genotypic data derived from Diversity Arrays Technology (DArTseq) analysis of 15,000 samples of 865 accessions from seven genebanks has generated 526,000 SNPs and provided a striking picture of the distribution of diversity within collections and accessions. Outcrossing species (e.g. pearl millet, lablab and pigeonpea) show relatively high levels of within-accession diversity, while rice and wheat show relatively little. However, some collections, such as wild potato, show less diversity than expected, suggesting that some purification of accessions has occurred through collecting, germplasm distribution or regeneration over time. The study is helping to guide improvements in collecting and genebank processes (e.g. regeneration, sampling) for specific crops.
- **GRIN-Global Community Edition:** Several CGIAR genebanks have tested, adopted and customized the GRIN-Global software for managing and publishing accession information online. In 2020, the CGIAR Community of Practice (CoP) on Data Management adapted the software to create a GRIN-Global Community Edition (GG-CE), using a new open-source solution to address gaps in functionality. GG-CE supports inventory management in all collection types, including tissue culture and field, as well as facilitating the use of mobile devices, barcoding and interoperability with other data systems, such as Genesys and breeding data management solutions. Furthermore, in a move to prepare for the One CGIAR reform, the Genebank Platform decided to adopt a single database management system across CGIAR genebanks, agreeing to dedicate time and resources in 2021 to evaluate options and finalize which system to adopt.
- **Costing and technical reviews:** Eleven costing reviews and 10 technical reviews of CGIAR genebanks have been completed between 2017-2020. The new technical review format includes the validation of the annual data on the status of the collections as reported to the Crop Trust and of the SOPs documented as part of individual genebank's QMS. The findings of both costing and technical reviews were collated and compiled with other information from the activities of the Genebanks CRP between 2012-2016 and of the CGIAR Genebank Platform since 2017 in a System-Level Review on Genebank Costs and Operations (GCO). Chaired by Geoff Hawtin, the GCO panel resolved issues concerning the definition of essential operations, highlighted priority activities for additional funding, developed a conceptual framework by which the new genebank program could be organized, and made recommendations for consolidating conservation activities and expanding user engagement. The GCO review report is [available](#) online. To complement the GCO review, a high-level [online dialogue](#) was organized in September 2020 together with Chatham House to facilitate a discussion among experts on their vision of how genebanks can play a more effective role in helping agriculture meet future challenges. The key findings and recommendations of the dialogue are available as a [brief report](#).
- **Genebank impacts:** Several genebank impact case studies have been prepared as a result of the work of seven Genebank Impact Fellows, who started work in 2018 under the supervision of Crop Trust staff together with Melinda Smale at the Michigan State University, and the mentorship of CGIAR genebank managers. The studies were published in a special edition of the journal *Food Security* in its October 2020 issue, "[Genebanks and Food Security in a Changing Agriculture](#)". This includes an introductory article by Melinda Smale and Nelissa Jamora, entitled [Valuing genebanks](#). In August 2020, the Genebank Platform recruited five new Genebank Impact Fellows, from Cameroon, Côte d'Ivoire, the Philippines, USA, and Germany. Four fellows are PhD students in economics-related fields and one is currently a staff member at IRRI. We apply the lessons we learned from the first cohort and are sustaining the momentum on genebank valuation research with new research topics. The following studies are expected to be completed by mid-2021:
 - The contribution of the ICRISAT genebank to adoption of improved groundnut varieties and reduction of rural poverty in Malawi. Martin Paul Tabe-Ojong, University of Bonn.

- Revival and survival of potato landraces in the Andes. Sophia Lüttringhaus, Humboldt University, Berlin.
- The contribution of the CGIAR Germplasm Health Units (GHUs) to international agricultural research: The case of rice blast disease in Bangladesh. Yuji Enriquez, International Rice Research Institute.
- An experimental approach to farmer valuation of African rice genetic resources. Nicholas Tyack, Graduate Institute, Geneva.
- The contribution of IITA's genebank to on-farm cowpea diversity and farmers' welfare in Nigeria. Abel-Gautier Kouakou, Osnabrück University.

F. Impacts of COVID

8. The COVID-19 pandemic required a major reassignment of genebank and GHU staff to shift and remote working. The focus of all genebanks, during lockdown, aside from keeping staff safe, was on sustaining sufficient staff in the laboratories, screenhouses and fields to carry out critical operations to avoid the loss of accessions. These included monitoring cold rooms, subculturing *in vitro* accessions and processing seed from harvest to cold room. In a small number of cases, harvests were lost. Genebanks and GHUs continued to respond to requests for germplasm and phytosanitary testing as a priority. Germplasm distributions declined by around 50 percent compared to a normal year. However, more than 90 percent of requests received were fulfilled.

9. Large tissue culture collections were the most vulnerable to lockdown measures, since they require continuous monitoring and subculturing by trained staff working in relatively small spaces. Procedures were modified to ensure all accessions were given necessary attention, which included reducing numbers of samples per accession, deploying staff from other teams to help, and running shifts over the weekend. Inevitably, some samples were lost, but all were replaced by safety duplicates. However, given the reduced staff capacity to generate new safety duplicates, the status of the tissue culture collections in the centres in Latin America in particular is becoming more precarious over time under lockdown conditions.

10. More positively, although genebank managers reported that some operations were reduced to as little as 36 percent of the normal rate, progress was made towards performance targets in 2020. Staff working remotely meant more time was dedicated to cleaning legacy data and developing software and apps for GG-CE. The Crop Trust coordinated with the CGIAR System Office and Centers' risk specialists to undertake a genebank risk assessment in June 2020 to ensure that measures were in place to facilitate remote working, including strengthening automated alarm and temperature control systems in cold rooms and drying rooms, and installing remote cameras, irrigation systems and extra laminar flow cabinets. Learning has been incorporated into revised genebank risk management strategies.

11. Germplasm collecting and research work on seed quality management, cryopreservation, gap analysis and subsetting were set back. Few of the physical meetings planned for 2020 took place, but more attention was paid to developing online training tools, such as the Policy Module's Open University training course on plant genetic resources policy. The genebank technical reviews continued successfully in a virtual format and the Annual Genebank Meeting, GCO review and Chatham House Dialogue were able to extend invitations to more staff, partners and thought leaders as a result of their virtual format.

12. Reports were made periodically during the year by the Crop Trust and CGIAR to the System Office, Treaty Secretariat and the Crop Trust Executive Board on the status of operations in the CGIAR genebanks during the pandemic. The Treaty Secretariat, the Crop Trust and FAO hosted a virtual meeting on the "Impact of the COVID-19 pandemic on the conservation, use and exchange of

plant genetic diversity” in September 2020 with the sponsorship of the Kingdom of Morocco. Impacts on national, regional and local programs and on farmers’ seed security were discussed. CIP presented on the effects of the pandemic on behalf of the CGIAR genebanks.

G. Crop Trust’s support to regional and national genebanks

Crop Wild Relatives (CWR) Project

13. In 2011, the Crop Trust launched a 10-year programme to support countries to collect seeds of wild plant species related to 29 crops included in Annex 1 of the Treaty, in order to: (1) secure their diversity for the long-term, and (2) use them in pre-breeding to prepare and distribute materials that would be useful to crop improvement programmes around the world in adapting these crops to climate change. The project, “[Adapting Agriculture to Climate Change](#)” (the CWR Project for short), is funded by the Government of Norway and guided by an Advisory Group comprising subject-matter experts, including representatives of CGIAR, and of the Treaty Secretariat as an observer. It has been implemented in partnership with the Millennium Seed Bank (MSB) of the Royal Botanic Gardens, Kew, UK, and with the participation of numerous specialist research institutes and national and international conservation and pre-breeding programmes around the world.

14. Due to the COVID-19 health crisis, which caused significant work interruptions for almost all partners in 2020, the Crop Trust asked NORAD for permission to reallocate some resources to allow the extension of the CWR Project until December 2021. This request for a no-cost extension (NCE) was approved and three pre-breeding and 10 evaluation partnerships, in turn, applied to the Crop Trust for an NCE until early or mid-2021.

Collecting

15. Following a gap analysis and prioritization exercise, agreements to collect and conserve CWR were concluded with 25 countries: Armenia, Azerbaijan, Brazil, Chile, Costa Rica, Cyprus, Ecuador, El Salvador, Ethiopia, Georgia, Ghana, Guatemala, Italy, Kenya, Lebanon, Malaysia, Nepal, Nigeria, Pakistan, Peru, Portugal, Spain, Sudan, Uganda and Vietnam. The collecting work of the CWR Project is now complete. A total of 4,587 samples were collected in 25 countries. Of these, 21 countries have deposited 3,544 seed samples of 27 target genera at the MSB, covering 253 species (284 taxa). To date MSB has distributed 2,891 unique accessions (3,723 samples) of 223 species to 9 national and international genebanks for research and multiplication. Multiplication of seeds at ICARDA and CIP is ongoing and will continue until mid-2021. All material collected with project support is available in the MLS.

Pre-breeding and evaluation

16. In preparation for the pre-breeding phase, crop-specific consultations were held during the first years of the CWR Project with a wide range of breeders and researchers. In total, pre-breeding projects on 19 crops were then supported. They involved a total of some 62 national and international partners in 34 countries. At the end of 2020, 16 pre-breeding projects had been completed. All pre-bred material is available in the MLS.

17. The focus of Phase 3 of the CWR Project (2017–2021) was to complete the pre-breeding activities and embark on a complementary set of projects to evaluate CWR-derived pre-bred lines. Most evaluation projects have strong participatory engagements, with material being tested by farmers in more than 20 countries. In total, evaluation projects for 13 crops are being supported in 38 countries, with 59 partners. By December 2020, evaluation projects on five crops had been completed.

18. Complementing the pre-breeding and evaluation activities, efforts to strengthen the management and availability of the information being generated by these projects are also continuing.

“Germinate” databases are being developed by the James Hutton Institute, UK for [13 crops](#). A series of [video tutorials](#) is being prepared.

19. The CWR Project has a major focus on capacity building. To date, it has supported training of more than 12,000 farmers, extension officers, students and others (37 percent female) from 71 countries on different aspects of CWR conservation, information systems, pre-breeding, and participatory evaluation (Table 2).

	Collecting	Pre-breeding	Information Systems	Total
Number of trainees	102	12,022	143	12,267
percent female	44 percent	37 percent	51 percent	37 percent
Countries	27	46	36	71
Institutions	36	68	31	124

Table 2. Summary of CWR Project capacity-building activities as of December 2020.

Outreach activities

20. Field days, presentations at relevant meetings and conferences, outreach workshops, and publications have promoted the pre-bred materials with a wide range of stakeholders. In 2020, we continued to raise awareness of the CWR Project and its key achievements and deliverables. However, we had to substitute planned on-site activities by greatly increasing our virtual communication and outreach through new feature stories shared on our websites and various social media channels.

21. The final meeting of the CWR Project was expected to take place in June 2020 in Rome in conjunction with a FAO symposium on *in situ* and on farm management. However, due to the COVID-19 health crisis plans for these physical meetings had to be changed. The [First International Multi-stakeholder Symposium on Plant Genetic Resources for Food and Agriculture](#) finally took place in March 2021 with strong CWR Project representation. We have also entered into a partnership with the editors at [Crop Science](#) for a Special Issue, published in late January 2021, entitled “Adapting agriculture to climate change: A walk on the wild side.” This focuses on the use of CWR by project partners and others in pre-breeding and evaluation efforts aimed at adapting crops to climate change. We are also preparing a summary paper on the collecting activities.

Templeton Project

22. A new project was funded by the [Templeton World Charity Foundation, Inc.](#) starting in mid 2019. “Safeguarding crop diversity for food security: Pre-breeding complemented with Innovative Finance” includes two mutually reinforcing elements: (A) pre-breeding two crops using diverse genetic resources, including CWR and landraces, and (B) exploring innovative and sustainable finance mechanisms to safeguard crop diversity in perpetuity.

