



Genebank
Platform



2021 | Genebank Platform Annual Plan of Work and Budget (POWB)



AfricaRice
Côte d'Ivoire



ICARDA

International Center for Agricultural
Research in the Dry Areas
Morocco and Lebanon



International Crops Research Institute
for the Semi-Arid Tropics
India



International Institute for
Tropical Agriculture
Nigeria

Alliance



International Livestock Research
Institute
Kenya



International Maize and Wheat
Improvement Center
Mexico



International Potato Center
Peru



International Rice Research Institute
Philippines



World Agroforestry
Kenya



CGIAR Genebank Platform

Plan of Work and Budget (POWB) 2021

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Narrative section

1. Adjustments/Changes to your Theories of Change

There are no adjustments to the Theory of Change for the Genebank Platform.

2. Plans and Expected Progress Towards Outcomes

The most important output of the Genebank Platform is the availability and provision of healthy, viable, documented germplasm from the 35 crop and tree collections managed by the CGIAR, which are maintained, and safety duplicated, in long-term conservation in accordance with FAO Genebank Standards (2014) and Article 15 of the International Treaty on Plant Genetic Resources for Food and Agriculture (Plant Treaty). Demand varies unpredictably between years. Figures for germplasm distributions in 2020 are not yet compiled but they are expected to be lower than for a normal year. We expect that the COVID pandemic and associated lockdown measures will have an impact on the number of requests for germplasm that will continue in 2021. Nevertheless, users continue to request germplasm and all 11 genebanks and germplasm health units (GHUs) continue to import and export germplasm shipments. Although requests are being met, the rate of other genebank operations, including those contributing to performance targets, has slowed down, particularly where lockdown measures are more severe in Asia, Europe and Latin America.

A. Conservation Module

Beyond routine genebank operations, several collective projects are ongoing under the Genebank Platform to address specific conservation goals. Highlights for 2021 are:

Building resilience in genebanks operating under lockdown

General measures to contain the COVID pandemic imposed levels of restriction on the operation of all 11 CGIAR genebanks that have neither been experienced before nor envisaged in risk management strategies. Nevertheless, in most cases, even at the height of lockdown, genebanks managed to keep critical staff working, to prioritize activities, address germplasm requests, ensure that accessions already planted were harvested and monitor critical facilities so that the collections were safe. An in-depth consultation on risks in genebanks conducted in 2020 is being followed up with actions to help ensure all genebanks can function under lockdown conditions, including installing irrigation systems, acquiring equipment for remote surveillance, updating alarm systems in cold rooms and introducing automation where applicable.

The greatest challenges were faced by genebanks managing *in vitro* collections. They were, at times, unable to host sufficient numbers of safely distanced staff in the laboratories to keep up with the turnover of accessions requiring subculture for general maintenance and safety duplication. In 2021, every opportunity will be taken to improve the status of these collections and to reinstate safety duplication procedures. The need for cryopreservation as a measure to secure clonal collections long-term is clearer than ever. In 2021, a fundraising effort for a new Global Cryopreservation Initiative, a collaboration between CGIAR, the Crop Trust and other partners, will be launched with a virtual event to be hosted by the Plant Treaty Secretariat.

Developing a unified approach to genebanking in West and Central Africa

In West and Central Africa, there are three genebank facilities managed by the CGIAR—at Bouaké in Côte d'Ivoire, Niamey in Niger and Ibadan in Nigeria. Several other CGIAR genebanks and close partners, such as the World Vegetable Center, also operate in the region. An initiative has been launched to develop closer collaboration among these institutes to enable more effective partnership with the national agricultural research systems (NARS). Opportunities are being explored to share facilities, exchange expertise, provide services from the more experienced genebanks and GHUs, and carry out joint planning. The move towards One CGIAR is helping to accelerate these plans. During 2021, a plant genetic resources strategy and 3-year action plan for West and Central Africa will be elaborated in more detail.

Long-term seed conservation

CGIAR is working in partnership with Aarhus University in Denmark to improve seed quality management in critical areas. An analysis of historical viability testing data (dating back more than 40 years) across all genebanks revealed that although seed accessions have been well maintained, long-term systematic viability monitoring of accessions has been insufficient. Processes for long-term conservation, as a result, may not be as effective as they could be with more comprehensive records on the behavior of the seeds in storage. Certain crops could be confidently stored in long-term conditions for longer periods with less need for monitoring or regeneration than is currently the case. Results of research under the Platform have already helped provide answers on seed quality management and the current phase of small projects in 2021 will help optimize protocols and improve seed lot management, post-harvest processes, seed dormancy breaking, and storage conditions in individual genebanks as well as evaluate the application of advanced technologies, such as imaging. All these activities will contribute to a more efficient system of conservation.