23. In Element A, our CWR Project partners are broadening the genetic base, and the resilience to climate change, of two crops that are important for food security in developing countries. ICARDA, ICRISAT and national partners (Kenya Agricultural and Livestock Research Organisation; Tanzania Agricultural Research Institute; National Semi Arid Resources Research Institute, Uganda; Ethiopian Institute of Agricultural Research; James Hutton Institute, UK; John Innes Centre, UK) are developing pre-breeding lines that can be used to breed new grasspea and finger millet varieties that will improve human health, increase income for rural poor and have significant environmental benefits. Partners use

state-of-the-art genomic tools to accelerate genetic improvement, and also implement novel speed breeding protocols for rapid generational turnover.

24. The COVID-19 pandemic led to work disruptions and delays. In order to take mitigating measures to manage these impacts, the Crop Trust submitted a request to the TWCF Inc. for reallocation of grant funds (June 2020). We are grateful to TWCF Inc. for approving our request.

25. In the first year of the project, grasspea partners have re-sequenced and re-assembled the grasspea reference genome. A preprint is [available](#). The construction of a speed breeding platform in Rabat, Morocco will be completed by July 2021. Genome resequencing work for 384 lines is ongoing. A *Lathyrus* Partnership Group was formed in December 2020. This stakeholder group will allow us to leverage input from the global grasspea community and bring more attention to this crop. We have the opportunity to position the [grasspea Germinate database](#) and the new [grasspea website](#) as important data sources for *Lathyrus* breeding.

26. Despite COVID-19, the finger millet activities in East Africa are still progressing mostly on schedule. However, some activities are delayed. All partners have established and implemented pre-breeding programs. The molecular characterization of all available finger millet materials from East African genebanks using DArTseq is delayed due to the implementation of two rounds of genetic purification (single seed descent, SSD). The [finger millet Germinate database](#) is almost ready for release. Partners assembled a collection of 1,812 finger millet accessions for this project (492 from Tanzania, 448 from Ethiopia and 872 from Uganda). This collection includes newly collected samples.

27. For Element B, “exploring innovative and sustainable finance mechanisms to safeguard crop diversity in perpetuity,” the Crop Trust hired KOIS Invest to perform a feasibility study on its “Food Security Bond” proposal, and this is described in more detail in the “Resource Mobilisation” section below.

Seeds for Resilience

28. “Seeds for Resilience” is a 5-year project, initiated in May 2019. It is funded by the Government of Germany (BMZ), through the German Development Bank (KfW). The project aims to support the conservation of crop diversity collections in selected national genebanks in Africa and to empower these genebanks as entry points for developing climate-resilient crop varieties. The partner genebanks are:

1. Ethiopian Biodiversity Institute (EBI) in Addis Ababa, Ethiopia.
2. Genetic Resources Research Institute (GeRRI) at the Kenya Agricultural and Livestock Research Organization (KALRO) in Nairobi, Kenya.
3. National Plant Genetic Resources Centre (NPGRC) at the Zambia Agriculture Research Institute (ZARI) in Lusaka, Zambia.
4. National Centre for Genetic Resources and Biotechnology (NACGRAB) in Ibadan, Nigeria.
5. Plant Genetic Resources Research Institute (PGRRI) in Bunso, Ghana.

Genebank reviews

29. Conducting external genebank reviews, as follows, was the first priority for the project:

1. Zambia: 16-18 September 2019
2. Kenya: 20-24 September 2019
3. Ethiopia: 30 September - 2 October 2019
4. Ghana: 4-8 October 2019
5. Nigeria: 10-14 October 2019

30. Thanks to these reviews and other interactions, the project now has a clear picture of the needs of each genebank. The review panel presented the final reports from each genebank in February 2020. Their recommendations were discussed with each partner genebank and documented during April and May 2020. During May 2020, partner genebanks selected the crop collections that will be prioritized to address their current viability, safety duplication and regeneration backlogs. These crops include barley, beans, cassava, coffee, cowpea, enset, finger millet, forages, okra, pearl millet, pigeon pea, rice, species of the genus *Solanum*, sorghum, sweet potato and yam, adding up some 60,000 accessions. Partner genebanks also started preparing their recommendation action plans and budgets, which will be part of the formal project agreements.

31. In November 2020, we engaged two consultants to conduct an additional review of the national genebank of Ghana. The first review conducted by the project identified that there might be a need to use a complementary site to conserve and regenerate existing seed collections. The recommendations of this additional review are being taken into consideration for the preparation of the workplan.

Capacity building

32. As an alternative to in-person workshops, in April 2020 we initiated a series of virtual meetings on QMS and GRIN-Global for the Seeds for Resilience partner genebanks. So far, 17 QMS webinars have been held. All participating genebanks have written and audited SOPs on conservation and distribution. In January 2021, participating genebanks initiated the preparation of their SOP on regeneration. Five GRIN-Global webinars were held during 2020, to familiarize genebank staff with the tools offered by the software to manage genebank inventory.

33. Since July 2020, in collaboration with communications staff of the Crop Trust, the project has been preparing plans for a CoP on Communications. The idea is to hold regular meetings with designated communications focal points at each partner genebank to create a space where ideas for the preparation and dissemination of communications material can be discussed. The CoP is developing a communications strategy for each participating genebank.

34. In August 2020, partner genebanks also started preparing workplans for the development of user groups. In preparing workplans, consultants and project partners are taking into consideration COVID-19 limitations for large gatherings and travel. These user groups are expected to represent distinct types of users (e.g., smallholder farmers, scientists, extensionists, NGOs and private sector) in targeted regions, who will be involved in the identification of desirable crop traits and genebank accessions that may offer such traits. User groups will meet regularly and participate in evaluation trials of genebank accessions and other activities designed to stimulate use of collections. Ultimately, it is expected that user groups will increase the user base of each genebank and provide tangible evidence of the value of collections.

The Svalbard Global Seed Vault

35. The 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 by the FAO Genebank Standards as an essential element of good genebank management practice aimed at minimizing risk to *ex situ* collections. The Crop Trust supports the duplication under black-box conditions of the world’s crop seed collections at the Svalbard Global Seed Vault, in Norway. A new 10-year agreement was signed in 2017 between the Crop Trust, the Government of Norway and NordGen for the management of the Svalbard Global Seed Vault.

36. After the upgrading of the Vault in 2019, a major seed deposit and associated Seed Summit were organised in February 2020 by way of celebration. This event brought together more than 100 participants from national and international institutions working on plant genetic resources for food and agriculture. Two members of the UN Sustainable Development Goals (SDG) Advocacy Group,

the Norwegian Prime Minister, Erna Solberg, and the President of Ghana, Nana Addo Dankwa Akufo-Addo, also participated, and signed the [Arctic Call to Action for Food Security and Climate Change](#). The International Advisory Panel (IAP) of the Svalbard Global Seed Vault, which provides advice on technical and legal issues, also met, and discussed options for attracting new seed depositors, increasing the number of deposits and new security procedures. During this event, a total of 65,119 samples were deposited by 34 genebanks. In total, 81,436 samples were added to the Vault in 2020 in 3 events by 42 institutions, 8 of which deposited for the first time.

37. The upgrade of the Seed Vault was funded by the Norwegian government and included the construction of a new entrance tunnel, a new maintenance building, that will be used as an office and for storing equipment, and a new cooling system. A new version of the Seed Portal was finalised in 2020 and is now [available](#). This now combines information on seed deposits, stored material and box locations that used to be hosted in two databases. It also offers advanced search options.

38. Since its inception in 2008, the Vault has accepted deposits on 54 occasions, and now holds a total of 1,074,533 accessions from 87 institutes. This includes about 634,452 accessions from the international collections managed by CGIAR centres.

H. Strengthening information systems for genebanks

39. Article 17.1 of the 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 systems for plant genetic resources for food and agriculture.”

40. The Crop Trust and CGIAR are continuing to support the implementation of two tools to enhance the management and availability of information about genebank collections: GRIN-Global and [Genesys](#). Close collaboration with the Treaty’s Global Information System (GLIS) has focused on building synergies and complementarities within the Governing Body-approved Programme of Work. As Digital Object Identifiers (DOIs) have been established as a priority area for GLIS on the advice of the Scientific Advisory Committee (the Crop Trust participates in SAC meetings), the Crop Trust facilitated the planning by both the CGIAR genebanks and Genesys to start supporting DOIs in 2017. The GRIN-Global community also included DOI support in their databases.

41. CGIAR genebanks established a CoP on Data Management in 2019 to coordinate and facilitate the development and implementation of: genebank data management software; approaches to data management and curation; integration with GLIS DOI and Easy-SMTA systems; and, finally, documentation and publication of accession data on Genesys.

GRIN-Global Community Edition

42. Significantly, the CoP on Data Management recently agreed to push ahead with efforts to develop an improved data management system at the genebank level, GG-CE. The Genebank Platform supports the CGIAR genebanks in the evaluation and adoption of GG-CE, with the objective to improve and standardize genebank data management, reporting, and availability of IT tools for curators and technicians.

Genesys

43. Thanks to the support of the Genebank Platform, the Crop Trust continues to develop Genesys as a fundamental component of an effective global conservation system. We work continuously with existing data providers to help them share up-to-date information about their collections and actively promote and encourage data publication (automated when feasible) from additional genebanks. We assist partner genebanks in improving data quality (by providing data analysis and validation tools) and completeness of accession data.

44. Genesys now hosts information on over 4 million accessions, 123 subsets (ranging from core collections to the “top 20 most distributed potatoes”) and over 400 datasets of phenotypic data. Since 2015, agreements to publish passport data on Genesys have been signed with the 11 CGIAR centers which manage genebank collections, APG (Australia), EMBRAPA (Brazil), GeRRI (Kenya), MARDI (Malaysia), SPGRC (SADC), SSE (USA), SPC (Fiji), CATIE (Costa Rica), NPGRL (Philippines), NGBT (Tunisia), NARC (Jordan), NACGRAB (Nigeria). Most recent additions (2020-2021) are: MSB (Myanmar), Margot Forde (New Zealand) and DENAREF (Ecuador). Negotiations with RDA (South Korea) are ongoing.

45. The Genesys Advisory Committee welcomed two new members in March 2020, Sunil Archak (NBPGR, India) and Chris Richards (USDA). The committee approved the [Vision and Mission document](#) and discussed the results of the 2020 user survey. The survey is being used to set priorities for Genesys improvement and development, primarily focused on increasing the number of data providers and improving existing functionality. A taxonomic backbone linking 90 percent of the 4 million accessions in Genesys to correct names according to GRIN Taxonomy was implemented in response to user feedback. This allows users to find accessions even if names are misspelled or taxonomy is outdated. Genebanks are able to embed and customize a searchable accession database into their websites, powered by Genesys.

46. The number of registered Genesys user accounts continues to grow, from 1,580 users in March 2020, to 1,797 in September 2020, to 1,936 in January 2021. We continue to approach potential new data providers to make more collections accessible through Genesys.

IT assessments and upgrading

47. The CWR Project includes a component aimed at strengthening the documentation systems of national genebanks. The Crop Trust has assisted genebanks with the analysis of their documentation needs, and, if they wish, with the adoption of GRIN-Global. To that end, experts visited and assessed the state of genebank documentation management in 37 national and regional genebanks between 2014 and 2020: Azerbaijan, Bhutan, Bolivia, Chile, Colombia, CATIE (Costa Rica), Cuba, Cyprus, Ecuador, Egypt, Ethiopia, Guatemala, Jordan, Kenya, Lebanon, Malaysia, Malawi, Mexico, Morocco, Myanmar, Nepal, Nigeria, Oman, Pakistan, Peru, Philippines, Rwanda, SPC (Fiji), SPGRC (Zambia), Sri Lanka, Sudan, Tanzania, Tunisia, Turkey (2x), Uganda, Uruguay, Vietnam, Zambia. Based on the results of these assessments, support to strengthen capacity for data management was provided to the national and regional genebanks in the following countries: Azerbaijan, Bhutan, Bolivia, CATIE (Costa Rica), Chile, Colombia, Ecuador, Guatemala, Jordan, Kenya, Lebanon, Morocco, Nigeria, Peru, Philippines, Rwanda, SPC (Fiji), SPGRC (Zambia), Sudan, Tunisia, Uganda, Uruguay and Vietnam. In 2020, upgrading projects were completed at the Myanmar Seed Bank, the National Genebank of Pakistan, the National Plant Genetic Resource Centre-Tanzania and the National Plant Genetic Resource Centre-Malawi.

III. RESOURCE MOBILIZATION

I. General

48. The Crop Trust's mandate is to help develop and fund a rational, cost-effective global system to conserve crop diversity in genebanks, through long-term, sustainable support to key collections of the crops that are most important for food and nutritional security. With its endowment fund, the Crop Trust provides guaranteed financial support to key collections of crop diversity, with particular focus in the developing world. As a result of costing studies initiated by the Crop Trust, our objective is to provide USD 34 million a year. Availability of USD 34 million annually requires an endowment fund of USD 850 million (based on 4 percent rate of return plus US inflation)

49. It is envisaged by the Crop Trust's Fund Disbursement Strategy that long-term support from the Crop Trust endowment will be provided to the following elements of such a global system:

- International collections under Article 15 of the Treaty.
- Globally important national and regional collections.
- The Svalbard Global Seed Vault, including ongoing operation and maintenance and support to genebanks in depositing back-ups.

50. In order for this to happen effectively, the following enabling structures also require long-term support:

- Secretariat operations of the Crop Trust in Bonn.
- Information systems, which require development and ongoing support to improve the availability and use of all crop collections.

51. Specifically, the Crop Trust endowment fund contributes to the running costs of eleven international genebanks, and has established a first-of-its kind Long-term Partnership Agreement (LPA) with the International Rice Research Institute (IRRI), pledging financial support for the essential operations of the world's most important rice collection.

52. Since its inception in 2004, up to 31 December 2020, the Crop Trust's endowment fund has increased in value to USD 365.5 million, including donor contributions as well as capital gains in the financial markets. These contributions include a EUR 50 million concessional loan from the KfW (German Development Bank) in 2017. In addition to this endowment funding, the Crop Trust received from donors a total of USD 270 million in project funding and USD 21 million for operational expenses.

53. Approximately 95 percent of the endowment fund's capital is provided by national governments, with the remainder coming from non-government actors, including foundations and the private sector. In an effort to diversify its funding base and to develop innovative funding mechanisms, the Crop Trust is exploring other fundraising strategies that aim to raise awareness and increase name recognition with a broad audience.

54. The Crop Trust's fundraising efforts are overseen by both the Executive Board and the Donors' Council. The Donors' Council is composed of governments and private sector donors who contribute at least USD 25,000 or USD 250,000, respectively. The Donors' Council meets at least once annually and provides financial oversight and advice to the Executive Board. Traditionally, the Donors' Council has been hosted at FAO in Rome. However, the Donors' Council meetings in 2020 were held virtually, given the difficulties of gathering in person due to the COVID-19 outbreak. This situation will most likely continue during 2021, with hopes of returning to the in-person format during the spring of 2022. During the 2018-2021 period, the Donors' Council was chaired by the Kingdom of

the Netherlands, and vice chaired by the Federal Republic of Germany, through their official representations in Rome.

J. A more diversified fundraising strategy

55. In order for the endowment fund to reach its goal of USD 850 million, the Crop Trust is currently exploring a set of innovative finance mechanisms to contribute to a more diversified fundraising strategy. The 18th meeting of the Crop Trust Donors' Council, held on 14-15 June 2018 in Bonn agreed to establish an ad hoc Working Group on Innovative Finance (IFWG) to analyse and review potential options which would deliver on the fundraising target as soon as possible.

56. At the 20th meeting of the Donors' Council on 29 March 2019, donors examined each innovative finance mechanism individually as they were listed in the IFWG Framing Document and provided recommendations to the Executive Board on which mechanisms should be prioritized and pursued in a timely manner. Overall, a food security bond, member country loans, crowdsourcing, crop-based fundraising, and an investment sharing facility were given priority. These recommendations were approved by the Executive Board on 4-5 May 2019.

57. Out of all the innovative finance mechanisms that have been explored, the Food Security Bond (FSB) has been the one with the most favorable reception among key donors and stakeholders. The FSB is an innovative financing mechanism to raise USD 500 million from institutional investors. The initial concept aimed to achieve three key objectives:

58. Capitalize upfront an endowment fund of sufficient size to provide a stable stream of future financial returns. These annual expected returns are to be withdrawn to finance on-going operations and reduce uncertainty and dependence on future donor contributions.

- Generate sufficient investment returns to fund the Crop Trust's essential operational expenditure of key genebanks.
- Protect the current Crop Trust endowment fund from any future recourse or claims from investors into the FSB.

59. To this end, the Crop Trust conducted a thorough process of gathering feedback from donors, partners and financial experts who are close to our mission and work. Additionally, the Crop Trust commissioned a feasibility study on the FSB, which was prepared by KOIS Invest, expert financial advisors on both innovative and traditional finance mechanisms. The feasibility study was presented to the Executive Board in November 2020, showing viability among potential investors for such a product and clear indications of the next steps for successful implementation. As a result, the Crop Trust is currently focused on promoting this mechanism and reaching out to key institutional donors to ask for support, particularly in relation to the bond's guarantee.

60. A second key instrument that was explored by the IFWG, and which holds a particular potential to engage the private sector, is crop-based fundraising. As discussed in the report to the Seventh Session of the Governing Body of the Treaty, the Crop Trust is pursuing crop-based fundraising to foster greater engagement and investment from private sector actors. The aim of crop-based fundraising is to engage conservationists, researchers, producers, consumers and other stakeholders in the commodity chain of specific food crops in the development and implementation of a global crop-based conservation strategy. This community would then "own" the strategy, and thereby would hopefully be prepared to contribute to its funding. The Crop Trust is testing this approach with the Global Coffee Conservation Strategy, produced jointly with [World Coffee Research](#). The aim is to raise USD 20 million of endowment funding which would allow investment of USD 5 million annually to safeguard key coffee collections in perpetuity. A similar process is currently underway for tea.

61. In parallel, the Crop Trust continues to prioritize grants from governments to the endowment fund. This traditional fundraising effort is underpinned by proactive engagement with governments, through calls and participation in digital events of mutual interest. However, visits to capitals and in-person events have had to be temporarily stopped due to restrictions resulting from the COVID-19 outbreak. The Crop Trust is hoping to engage new governments beyond its traditional pool of donors, with a particular focus on increasing the regional representation of Asia and Latin America in our governance structures. To that end, the Crop Trust is deploying an active engagement strategy which comprises the development of communications tools in more languages, participating in relevant regional fora, and working more closely with local agencies and partners in these regions.

62. In addition to endowment fund giving, the Crop Trust will continue to pursue time-bound funding from specific donors to cover the annual operating expenditures of individual genebanks, or for specific projects for the upgrading of individual crop collections, prioritizing collections and crops that are included under Article 15 and Annex 1 of the Treaty, as well as genebanks identified under the National Collections Strategy of the Crop Trust.

IV. COMMUNICATION AND OUTREACH

K. Online, on brand, on target

63. As the linked climate, food and biodiversity crises deepen, it is increasingly urgent that the role of conservation and use of crop diversity in ensuring our future nutritional security within planetary boundaries is high on the global development agenda. Despite significant challenges due to the outbreak of COVID-19, the Crop Trust's Communications Unit was restructured in 2020. It now has a comprehensive digital-first strategy, new processes and policies, and two new staff members. Crop Trust communications efforts aim to: raise the importance of conservation and use of crop diversity higher on the global development agenda; promote the Crop Trust as manager of a unique endowment and an authoritative voice on the science of crop diversity conservation and use; support capacity building initiatives; and underpin resource mobilization efforts.

64. In-line with the communications strategy, a gap analysis was carried out, and all Crop Trust online platforms and channels were analysed to assess performance and current audience participation. Due to the restrictions on in-person events resulting from the outbreak of COVID-19, to best expand reach and connect with target audiences and communities, all events swiftly switched to digital formats, and the team focused on increased outreach through partnerships with high-reach platforms. The Crop Trust became the 29th Charter Member of Global Landscapes Forum (GLF) in June 2020, and subsequently participated in major GLF global events, reaching thousands of people worldwide.

65. The changes reaped benefits. Through leveraging partner platforms, the Executive Director's editorials, speeches and blogs attracted more than 20 times as many views as before. Participation in high-reach digital events substantially increased views and reach and, at the same time, dramatically cut travel and conference expenditure, resulting in a high return on investment. In 2020, the Crop Trust:

- hosted a "GLF Live" event on COVID-19 and its impact on genebanks.
- participated in GLF's Bonn Digital Conference, at which our Executive Director delivered a plenary speech.
- co-hosted the Pocono Organics Food Forever Experience, where the Executive Director and Board Chair Peter Crane delivered plenary speeches.
- co-hosted with the Food Forever Initiative three live sessions and three "lightning talks" at the GLF Biodiversity Digital Conference "One World, One Health," at which the Executive Director delivered a Thought Leader address.

- co-hosted the second Food+ Summit in collaboration with *Foreign Policy* magazine, where our Executive Director participated in a plenary panel.

L. Food Forever Initiative

66. Food Forever's continued developing strong communications assets to raise awareness of the importance of safeguarding and using crop diversity for more resilient food systems. However, 2020 was particularly critical and challenging, because, on the one hand, it was the campaign's originally planned final year (in conjunction with the deadline of SDG2.5), and, on the other hand, the Secretariat had to navigate the challenges associated with the COVID-19 pandemic.

67. Food Forever was launched in 2017 as part of the EAT Stockholm Food Forum, which was attended by an audience of more than 500 people and accessed by more than 8 million online. Leading up to its launch, Food Forever secured a number of committed, high-profile Champions and Partner Organizations; developed a logo and visual identity; and prepared a [website](#) to showcase efforts to support the implementation of SDG2.5. This was the foundation that propelled Food Forever in 2018 and 2019. In 2020, given the deadline for SDG2.5, the Secretariat hoped to highlight the sense of urgency and escalate efforts globally through a crowdsourcing approach, so awareness raising efforts could be organized by external partners, based on some key guidelines around messaging and branding.

68. However, the COVID-19 outbreak forced a radical change of plans very early in the year. The pipeline of events and communication activities planned for the year was almost totally cancelled, as restrictions for travel and in-person events escalated rapidly across all continents. The central effort that guided the Secretariat's work in the first half of 2020 was hence to ensure a successful transition of all communications efforts to fully digital.

69. Overall, 2020 saw the addition of one high-profile Champion (Dr Ismahane Elouafi) and three Partner Organizations (the GLF, Foreign Policy and the Future Food Institute), a transition to educational events, and an engaging series of digital and hybrid awareness-raising and knowledge-sharing activities. Amongst these activities, the Secretariat organized two Food Forever Experiences, one fully in person at the Davos Annual Meeting of the World Economic Forum in January, and one hybrid experience to celebrate the Global Day of Action on September 25 in the Pocono Organics farm in Pennsylvania. Additionally, Food Forever launched partnerships to co-host digital events with GLF (three sessions in total), the Future Food Institute (two sessions), Food Tech Summit-Africa (one session), and the Global Youth Institute of the World Food Prize (one session). Also, Food Forever contributed to the Food+ Summit, a policy-driven event organized by Foreign Policy magazine, sharing insights on food systems sustainability to a predominantly US-based audience.

70. In terms of campaigns, the Secretariat designed a fully virtual exhibit to replace the initially in-person Traveling Exhibit for Botanic Gardens. This new virtual exhibit was taken over by three botanical gardens in different parts of the world, with many more showing interests to continue their involvement in 2021. Additionally, the campaign launched the Biodiversity for Resilience video series, four short-form films focused on showcasing the important role of agrobiodiversity for more sustainable and more resilient food systems. The first video can be viewed [here](#).