Partnership with national agricultural research systems (NARS) and collecting

In 2021, projects with NARS partners are underway to build capacity and collect crop diversity in target locations. The eight countries involved (Chad, Mauritania, Myanmar, Niger, Papua New Guinea, South Sudan, Sudan, and Togo), are underrepresented in *ex situ* collections, according to global gap analyses. The current projects will focus on enabling the two-way flow of germplasm and information between CGIAR genebanks and national partners. If regulations allow, joint collecting missions will take place to gather landrace diversity of target crops.

Addressing technical review recommendations

All 11 genebanks are in the process of addressing recommendations from the external technical reviews that took place in 2019 and 2020. Of the 153 total recommendations, 39 have been prioritized as part of funded action plans in 2021. Activities include improving the regeneration rate of temperate *japonica* rice accessions, testing high-density planting to regenerate wild species, developing SNP chips for accession identification, addressing serious health, safety and other risks in several genebanks, improving cryobank and germination facilities, securing unique yam accessions that are only in the field, improving the automation of data capture and management in several genebanks, addressing chronic issues regarding health and vigor in *in vitro* collections, and evaluating diverse treatments for breaking seed dormancy in *Oryza glaberrima*.

Germplasm Health Units (GHUs)

The processing time and costs of providing phytosanitary services offered to genebanks and breeding programs are being evaluated to prioritize improvements. The GHU group will initiate the development of a general phytosanitary framework and common principles that will help shape the new service unit provided by GHUs within the One CGIAR structure. Among the principles to be established will be a standard for determining the availability of accessions for distribution and use. The GHUs Community of Practice will also continue raising awareness in support of the global network of CGIAR GHUs preventing the transboundary spread of diseases.

B. Use Module

One Genebank data management system

At the last meeting of the Platform Management Team in 2020, it was agreed that the CGIAR genebanks would work towards adopting a single inventory and data management system for all 11 genebanks. Progress is being made in the adoption and further development of GRIN-Global Community Edition (GG-CE) as part of the workplan of the Genebank Data Management Community of Practice. Some of the existing best practices, workflows and solutions in place in different genebanks are being brought together under the new system, particularly expertise in system deployment and data migration.

A method for merging GG-CE instances will be developed and used to pilot the One CGIAR Genebank Database. The 11 databases will be migrated to a cloud-based version of GG-CE for comprehensive evaluation by genebank curators and technicians. The evaluation will aim to identify further needs for tools or software development and result in a final decision as to whether GG-CE will be fit for purpose. For the first time in CGIAR history, inventory and accession data across all genebank locations and crops will be in one database.

Promoting use of collections

Three projects are underway in 2020 and 2021 to tackle the challenges of directing users towards diversity that has the traits they are seeking and to facilitate more effective management of ever-growing collections:

- Genetic sequence data from cassava collections at IITA and CIAT are being analyzed to determine diverse subsets, to identify redundancy between and within the collections and to provide marker datasets for association mapping;
- Accessions from three genebanks are being sequenced to determine heterogeneity within and between accessions and to build on an existing study that has sequenced samples from the other eight genebanks to establish principles for sampling genebank accessions;
- CIAT and ICARDA are developing a tool that will allow genebank managers and users to build customized subsets based on environmental variables using well established data-mining approaches. The subsetting tool will be applicable to any set of accessions with passport and characterization data and will be available via the Genesys portal.
- The Genesys portal will be updated to make the resulting datasets and subsets accessible to researchers.

C. Policy Module

Capacity building for Centers' compliance with genetic resources laws and policies

To promote Centers' compliance with international and national laws and CGIAR policies concerning genetic resources, the Policy Module will engage in a range of complementary activities, including to:

- Launch a new online course developed in partnership with the United Kingdom's Open University on "Genetic Resources Policies for CGIAR Scientists" and run the course twice for approximately 50 scientists;
- Finalize the "Guidelines for Centers' Operations under the Plant Treaty" and submit them for approval by the CGIAR Genetic Resources Policy Working Group, Centers' Directors General and the CGIAR System Board;
- Finalize a guidance note for integrating access and benefit-sharing (ABS) considerations along the life cycle of research and development projects and submit them for approval;
- Together with the System Office, review Centers' reports and public disclosures regarding restrictive licenses and intellectual property applications for intellectual assets derived from plant genetic resources and provide assistance to Centers in improving their published disclosures;
- Assist CGIAR genebanks and national partners to address ABS policy issues that arise in the context of new collecting projects supported by the Genebank Platform.

Coordinating CGIAR in intergovernmental genetic resources policy fora

The Policy Module will coordinate CGIAR's participation in the Ninth Session of the Governing Body of the Plant Treaty, currently scheduled for December 2021. Over the course of 2021, the Policy Module will participate in consultations with contracting parties, observers (including representatives of the private sector and civil society organizations) and the Treaty Secretariat, concerning the possible relaunching of negotiations to improve the Plant Treaty's Multilateral System of Access and Benefit-sharing (MLS). These negotiations were suspended at the end of 2019, largely over disagreements about whether the enhanced system should include new requirements for monetary benefit-sharing from commercial users of digital sequence information (DSI).