71. The good news is that Food Forever's engagement and communication impact increased in the digital space. The GLF conference in June 2020 was watched internationally by more than 100,000 spectators. This success was repeated with the Pocono Experience (September 25), which had more than 20,000 views and reactions. The event combined a scaled-down in-person experience, with live tasting and farm touring taking place on the ground, with interactive digital content which made streaming from home much more engaging. Successful innovations included having a skilled spokesperson moderate the whole event (Ms Dina Deleasa-Gonsar, renowned TV personality and food enthusiast), a longer program with more content tailored for those synching at home, and filming the live events at Pocono with a multi-camera approach (similar to a sporting event), among others.

72. Additionally, a partnership with the Future Food Institute was launched in May 2020. As part of their knowledge sharing platform, the Future Food Institute organizes a series of digital bootcamps and luncheons to bring together experts in different fields related to food systems and promote science-based conversations around healthier and more sustainable food practices.

73. Food Forever continued partnering with the Chefs' Manifesto on a global campaign that calls on chefs to advocate for the amazing wealth of diversity within our food system and to put it to use in their kitchens and beyond. The work with chefs in 2020 focused on generating educational opportunities for them to address food advocates, students and activists on issues around sustainable gastronomy and diverse food systems. Some of the chef engagements in 2020 included three digital bootcamps in partnership with the Future Food Institute (in May, July and November), two chef interviews in the framework of the GLF conferences (in May and October), and one sustainable gastronomy session in partnership with the Global Youth Institute of the World Food Prize to commemorate World Food Day (October 16).

74. In conclusion, the COVID-19 pandemic has led to a fundamental change in the way Food Forever has communicated to ensure greater engagement in SDG2.5. As a result of disruptions in activities in the first and second quarter of 2020, donors have granted the Secretariat a no-cost extension for two additional quarters, until July 2021, in order to complete all programmed activities and ensure an adequate closure of the campaign.

ANNEX II

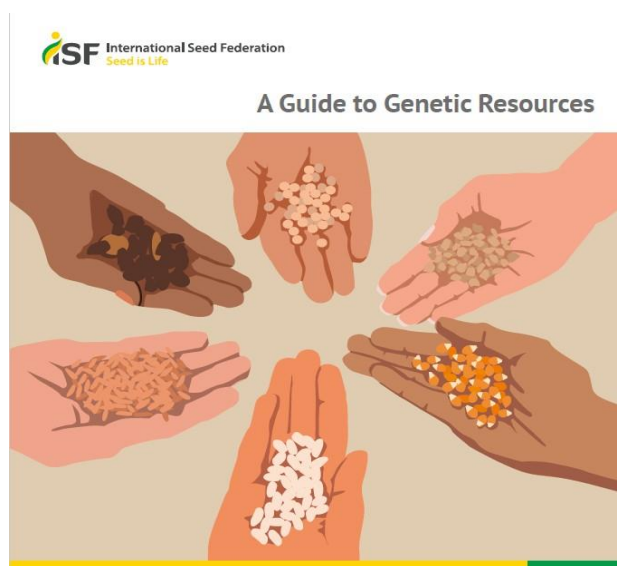
REPORT FROM THE INTERNATIONAL SEED FEDERATION

I. INTRODUCTION

1. The International Seed Federation (ISF) (www.worldseed.org) represents the global seed industry through 56 national seed associations representing 7500 companies and its vision is to build “A world where the best quality seed is accessible to all, supporting sustainable agriculture and food security”. Through its mission “to create the best environment for the global movement of seed and promote plant breeding and innovation in seed”, ISF “promotes the International Treaty as the preferred tool to administer Plant Genetic Resources for Food and Agriculture (PGRFA).”

2. ISF recognizes the importance of the conservation of plant genetic resources for food and agriculture (PGRFA) and the role they play in addressing global challenges, such as a growing population, climate change, biodiversity loss, poverty alleviation, and food security. To help its members and the public to understand the importance of genetic resources, ISF developed in 2019 a discussion guide available here:

https://www.worldseed.org/wp-content/uploads/2020/04/genetic_broch_17avril.pdf



3. In addition to this guide, the seed sector has been actively engaged in voluntary benefit sharing activities and has gathered examples of the voluntary engagement of its members:

<https://www.euroseeds.eu/seeding-benefits/>

4. ISF is providing this report to the Intergovernmental Technical Working Group on Plant Genetic Resources for Food and Agriculture to share ideas and concerns related to **"Digital sequence information" (DSI) on plant genetic resources for food and agriculture (item 7 of the Provisional Agenda)**.

5. The debate on DSI began within the Convention on Biological Diversity (CBD) and its Nagoya Protocol, and was more recently taken up within bodies under the FAO. It became a roadblock to progress within the negotiations on the enhancement of the multilateral system of the ITPGRFA where Governing Body 8. Unfortunately, an agreement on a new SMTA and the extension of Annex 1 could not be reached. The seed sector is concerned that DSI could become regulated under an international access and benefit sharing framework that would negatively impact the benefits currently being realized through freely accessible DSI from public databases. Importantly, many of the benefits

from sharing non-confidential information on conservation, pest management, scientific education, public-private partnerships, and other uses of genetic resources would be put in jeopardy.

A. Value of open and public Nucleotide Sequence Databases

6. The term DSI has been widely used in recent debates on access and benefit sharing related to genetic resources. It is a placeholder term for something that has not been defined yet.

7. The term DSI has been widely used in recent debates on access and benefit sharing related to genetic resources. But DSI is an ambiguous term with a dangerously wide latitude of meanings that is certain to perpetuate disagreement. Without a meaningfully-scoped definition of DSI, little constructive discussion is likely to occur. Even so the term DSI is used in this document as placeholder.

The International Nucleotide Sequence Database Collaboration (INSDC) receives USD50M annually from the European Union, Japan, and the United States.

Anyone with internet access has free access to the information.

“All database records submitted to the INSDC will remain permanently accessible as part of the scientific record”(INSDC policy: www.insdc.org/policy.html)

8. Vast amounts of DSI have been made publicly available, **unencumbered and free of charge** through multiple globally-accessible databases.

9. In fact, governments continue to provide significant and sustained funding for open access public databases. Users from all countries currently enjoy free access. Diverse actors in the private and public sectors are involved in the generation, storage, curation, dissemination, interpretation and use of DSI globally.

10. Regulation of these processes has been largely self-imposed: the genomics community has a long history of collaborative data sharing through international research consortia, built on the belief that combining and sharing datasets will accelerate discovery⁷. The benefits of this international collaboration and sharing have provided enormous benefits to society and biodiversity, and it is important that current benefits remain unaffected by the discussions on DSI.

⁷ Genome Biology Volume 15, Article number: 430 (2014)

B. ISF supports the current approach of open and free public data

11. Open access to DSI in public databases currently helps address food security, the conservation of biodiversity, environmental and human health problems through monitoring and early detection, education and other capacity building programs, and sustainable agriculture challenges to name a few.

12. Some specific examples of direct social benefits resulting from open and free access DSI exchange systems include:

- The rapid development of Corona virus (SARS-CoV-2) diagnostic tests was a direct benefit of the open accessibility of DSI databases to China and Australia-based researchers⁸. In the early days of the recent corona virus outbreak, scientists were able to quickly and easily access viral DSI with freedom to operate and limited legal implications. This access allowed a rapid understanding of the cause of the illness, ways to slow its spread, and a focus on developing solutions. This recent example is a very important illustration of the importance of information sharing and collaboration amongst the global scientific community and should be kept in mind when considering any measures that could restrict access to such information.
- DSI saves time and money in biodiversity monitoring for early warnings of climate change and other aspects of ecosystem management⁹. DSI benefits and enables basic taxonomic research, control of pathogens and invasive species, and safe international movement of plant materials and commodities.
- DSI enables more effective ways to monitor on-farm pests and diseases and ensures quality control and food safety. Upstream, DSI benefits exploration, collection, and use of breeding materials to improve plant varieties for more sustainable agriculture.
 - ✓ Sorghum DSI helped scientists identify opportunities for greater nitrogen use efficiency, insect resistance, and solutions to Striga, a parasitic weed impacting all types of farmers throughout Africa.
 - ✓ Availability of the pearl millet genome sequence has provided insights for improved quality and yield in challenging environmental conditions of Sahelian agriculture.
 - ✓ Research on cassava, a crop critical to hundreds of millions of people in the tropics has likewise benefited; nutritional qualities, post-harvest storage, flowering time, and disease management can now be improved more efficiently through the unencumbered exchange of DSI within a global network of scientists.
 - ✓ In several vegetable crops disease resistance programs have benefitted from publicly available DSI enabling a faster delivery of resistant lines to the growers around the world. Without these DSI data the development of resistant crops of tomato, pepper, and cucumber would have been delayed.

Source: IWGSC

⁸ <https://www.nature.com/articles/d41587-020-00002-2>

⁹ <https://www.nature.com/articles/d41587-020-00002-2>

Benefits of the sharing of information is also recognized by the **Second Global Plan of Action for Plant Genetic Resources for Food and Agriculture** (adopted by the FAO Council in 2011):

“Linking conservation with use and identifying and overcoming obstacles to the greater use of conserved PGRFA are necessary if maximum benefits are to be obtained from conservation efforts. Effective information management, **including the sharing of relevant information widely with users** by taking full advantage of advanced information technologies, will be an important prerequisite to achieving this objective. **This will increasingly include molecular and genomic information which will need to be linked to, and analysed together with, the characterization and evaluation data of morphological and agronomic traits managed in gene bank databases.**”

C. ISF is committed to the preservation of the benefits of Public-Private Partnerships

13. In Public-Private Partnerships (PPP), private and public actors draw upon their complementary resources to develop nutritious and diverse crops which may be based on DSI. For example, the bread wheat initiative and wheat genome sequencing consortium use collaboration to create sequence-based tools to accelerate wheat breeding and develop much needed improved wheat varieties.

14. Other PPP deliver support services to the agricultural sector – such as the monitoring of disease strains to help breeders to develop resistant varieties.

The International Wheat Genome Sequencing Consortium was established in 2005 by a group of wheat growers, scientists and breeders. The goal of the IWGSC is to make a high quality genome sequence of bread wheat publicly available, in order to lay a foundation for basic research that will enable breeders to develop improved varieties.



15. Extending ABS requirements from genetic resources to DSI generated from the genetic resource could threaten PPP. Sub-contracted service relationships between public and private sectors may be jeopardized. Moreover, graduate students (as well as faculty) participating in PPP capacity building will find reduced private funding and face new barriers in the selection of research topics due to the increased costs and legal uncertainties brought by DSI/ABS regulations.

Partnerships “can channel the expertise of the private sector and advance national programs in emerging countries to benefit low income countries”

(Pingali, P.L. 2012. Green revolution: impacts, limits, and the path ahead.)

16. Continued open and free access to DSI in the public domain will assure the legal certainty needed to encourage collaboration and capacity building while avoiding costs related to burdensome administrative tracking.

17. **Research on minor (orphaned) crops, crop wild relatives, and non-agricultural species, that are advocated within the FAO and for which knowledge is often limited, will be facilitated by open and free access to DSI, and the full value of these species is more likely to be discovered and developed.**

D. To sustain benefits, proceed with caution

18. With so many impactful societal benefits shared from the open and free exchange of DSI, it remains unclear what public interest or interest of biodiversity conservation could justify disrupting the current exchange of DSI through the imposition of access and benefit sharing obligations.

19. **Unrealistic expectations for monetary payments do not justify the administrative and opportunity costs associated with vaguely conceived, largely un-enforceable access and benefits sharing approaches.** There are many technical reasons against attempting to regulate DSI including the intractable notion of sequence having a country of origin.

20. In addition, policy makers may be reminded that much DSI is repetitive, even across species. Research done two decades ago already showed that “mice and men share about 97.5 per cent of their working DNA”¹⁰; this underscores the difficulties inherent with claims of national sovereignty on DSI.

11

Article 17.1 of the Convention on Biological Diversity: The Contracting Parties shall **facilitate the exchange of information**, from all publicly available sources, relevant to the conservation and sustainable use of biological diversity, taking into account the special needs of developing countries.

Article 17.1 of the ITPGRFA: The Contracting Parties shall cooperate to develop and strengthen a global information system **to facilitate the exchange of information**, [...], 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.

Second Global Plan of Action: The main aims of the Second GPA, as agreed by the Commission at its Thirteenth Regular Session and approved by the FAO Council at its 143rd Session in 2011, are: [...] h) **to promote information sharing** on PGRFA among and within regions and countries;

21. **Keeping in mind the engagement toward “information” already present in many international regulations, a better alternative to new regulation will be to focus more attention**

¹⁰ <https://www.newscientist.com/article/dn2352-just-2-5-of-dna-turns-mice-into-men/>

on encouraging innovation and capacity building and widening participation so that such benefits can be further multiplied.

22. ISF is seeking constructive dialogue and ideas on how to maintain, strengthen and continually enable even greater access to DSI for the benefit of human health and the environment while, at the same time, promoting the fair and equitable sharing of benefits resulting from the use of genetic resources.

23. For more information, please contact the ISF Secretariat at h.khanniazi@worldseed.org



ANNEX III

REPORT FROM THE INTERNATIONAL TREATY ON PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

I. INTRODUCTION

1. This report has been prepared by the Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture (International Treaty) in response to the invitation from the Secretariat of the Intergovernmental Technical Working Group on Plant Genetic Resources for Food and Agriculture (Working Group) to provide the Working Group with updates on relevant activities.
2. This report is structured into two main sections, one to illustrate the major outcomes of the Eighth Session of the Governing Body of the International Treaty, which was held in November 2019, and another to present progress on selected implementing activities.

II. OUTCOMES OF THE EIGHTH SESSION OF THE GOVERNING BODIES

3. The Eighth Session of the Governing Body adopted fourteen Resolutions and provided additional guidance in various appendixes to the report.¹² With a view to informing the Working Group, the summary below presents the deliberations of the Governing Body on thematic areas which are of direct relevance to the on-going consideration of plant genetic resources for food and agriculture (PGRFA) by Members of the Commission on Genetic Resources for Food and Agriculture (Commission).

A. Cooperation with the Commission

4. In line with established practice, the Governing Body adopted a separate Resolution on the matter.¹³ The Governing Body welcomed the joint activities of the Secretariats of the International Treaty and the Commission during the intersessional period and requested its Secretary to continue strengthening collaboration and coordination with the Secretary of the Commission to promote coherence and synergies, while avoiding duplications, in the development and implementation of the respective programmes of work of the two bodies, and in particular with regard to:
 - (a) the preparation of the *Third Report on the State of the World's Plant Genetic Resources for Food and Agriculture* and of a draft *Third Global Plan of Action for Plant Genetic Resources for Food and Agriculture*, as appropriate;
 - (b) the implementation and monitoring of the *Second Global Plan of Action for Plant Genetic Resources for Food and Agriculture* (GPA);
 - (c) the implementation of the *Genebank Standards for Plant Genetic Resources for Food and Agriculture*, including through capacity building;
 - (d) support to countries with strengthening their crop improvement capacity;
 - (e) the preparation of in-depth case studies on the effects of seed policies, laws and regulations on: on-farm diversity of PGRFA; smallholders' access to sufficient, affordable, diversified and locally adapted PGRFA, including farmers' varieties/landraces; and food security and nutrition under the different seed systems;
 - (f) access and benefit-sharing;

¹² The full report is available at: <http://www.fao.org/3/nb918en/nb918en.pdf>.

¹³ <http://www.fao.org/3/nb787en/nb787en.pdf>

- (g) digital sequence information/genetic sequence data;
- (h) the Global Information System and FAO's World Information and Early Warning System on Plant Genetic Resources for Food and Agriculture (WIEWS), targets and indicators, as well as the development of the Post-2020 Global Biodiversity Framework;
- (i) joint training events at the regional level and the provision of assistance for the elaboration of national reports on monitoring of plant genetic resources for food and agriculture, subject to the availability of resources;
- (j) conservation and sustainable use.

B. Conservation and Sustainable Use

5. In its Resolution 5/2019, the Governing Body decided to reconvene the *Ad Hoc* Technical Committee on Conservation and Sustainable Use (*Ad Hoc* Committee) and requested the Secretary to cooperate with the Commission to organize the International Symposium on on-farm management and in situ conservation.¹⁴
6. The Governing Body invited the Commission to provide the Secretary of the Governing Body with the reports received from its members on the implementation of the Second Global Plan of Action for PGRFA that will be compiled, summarized and submitted to the *Ad Hoc* Committee for further review.
7. The Governing Body also requested to facilitate training and capacity building to support implementation of conservation and sustainable use, including by collaborating with CGIAR centers, and to continue collaborating with the Convention on Biological Diversity (CBD) on the interaction between genetic resources, community and farmer-led system activities, and protected area systems.

C. Farmers' Rights

8. The Governing Body, through Resolution 6/2019,¹⁵ welcomed the *Inventory of National Measures, Best Practices and Lessons Learned on the Realization of Farmers' Rights* and reconvened the *Ad Hoc* Technical Expert Group on Farmers' Rights to work on the drafting of *Options for Encouraging, Guiding and Promoting the Realization of Farmers' Rights, as set out in Article 9 of the International Treaty*.
9. The Governing Body invited Contracting Parties to promote sustainable, biodiverse production systems and facilitate participatory approaches such as community seed banks, community biodiversity registries, participatory plant breeding and seed fairs as tools for realizing Farmers' Rights, and to take initiatives to convene further regional workshops and other consultations with a broad range of stakeholders, including with farmers' organizations, particularly those in the centers of origin and crop diversity, for the exchange of knowledge, views and experiences on the realization of Farmers' Rights.
10. The Governing Body also invited each Contracting Party that has not already done so, to consider reviewing, and, if necessary, adjusting national measures that affect the realization of Farmers' Rights, in particular legislation concerning variety release and seed distribution, to protect and promote Farmers' Rights as appropriate and subject to national legislation.
11. The Governing Body noted the ongoing review process of the FAQs on the interrelations between the UPOV Convention and the International Treaty and exchange of experiences and information on implementation of the UPOV Convention and the International Treaty, and requested

¹⁴ <http://www.fao.org/3/nb783en/nb783en.pdf>.

¹⁵ <http://www.fao.org/3/nb784en/nb784en.pdf>

the Secretary to continue exploring how Contracting Parties to the International Treaty could further contribute to these processes, and to continue the dialogue with UPOV on these matters.

D. Multi-Year Programme of Work and Digital Sequence Information

12. The Governing Body, through Resolution 13/2019,¹⁶ adopted its first Multi-Year Programme of Work in order to plan and structure the implementation of the International Treaty and the work of the Governing Body in a coherent and integrated manner, and to highlight the expected major outputs and milestones to be achieved at the respective Sessions of the Governing Body.

13. In the context of the Multi-Year Programme of Work, the Governing Body requested the Secretary to continue following the discussions on digital sequence information in other fora and coordinating with the Secretariats of the CBD and the Commission in any related activities in order to ensure coherence and avoid duplication of efforts. It further requested the Secretary to inform the Governing Body, at its next Session, of the state of discussions and outcomes of the related processes in the two fora as they relate to the potential implications of the use of digital sequence information on genetic resources, for the objectives of the International Treaty. Provisions on digital sequence information are reflected in the Multi-Year Programme of Work.

E. Multilateral System of Access and Benefit-Sharing

14. The Governing Body conducted intense negotiations for the development of a package of measures to enhance the functioning of the Multilateral System of Access and Benefit-Sharing. Given the complex legal, policy and practical implications, a Resolution was not adopted at the Session. The Chair's compromise package that was presented during the Session included drafts of: a resolution; a revised SMTA; an amendment to expand Annex I of the Treaty; terms of reference for an *Ad Hoc* Advisory Technical Committee on the SMTA and the Multilateral System for the biennium 2020-21; and a proposal on consideration of potential implications of the use of digital sequence information/genetic sequence data for the objectives of the International Treaty under the Multi-Year Programme of Work.

15. The Governing Body took note of the need to take stock and to assess the next steps on further work on the Enhancement of the Multilateral System. While there has been no formal intersessional process on the enhancement of the Multilateral System during this biennium, the Governing Body encouraged informal consultations among Contracting Parties and especially national consultations amongst sectors and relevant stakeholders.¹⁷

16. Regarding the implementation of the Multilateral System, the Governing Body took note of the biennial report indicating that 2.2 million PGRFA materials were available and had been documented. The Report also reflected a 21 percent increase in the material exchanged and reported to the Governing Body. The Governing Body requested the Secretary, among other tasks, to facilitate the availability and transfer of material and to strengthen operations, including the provision of support to SMTA users and for the reporting on the transfers to the Governing Body through Easy-SMTA.¹⁸ It further requested, subject to the availability of financial resources, the organization of regional training workshops in support of Contracting Parties.¹⁹

17. With regard to the reviews and assessment of the Multilateral System and the implementation and operation of the SMTA, the Governing Body requested the Secretary to prepare reports based on Contracting Parties' and other stakeholders' inputs, including on possible measures to be considered

¹⁶ <http://www.fao.org/3/nb791en/nb791en.pdf>

¹⁷ IT/GB-8/19/Report, para. 30-35

¹⁸ <https://mls.planttreaty.org/itt/>

¹⁹ <http://www.fao.org/3/nb779en/nb779en.pdf>

by the Governing Body in order to encourage natural and legal persons to make material available in the Multilateral System.

F. Global Information System

18. In its Resolution 4/2019,²⁰ on the Implementation of the Global Information System, the Governing Body took note of the ongoing collaboration with WIEWS, among other partners. In doing so, it requested the Secretary to continue enhancing cooperation with relevant institutions and initiatives, and to facilitate the exchange of PGRFA information through the Global Information System.

19. The Governing Body also took note of the progress made in the voluntary use of the Digital Object Identifiers (DOIs) and their usefulness to link the material to digital sequence information/genetic sequence data. Additionally, it requested the Secretary to encourage and guide users to link scientific publications and datasets to PGRFA material.

20. The Governing Body reconvened the Scientific Advisory Committee which, among other tasks, shall continue considering scientific and technical issues of relevance to digital sequence information/genetic sequence data and their implications, and relevant national legislation, as appropriate.

21. The Governing Body requested the Secretary to continue its efforts to build the capacity of relevant stakeholders, especially in developing countries, and to review the DOI Guidelines taking into account comments from national genebanks. It also took note of the project “Development of a Globally Agreed List of Descriptors for *in situ* Crop Wild Relatives Documentation”.²¹

G. Funding Strategy

22. The Governing Body, through Resolution 3/2019,²² adopted the Funding Strategy for the period 2020-25 and established, within the Strategy, a target of USD 0.9-1.1 billion per year over a period of ten years with a milestone of 40 percent to be achieved by 2026 to support the implementation of the International Treaty. In adopting the Strategy, it called upon FAO to prioritize the delivery of programmes and projects supportive of the implementation of the International Treaty, and to support the nexus between biodiversity and climate change, in particular, through its involvement in the Global Environment Facility and the Green Climate Fund and to actively contribute to the work of the newly established Standing Committee on the Funding Strategy and Resource Mobilization.

23. The Treaty Contracting Parties made extensive use of the FAO’s Second Global Plan of Action for Plant Genetic Resources for Food and Agriculture (GPA) in adopting its updated Funding Strategy. The funding target range was established taking into account the GPA. The new programmatic approach of the Benefit-sharing Fund focuses on GPA priority area 2²³ and GPA priority area 11.²⁴ The Funding Strategy has been designed with a view to improve links with the GPA and its monitoring through the WIEWS.

²⁰ <http://www.fao.org/3/nb782en/nb782en.pdf>

²¹ <http://www.fao.org/3/cb3256en/cb3256en.pdf>

²² <http://www.fao.org/3/nb780en/nb780en.pdf>

²³ Supporting on- farm management and improvement of plant genetic resources for food and agriculture.

²⁴ Promoting the development and commercialization of all varieties, primarily farmers’ varieties/landraces and underutilized crops.

H. Cooperation with the Convention on Biological Diversity

24. The Governing Body, through Resolution 11/2019,²⁵ emphasized the importance of enhancing cooperation with the CBD in the development and implementation of the Post-2020 Global Biodiversity Framework and recommended that targets for plant genetic resources for food and agriculture should be maintained and strengthened, including by relying on monitoring systems available through the reporting processes of the International Treaty and Commission, and the experience gained in monitoring Target 2.5 of the Sustainable Development Goals (SDGs). It also recommended that such targets should deal not only with conservation of genetic diversity, but also with its sustainable use. With regard to targets on access to genetic resources and the fair and equitable sharing of benefits arising from their utilization, the Governing Body recommended that such targets expressly consider the International Treaty and its Multilateral System of Access and Benefit-Sharing, and that monitoring rely, *inter alia*, on the monitoring systems available through the reporting systems of the International Treaty.

I. Capacity Development Strategy

25. The Governing Body welcomed the initiative for a Capacity Development Strategy to enhance implementation of the International Treaty through improving the coherence, efficiency and effectiveness of capacity development initiatives and activities. It requested the Secretary to develop a draft Strategy (2022-2025) with inputs from stakeholders and in consultation with relevant subsidiary bodies, for consideration by the Governing Body at its next Session.

J. Contribution by FAO to implementation of the International Treaty

26. The Governing Body invited FAO, through Resolution 8/2019,²⁶ to continue actively support the International Treaty as a key international instrument required for the fulfilment of SDG 2 (zero hunger) and 15 (life on land) and to build awareness of the importance of the implementation of, and compliance with, the International Treaty at the highest national levels.

27. The Governing Body recommended that FAO's Strategy on Mainstreaming Biodiversity across Agricultural Sectors place adequate emphasis on genetic diversity, and invited FAO to continue including the Secretariat of the International Treaty in activities to implement the Strategy.

III. PROGRESS IN THE IMPLEMENTATION OF THE INTERNATIONAL TREATY

28. Following the outbreak of the COVID-19 pandemic, the Secretariat of the International Treaty organised a number of meetings of subsidiary bodies and other events, in virtual mode.²⁷ A brief overview of selected implementing activities is presented in the sections below.

Conservation and sustainable use of PGRFA

29. The Secretariat of the International Treaty, the Global Crop Diversity Trust and the Commission co-organized the First International Multi-Stakeholder Symposium on Plant Genetic Resources for Food and Agriculture, which was held on 29-30 March 2021 in virtual mode. The Symposium brought together technical experts and stakeholders on *in situ* conservation and on-farm management of PGRFA and provided an open-ended forum for the exchange of information and experiences to strengthen and support on-going efforts with regard to the conservation and sustainable

²⁵ <http://www.fao.org/3/nb789en/nb789en.pdf>

²⁶ <http://www.fao.org/3/nb838en/nb838en.pdf>

²⁷ The calendar and documentation of meetings are available at: <http://www.fao.org/plant-treaty/meetings/en/>.

use of crop diversity. The Secretariat of the International Treaty will present the outcomes of the Symposium to the Governing Body at its next Session.

30. A new, larger version of the toolbox on sustainable use has been published on the Treaty's website.²⁸ The toolbox contains more than 1,300 resources, in English, French and Spanish. A survey was recently launched to seek inputs for improvements of the toolbox.

Reporting cycle under the *Compliance Procedures*

31. The submission of national reports, for the second reporting cycle, on the implementation of the International Treaty is ongoing. The Secretariat is making the information available online. The reports contain essential information regarding the development of legislation, policies and programmes for the implementation of the International Treaty at the national level. They illustrate the progress and achievements and identify the major gaps that remain to be addressed and that may need additional attention from International Treaty bodies and donors. The information provided by the Contracting Parties through this mechanism supplements, at narrative level, the information contained in the indicators under the *GPA*.²⁹

Farmers' Rights

32. The Secretariat has published, on-line, the *Inventory of national measures that may be adopted, best practices and lessons learned from the realization of Farmers' Rights, as set out in Article 9 of the International Treaty*.³⁰ Through the *Inventory*, Contracting Parties and interested stakeholders share the experiences gained so far with, and lessons learned from, the realization of Farmers' Rights.

33. Based on this *Inventory*, inter-sessional work is on-going to develop the *Options for encouraging, guiding and promoting the realization of Farmers' Rights as set out in Article 9 of the International Treaty*.

34. The Secretariat continues to reach out to Contracting Parties and interested stakeholders, to submit measures and practices for inclusion in the *Inventory* and/or update their submissions. The Secretariat is also facilitating the initiatives of interested stakeholders to communicate information on Farmers' Rights, including by sharing the *Inventory* in relevant fora within and outside FAO.

Multilateral System of Access and Benefit-Sharing

35. Under the Initiative of the Government of Switzerland, an informal consultation among representatives of Contracting Parties, in their individual capacity, was held on 21 January 2021. The objectives of the informal consultations were to:

1. take stock of the progress made so far in the process established under the International Treaty to enhance the functioning of the Multilateral System and
2. exchange views and ideas on how best to move forward in our efforts to enhance the functioning of the Multilateral System.

36. Thanks to progress made in the current biennium, the Multilateral System has facilitated the transfer of more than 6 million PGRFA, of which 1.4 million were materials under development. The transfers of wheat, rice and maize PGFRA alone constitute more than two-thirds of all transfers. The Secretariats of the International Treaty and the Commission are collaborating to prepare a report on germplasm flow.

Global Information System

²⁸ The *Inventory* can be accessed at: <http://www.fao.org/plant-treaty/tools/toolbox-for-sustainable-use/overview/en/>.

²⁹ The reports are available at: <http://www.fao.org/plant-treaty/areas-of-work/compliance/compliance-reports/en/>.

³⁰ The *Inventory* is available at: <http://www.fao.org/plant-treaty/areas-of-work/farmers-rights/overview-inventory/en/>.

37. As of 5 May 2021, more than 1.1 million PGRFA have been identified and linked with the related datasets in other systems through the registration of DOIs on the Portal of the Global Information System. Through the helpdesk, the Secretary has continued providing regular support to users in Contracting Parties, mainly national collections, including during the period of stringent restrictions induced by the COVID-19 pandemic.

38. The GLIS Portal was redesigned in early 2021 with a directory of links to sources of PGRFA (for *ex situ*, *in situ*, on-farm and others), added-value activities, users' themes and PGRFA documentation. It also provides advanced search tools for material in the Multilateral System and DOI registrants. The new Portal facilitates access to various datasets in WIEWS for *ex situ* and on-farm records, as well as organizations with a WIEWS instcode. In addition to several improvements in the search form, the System presents statistics module with customized standard views and sample queries for users.³¹

39. Under the project "Development of a Globally Agreed List of Descriptors for *in situ* Crop Wild Relatives Documentation", the International Treaty has released an updated list of passport descriptors for crop wild relatives conserved *in situ*. The publication, *Descriptors for Crop Wild Relatives Conserved in situ*, is available in English, Arabic, French and Spanish.³² It provides an international standard to ensure consistency in the way data about plant genetic material of crop wild relatives are documented and exchanged around the world.

Funding Strategy and Benefit-Sharing Fund

40. A multi-year Operational Plan for the Funding Strategy has been developed for the period 2020-2025 and is actively being implemented.

41. The Secretariat has engaged in a number of global initiatives, including through collaboration with FAO, that offer opportunities for leveraging and mobilizing resources for the International Treaty. These include the GEF-7 and 8 programs, the COVID-19 food systems recovery measures and packages that countries are putting in place, and the International Year of Fruits and Vegetables.

42. In the framework of the Funding Strategy, the International Treaty and the Global Crop Diversity Trust are working together on a number of joint outreach and resource mobilization initiatives, including in relation to emergencies suffered by genebanks, Article 15 collections, and innovative funding by for example bringing the finance sector to support conservation of PGRFA. The partnership is also advancing on scientific and technical matters, including to strengthen capacity-building for genebank staff and others to enhance conservation and availability of PGRFA.

43. A draft strategy to mobilize funds from food processing industries has been developed and takes into consideration FAO's new Strategy for Private Sector Engagement 2021-2025. The strategy will be further developed over the coming months and considered by the Governing Body at its next Session.

44. The on-going Fourth Cycle of the Benefit-Sharing Fund (BSF-4) consists of 20 projects executed in 29 developing countries.³³ The BSF-4 portfolio marks a transition towards a programmatic approach and a more strategic, sustainable and diversified implementation of the new Funding Strategy of the International Treaty. The main beneficiaries of BSF-4 projects are farmers who receive support for *in situ* and on-farm management. A total of 48 among research institutes, NGOs, governments, farmers organization, national genebanks, universities and food industries are partnering in the execution of BSF-4 projects. Project activities include the establishment of community seed

³¹ The GLIS home page is: <https://ssl.fao.org/glis/>. The statistics are available at: <https://ssl.fao.org/glis/stats/index>.

³² The publication is available at: <http://www.fao.org/plant-treaty/areas-of-work/global-information-system/development-of-a-globally-agreed-list-of-descriptors/en/>

³³ The list of approved projects is available at: <http://www.fao.org/plant-treaty/areas-of-work/benefit-sharing-fund/projects-funded/bsf-fourth-cycle/en/>

banks, the duplication of germplasm in national genebanks and the Global Seed Vault, and the evaluation of target crop accession for breeding.

45. The Independent Evaluation of BSF-3 projects is on-going and will be finalized before the end of 2021. The Secretariat has published the Phase 1 Report of the Independent Evaluation.³⁴

46. Based on an *Options Paper* and advice received, progress is being made towards BSF-5, with the aim of launching the new project cycle by 2021.³⁵

47. The Secretariat has provided inputs to the *Study on the Role of Genetic Resources in Climate Change Adaptation and Mitigation* that the Commission requested at its last Session, including by selecting successful tools, good practices, models and lessons learnt from Benefit-Sharing Fund projects that pursue climate change adaptation and mitigation through PGRFA management.

The Post-2020 Global Biodiversity Framework

48. The Bureau of the Ninth Session of the Governing Body, with the support of the Secretary, is engaging in the preparation of the Post-2020 process to speak on behalf of the Contracting Parties and thereby to ensure strong contributions from the International Treaty in the development and implementation of the new framework, including through cooperation with other biodiversity-related conventions. The Secretariat of the International Treaty is actively participating and providing input in the ongoing CBD negotiations of the framework.

The Capacity Development Strategy

49. In partnership with UNEP-WCMC, the Secretariat convened an informal group of expert stakeholders to gather insightful information and views on capacity development, including in synergy with biodiversity and climate change international conventions, instruments and processes. The draft strategy under preparation will be reviewed by the subsidiary bodies of the International Treaty before submission to the Governing Body.

Collaboration with FAO's Legal Office and GODAN

50. FAO's Legal Office, in collaboration with the Secretariat of the International Treaty, formulated and commissioned a study on agricultural data policy and management, which is being undertaken in partnership with the Global Open Data for Agriculture and Nutrition Initiative (GODAN) and the University of Ottawa. The study under preparation is intended to develop knowledge and insights into existing legal and policy structures of agricultural data ownership, control and management, including intellectual property rights, and, in particular, addresses the case of the International Treaty.

SDGs and the International Treaty

51. The International Treaty, through FAO, is actively contributing under the SDG indicator and monitoring framework. In particular, Target 15.6 promotes the fair and equitable sharing of the benefits arising from the utilization of genetic resources and appropriate access to such resources. UNEP-CBD is the custodian agency for indicator 15.6.1, which refers to the number of countries that have adopted legislative, administrative and policy frameworks to ensure fair and equitable sharing of benefits. In the current biennium, the Secretariat continues providing updated information and data related to the implementation of the International Treaty, thus contributing to annual SDG progress reports and feeding into the High-Level Political Forum's follow-up and review processes.

52. The work of the International Treaty is also relevant to SDG Target 2.5, for which FAO is the custodian agency. Indicator 2.5.1 refers to the number of plant and animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities. While WIEWS assists countries with measuring such progress for the implementation of the GPA, the implementation of the

³⁴ The Draft Report of Phase 1 of the Independent Evaluation of the BSF III is available at: <http://www.fao.org/3/cb3418en/cb3418en.pdf>

³⁵ The Options Paper for BSF-5 is available at: <http://www.fao.org/3/cb3452en/cb3452en.pdf>

International Treaty by Contracting Parties contributes towards the achievement of Target 2.5 through increasing the number of PGRFA secured in conservation facilities.

COVID-19 response

53. Since the outbreak of the COVID-19 pandemic, the Secretariat has been collecting information and ensuring a dialogue between Treaty stakeholders on the impact of the pandemic on core implementing activities of International Treaty stakeholders. The Secretariat conducted surveys between June and August 2020 with National Focal Points and partners of the Benefit-Sharing Fund.

International Panel of Experts

54. The Secretariat of the International Treaty and the Global Crop Diversity Trust have joined forces to organize a series of virtual international panels that bring together PGRFA experts and stakeholders to discuss matters of emerging importance for the Treaty community. Three panels of experts have been organized as follows, and it is anticipated that the series will continue in the short to mid term:

- *The impact of the covid-19 pandemic on the conservation, use and exchange of plant genetic diversity.* The panel was held on 15 September 2020 with the sponsorship of the of the Kingdom of Morocco.³⁶
- *Fruit and vegetable genetic diversity: the status and challenges of conservation, exchange and use.* The panel was held on 16 February 2021 with the sponsorship of the Government of Italy and in collaboration with the International Society for Horticultural Science. It was one of the events being organized this year to celebrate the International Year of Fruits and Vegetables.³⁷
- *Cryopreservation: A long-term strategy for hard-to-serve PGRFA collections in a post-COVID world.* The panel will be held on 25 June 2021 with the sponsorship of the Government of Belgium.³⁸

Cyclone-Idai response

55. The Secretariat has been working in collaboration with the national genebanks of Zimbabwe, Malawi and Mozambique, Bioversity International and in coordination with relevant FAO sub-regional and country offices to support the implementation of a Cyclone-Idai emergency response project with funding from the Governments of Germany and Norway. The project, which has been implemented from October 2019 to date, focuses on restoring local seed-systems, strengthening national and regional PGRFA emergency response coordination and supporting the implementation of the International Treaty.

55. The Government of Germany has recently committed further support to expand the project. The project is ongoing and will conclude in May 2021.

IV. CONCLUSION

56. In accordance with the request of the Governing Body at its Eighth Session, the Secretariat of the International Treaty will continue to work closely with the Secretariat of the Commission on a range of issues of common interest and objectives, including issues of relevance to the Working Group. The Treaty Secretariat will also bring to the attention of the Governing Body, at its next Session, any relevant discussions and outcomes of this meeting.

³⁶ <http://www.fao.org/plant-treaty/overview/partnerships/expert-panel>

³⁷ <http://www.fao.org/plant-treaty/overview/partnerships/international-panel/en/>

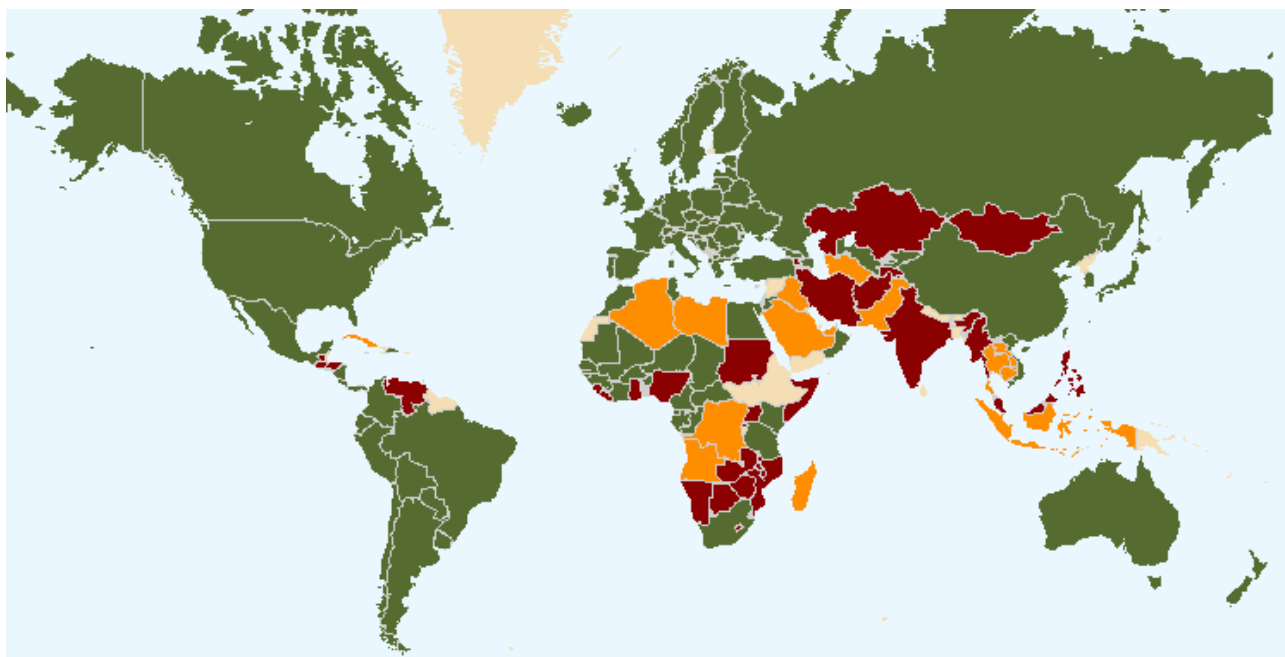
³⁸ <http://www.fao.org/plant-treaty/overview/partnerships/international-expert-panel/en/>

ANNEX IV

REPORT FROM THE INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

I. INTRODUCTION

1. The International Union for the Protection of New Varieties of Plants (UPOV) was established in 1961 by the International Convention for the Protection of New Varieties of Plants (UPOV Convention). The mission of UPOV is to provide and promote an effective system of plant variety protection, with the aim of encouraging the development of new varieties of plants, for the benefit of society. As of May 4, 2020, UPOV has 76 members (shown in green). Nineteen States and 1 intergovernmental organization have initiated the procedure for acceding to the UPOV Convention (shown in brown), and 24 States and one intergovernmental organization have been in contact with the Office of the Union for assistance in the development of laws based on the UPOV Convention (shown in orange):



The boundaries shown on this map do not imply the expression of any opinion whatsoever on the part of UPOV concerning the legal status of any country or territory.

2. Details are provided in the Annex to this report and in the list of UPOV members available at <http://www.upov.int/members/en/>.

3. The UPOV Convention provides the basis for members to encourage plant breeding by granting breeders of new plant varieties an intellectual property right: the breeder's right (see http://www.upov.int/upovlex/en/upov_convention.html).

4. The UPOV Convention specifies the acts that require the breeder's authorization in respect of the propagating material of a protected variety and, under certain conditions, in respect of the harvested material. UPOV members may also decide to extend protection to products made directly from harvested material, under certain conditions.

5. In order to obtain protection the breeder needs to file individual applications with the authorities of UPOV members entrusted with the task of granting breeders' rights. The directory of the PVP Offices of the UPOV members is available at http://www.upov.int/members/en/pvp_offices.html. UPOV has developed UPOV PRISMA, an on-line tool to assist with plant variety protection (PVP) applications in participating UPOV members. At the time of this report, 35 UPOV members

participated in UPOV PRISMA, including the European Union and the African Intellectual Property Organization. More information on UPOV PRISMA can be found at <https://www.upov.int/upovprisma/en/index.html>.

6. A State or intergovernmental organization that wishes to become a UPOV member needs to seek the advice of the UPOV Council in respect of the conformity of its laws with the provisions of UPOV Convention. This procedure leads, in itself, to a high degree of harmony in those laws, thus facilitating cooperation between members in the implementation of the system. Guidance documents on how to develop legislation and become a UPOV member can be found at http://www.upov.int/upov_collection/en/. The legislation of UPOV members can be consulted in UPOV Lex at <http://www.upov.int/upovlex/en/>.

7. The main objectives of UPOV are, in accordance with the UPOV Convention, to:

- provide and develop the legal, administrative and technical basis for international cooperation in plant variety protection;
- assist States and organizations in the development of legislation and the implementation of an effective plant variety protection system; and
- enhance public awareness and understanding of the UPOV system of plant variety protection.

8. The effectiveness of the UPOV system of plant variety protection is enhanced by the provision of guidance and information materials such as Explanatory Notes (“UPOV/EXN” series), Information Documents (“UPOV/INF” series), the General Introduction to the Examination of Distinctness, Uniformity and Stability and the Development of Harmonized Descriptions of New Varieties of Plants, with its associated TGP documents, and the “Guidelines for the Conduct of Tests for Distinctness, Uniformity and Stability”. Such materials provide the basis for harmonization and, thereby, facilitate cooperation between UPOV members (http://www.upov.int/upov_collection/en/).

9. Further measures to support and enhance cooperation between members include the UPOV PRISMA PBR Application Tool (<http://www.upov.int/upovprisma/en/index.html>), information available in the PLUTO Plant Variety Database (<http://www.upov.int/pluto/en/>) and in the GENIE database (<http://www.upov.int/genie/en/>).

II. UPOV AND PLANT GENETIC RESOURCES

10. UPOV considers that plant breeding is a fundamental aspect of the sustainable use and development of genetic resources. It is of the opinion that access to genetic resources is a key requirement for sustainable and substantial progress in plant breeding. The concept of the “breeder’s exemption” in the UPOV Convention, whereby acts done for the purpose of breeding other varieties are not subject to any restriction, reflects the view of UPOV that the worldwide community of breeders needs access to all forms of breeding material to sustain greatest progress in plant breeding and, thereby, to maximize the use of genetic resources for the benefit of society.³⁹

11. The following paragraphs report on some recent areas of cooperation between UPOV and the Commission on Genetic Resources for Food and Agriculture (CGRFA) and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA).

A. Commission on Genetic Resources for Food and Agriculture

12. From February 18 to 22, 2019, in Rome, the Office of the Union attended the Seventeenth Regular Session of the CGRFA.

³⁹ See http://www.upov.int/export/sites/upov/news/en/2003/pdf/cbd_response_oct232003.pdf

B. Intergovernmental Technical Working Group on Plant Genetic Resources for Food and Agriculture (ITWG-PGRFA)

13. From July 25 to 27, 2018, in Rome, the Office of the Union attended the Ninth Session of the Intergovernmental Technical Working Group on Plant Genetic Resources for Food and Agriculture (ITWG-PGRFA).

C. International Treaty on Plant Genetic Resources for Food and Agriculture

14. UPOV has published an FAQ on “What is the relationship between the UPOV Convention and international treaties concerning genetic resources, e.g. the Convention on Biological Diversity (CBD) and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)?” (see <http://www.upov.int/about/en/faq.html#QR10>), which includes the following:

“[...] Both the ITPGRFA and the UPOV Convention aim to support plant breeding activities and to encourage the development of new varieties of plants. The ITPGRFA does so by providing a system for facilitated access to plant genetic resources, while the UPOV Convention does so by establishing a system for plant variety protection. When implemented by UPOV members, the relevant legislations dealing with these matters should be compatible and mutually supportive.”

D. Interrelations with the International Treaty on Plant Genetic Resources for Food and Agriculture

15. At its fifty-second ordinary session, held in Geneva on November 1, 2018, the UPOV Council:

- noted that the Governing Body of the ITPGRFA, at its Seventh Session, had adopted Resolution 7/2017 on “Implementation of Article 9, Farmers’ Rights” and Resolution 12/2017 on “Cooperation with other international bodies and organizations. The UPOV Council also noted that Resolution 7/2017 contained a decision to establish an Ad Hoc Technical Expert Group on Farmers’ Rights (AHTEG), with the terms of reference contained in the Annex to that Resolution;
- noted that the Office of the Union had accepted the invitation of the Secretary of the ITPGRFA to nominate an expert to attend the meetings of the AHTEG, the first meeting of which has been held in Rome, from September 11 to 14, 2018. It noted the report on the first meeting of the AHTEG of ITPGRFA and that the full report was available at <http://www.fao.org/plant-treaty/meetings/meetings-detail/en/c/1099122/>;
- encouraged UPOV members which were also Contracting Parties to the ITPGRFA to send submissions on measures implementing Article 9 of the ITPGRFA using the template (to: pgrfa-treaty@fao.org copy to upov.mail@upov.int);
- noted the proposals for revision of the FAQ on the interrelations between the UPOV Convention and the ITPGRFA (see <http://www.upov.int/about/en/faq.html#QR10>), and the proposals on how to facilitate the exchanges of experiences and information on the implementation of the UPOV Convention and the ITPGRFA, with the involvement of stakeholders and the other proposals received;
- agreed to request the Vice Secretary-General to consult the Executive Secretary of the CBD and the Secretary of the ITPGRFA on how the objectives of the CBD and ITPGRFA might be reflected in the FAQ, and to explore means on how to facilitate the exchanges of experiences and information on the implementation of the UPOV Convention, the CBD and the ITPGRFA.

16. From May 20 to 23, 2019, in Rome, the Office of the Union attended the second meeting of the AHTEG on Farmers' Rights of ITPGRFA.

17. At its fifty-second ordinary session, held in Geneva on November 1, 2018, the UPOV Council:

- noted that the Governing Body of the ITPGRFA, at its Seventh Session, had adopted Resolution 7/2017 on "Implementation of Article 9, Farmers' Rights" and Resolution 12/2017 on "Cooperation with other international bodies and organizations. The UPOV Council also noted that Resolution 7/2017 contained a decision to establish an Ad Hoc Technical Expert Group on Farmers' Rights (AHTEG), with the terms of reference contained in the Annex to that Resolution;
- noted that the Office of the Union had accepted the invitation of the Secretary of the ITPGRFA to nominate an expert to attend the meetings of the AHTEG, the first meeting of which has been held in Rome, from September 11 to 14, 2018. It noted the report on the first meeting of the AHTEG of ITPGRFA and that the full report was available at <http://www.fao.org/plant-treaty/meetings/meetings-detail/en/c/1099122/>;
- encouraged UPOV members which were also Contracting Parties to the ITPGRFA to send submissions on measures implementing Article 9 of the ITPGRFA using the template (to: pgrfa-treaty@fao.org copy to upov.mail@upov.int);
- noted the proposals for revision of the FAQ on the interrelations between the UPOV Convention and the ITPGRFA (see <http://www.upov.int/about/en/faq.html#QR10>), and the proposals on how to facilitate the exchanges of experiences and information on the implementation of the UPOV Convention and the ITPGRFA, with the involvement of stakeholders and the other proposals received;
- agreed to request the Vice Secretary-General to consult the Executive Secretary of the CBD and the Secretary of the ITPGRFA on how the objectives of the CBD and ITPGRFA might be reflected in the FAQ, and to explore means on how to facilitate the exchanges of experiences and information on the implementation of the UPOV Convention, the CBD and the ITPGRFA.

18. From May 20 to 23, 2019, in Rome, the Office of the Union attended the second meeting of the AHTEG on Farmers' Rights of ITPGRFA.

19. At its fifty-third ordinary session, held in Geneva on November 1, 2019, the UPOV Council:

- requested the UPOV Office to cooperate with FAO in relation to the in-depth case studies on status and trends of seed policies and laws, for consideration by the Intergovernmental Technical Working Group on Plant Genetic Resources for Food and Agriculture (Working Group), at its next session, planned to be held in Rome from June 17 to 19, 2020. "These case studies should consider the effects of seed policies, laws and regulations on: (i) on-farm diversity of plant genetic resources for food and agriculture (PGRFA); (ii) smallholders' access to sufficient, affordable, diversified and locally adapted PGRFA, including farmers' varieties/landraces; and (iii) food security and nutrition under the different seed systems. The Commission requested FAO to clarify the terms 'farmers' seed systems', 'informal seed systems', 'formal seed systems' and 'integrated seed systems', taking into account submissions by Members and observers' (see document CGRFA-17/19/Report, paragraph 67);

20. From November 11 to 16, 2019, in Rome, the UPOV Office attended the Eighth Session of the Governing Body of the ITPGRFA.

E. Other fields of cooperation

21. On June 1, 2018, the Office of the Union submitted comments on the revised draft report on “The State of the World’s Biodiversity for Food and Agriculture” on matters related to UPOV membership and on the definition of “variety” in the 1991 Act of the UPOV Convention.

III. GENERAL DEVELOPMENTS IN UPOV

F. Situation in UPOV

New members

22. On December 1, 2019, Egypt acceded to the 1991 Act of the UPOV Convention and became the seventy-sixth member of UPOV.

Ratification of the 1991 Act

23. Belgium deposited its instrument of ratification of the 1991 Act of the UPOV Convention on May 2, 2019.

Examination of laws or draft laws Nigeria

24. The Council took a positive decision, on August 21, 2019, on the conformity of the “Plant Variety Protection Bill of Nigeria” (“Draft Law”) with the 1991 Act of UPOV Convention, which allows Nigeria once the Draft Law is adopted with no changes and the Law is in force, to deposit its instrument of accession to the 1991 Act.

Saint Vincent and the Grenadines

25. The Council took a positive decision, on August 21, 2019, on the conformity of the “Plant Breeders’ Protection Bill 2019 of Saint Vincent and the Grenadines” (“Draft Law”) with the 1991 Act of the UPOV Convention, which allows Saint Vincent and the Grenadines once the Draft Law is adopted with no changes and the Law is in force, to deposit its instrument of accession to the 1991 Act.

Mongolia

26. The Council, at its fifty-third ordinary session, held in Geneva, on November 1, 2019, took a positive decision on the conformity of the Draft Law of Mongolia on Crop Seed and Variety (“Draft Law”) with the provisions of the 1991 Act of the International Convention for the Protection of New Varieties of Plants, which would allow Mongolia once the relevant parts of the Draft Law were adopted with no changes and the Law in force, to deposit its instrument of accession to the 1991 Act.

Afghanistan

27. The Council, at its fifty-third ordinary session, held in Geneva, on November 1, 2019, took a positive decision on the conformity of the “Draft Plant Variety Protection Act of Afghanistan” (“Draft Law”) with the provisions of the 1991 Act of the International Convention for the Protection of New Varieties of Plants, which would allow Afghanistan once the Draft Law was adopted with no changes and the Law in force, to deposit its instrument of accession to the 1991 Act.

Myanmar

28. The Council, at its fifty-third ordinary session, held in Geneva, on November 1, 2019, noted the developments on the Law on Plant Variety Protection of Myanmar and reaffirmed its 2017

decision on conformity with the 1991 Act of the UPOV Convention, allowing Myanmar to become a UPOV member.

G. Distance Learning Courses

29. The next running of the UPOV distance learning courses DL-205 “Introduction to the UPOV System of Plant Variety Protection under the UPOV Convention”, DL-305 “Examination of applications for plant breeders’ rights”, DL-305A “Administration of Plant Breeders’ Rights” and DL-305B “DUS Examination”, in English, French, German and Spanish, will be as follows:

Study period: October 12 to November 15, 2020 (registration from August 3 to September 13, 2020).

The categories of participants for the UPOV distance learning courses are the following:

Category 1: Government officials of members of the Union endorsed by the relevant representative to the UPOV Council (No fee)

Category 2: Officials of observer States / intergovernmental organizations endorsed by the relevant representative to the UPOV Council (One non-fee paying student per State/intergovernmental organization; Additional students: CHF1 000 per student)

Category 3: Others (Fee: CHF1 000)

30. Registration of participants in categories 1 and 2 must be accompanied by an endorsement from the representative to the UPOV Council of the UPOV member or observer, as appropriate, formally nominating the participant.

31. More detailed information concerning the UPOV distance learning courses’ content and on-line registration is provided on the UPOV website (see <http://www.upov.int/resource/en/training.html>).

32. For further information about UPOV, please contact the Office of the Union:

E-mail: upov.mail@upov.int

Website: www.upov.int

Tel: (+41-22) 338 9153

Fax: (+41-22) 733 0336

IV. INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS (UPOV)

as of 4 May 2020

Members of UPOV

African Intellectual Property Organization ^{2, 4}	Colombia ¹	Israel ²	Oman ²	Sweden ²
Albania ²	Costa Rica ²	Italy ¹	Panama ²	Switzerland ²
Argentina ¹	Croatia ²	Japan ²	Paraguay ¹	Trinidad and Tobago ¹ Tunisia ²
Australia ²	Czech Republic ²	Jordan ²	Peru ²	Turkey ²
Austria ²	Denmark ² Dominican Republic ² Ecuador ¹	Kenya ²	Poland ²	Ukraine ²
Azerbaijan ²	Egypt ²	Kyrgyzstan ²	Portugal ¹	United Kingdom ²
Belarus ²	Estonia ²	Latvia ² Lithuania ²	Republic of Korea ²	United Republic of Tanzania ²
Belgium ²	European Union ^{2, 3}	Mexico ¹	Republic of Moldova ²	United States of America ²
Bolivia (Plurinational State of) ¹	Finland ²	Montenegro ²	Romania ²	Uruguay ¹
Bosnia and Herzegovina ²	France ²	Morocco ²	Russian Federation ²	Uzbekistan ²
Brazil ¹	Georgia ²	Netherlands ² New Zealand ¹	Serbia ²	Viet Nam ²
Bulgaria ²	Germany ²	Nicaragua ¹	Singapore ²	
Canada ²	Hungary ²	North Macedonia ²	Slovakia ²	(Total 76)
Chile ¹	Iceland ²	Norway ¹	Slovenia ²	
China ¹	Ireland ²		South Africa ¹	
			Spain ²	

¹ 1978 Act is the latest Act by which 17 States are bound.

² 1991 Act is the latest Act by which 57 States and 2 organizations are bound.

³ Operates a plant breeders' rights system which covers the territory of its 27 member States (*Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden*) and until December 31, 2020, the United Kingdom.

⁴ Operates a plant breeders' rights system which covers the territory of its 17 member States (*Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Comoros, Congo, Côte d'Ivoire, Equatorial Guinea, Gabon, Guinea, Guinea Bissau, Mali, Mauritania, Niger, Senegal, Togo*).

States and intergovernmental organizations which have initiated the procedure for acceding to the UPOV Convention

Afghanistan, Armenia, Brunei Darussalam, Ghana, Guatemala, Honduras, India, Iran (Islamic Republic of), Kazakhstan, Malaysia, Mauritius, Mongolia, Myanmar, Nigeria, Philippines, Saint Vincent and the Grenadines, Tajikistan, Venezuela (Bolivarian Republic of), Zimbabwe, as well as the African Regional Intellectual Property Organization (ARIPO).

States and intergovernmental organizations which have been in contact with the Office of the Union for assistance in the development of laws based on the UPOV Convention

Algeria, Bahrain, Barbados, Cambodia, Cuba, Cyprus, El Salvador, Indonesia, Iraq, Jamaica, Lao People's Democratic Republic, Libya, Liechtenstein, Malawi, Mozambique, Namibia, Pakistan, Saudi Arabia, Sudan, Thailand, Tonga, Turkmenistan, United Arab Emirates, Zambia, as well as the Southern African Development Community (SADC).