The Policy Module will also coordinate CGIAR participation in the Convention on Biological Diversity (CBD). In 2021, the CBD will hold meetings to address DSI and benefit-sharing; currently, information-gathering and synthesis meetings are confirmed but it is uncertain whether norm-setting meetings of the Conference of the Parties will be held. The Policy Module will also continue to participate in meetings related to the development of the post-2020 Global Biodiversity Framework.

The Policy Module will also develop a report, requested by the Plant Treaty's Governing Body, concerning the Centers' compliance with the CGIAR Principles on the Management of Intellectual Assets (IA Principles), particularly with respect to intellectual assets derived from plant genetic resources accessed through the MLS or subject to national ABS laws.

3. Financial Plan for the coming year, including use of W1/2

The use of W1/2 strictly follows the Genebank Platform proposal. In 2020, the Crop Trust contributed USD 9 million in funding to the Genebank Platform, including income from the endowment and funds raised from Finland and the European Commission. Plus, GIZ provided additional funding of USD 3.8 million via Window 2, which was outside of the CGIAR's W1/2 commitment described in the 2020 Financing Plan (FinPlan). The expected allocation from the Crop Trust to the Genebank Platform in 2021 is USD 15 million. As the endowment annual income does not yet meet this level, the Crop Trust will need to raise approximately USD 5 million in additional funds this year to meet its commitment.

TABLES

Table 2A: Planned Milestones

Module	Mapped to Sub-IDO	2022 Module outcomes	Milestone	Choose one of the following: milestones 1) Identical to proposal 2) Reworded/ rephrased from proposal 3) New/changed	Means of verification	CGIAR Cross-Cutting Markers for the milestone 0=not targeted; 1=significant; 2=principal N/A = not applicable			
						for gender	for youth	for CapDev	for CC
Module 1: Conservation	Increased conservation and use of genetic resources	Outcome 1.1 Disease-free, viable, documented germplasm made available	1. 80% accessions available 2. 62% seed accessions safety duplicated 3. 75% clonal accessions safety duplicated	1	Genesys online reporting and external validation	N/A	N/A	N/A	N/A
		Outcome 1.2 Crop diversity conserved in a rational and effective global system	4. Storage periods redefined for at least 20 crops 5. Gaps in at least eight crop gene pools addressed through CGIAR–NARS joint collecting missions 6. 5% reduction in average time taken to carry out phytosanitary controls	1 1 1	Special report Diversity trees on Genesys Report on cost analysis	N/A	N/A	1 1 1	N/A

Module	Mapped to Sub-IDO	2022 Module outcomes	Milestone	Choose one of the following: milestones 1) Identical to proposal 2) Reworded/ rephrased from proposal 3) New/ changed	Means of verification	CGIAR Cross-Cutting Markers for the milestone 0=not targeted; 1=significant; 2=principal N/A = not applicable			
Module 2: Use		Outcome 2.0 More effective access and use of germplasm enabled	7. One CGIAR genebank database piloted	3	Reports	N/A	N/A	1	N/A
			8. Subsets promoted for phenotyping by users	1	Reports/Genesys			1	
			9. Subsetting tool accessible via Genesys	1	Genesys			1	
Module 3: Policy		Outcome 3: Supportive policy environment developed	10. Update white papers on genetic resources policies and CGIAR compliance for Director Generals, System Office and System Board	2	Reports	N/A	N/A	1	N/A
			11. Guidelines for Centers' operations under the Plant Treaty and for integrating access & benefit-sharing considerations in R&D project life cycles	1	Reports			1	
			12. Plant genetic resources policy sessions led by Platform scientists in national and regional workshops	1	Reports			1	

Table 2B: Planned Evaluations/Reviews, Impact Assessments and Learning Exercises

Platform	Module (if not overall Platform)	Status (ongoing, new)	Planned studies/learning exercises in the coming year	Geographic scope	Who is commissioning this study
Genebank	Conservation	New but related to ongoing activity	Consolidated costings of genebank essential operations compiled across 11 CGIAR genebanks	Global	Platform management
	Conservation		Genebank Operations and Advanced Learning and other capacity-building workshops		
	Use		Five impact fellows will conduct short studies with the IITA, ICARDA, AfricaRice, ICRISAT and CIP genebanks		

Table 2C: Planned major new collaborations (CGIAR internal, or with non-CGIAR collaborators)

Name of Platform/CRP or non-CGIAR collaborator	Brief description of collaboration (give and take among CRPs/Platforms/non-CGIAR collaborator) and value added (e.g. scientific or efficiency benefits)
<p>CRPs & Platforms</p>	<p>Genebank managers, GHU leaders, the Policy unit and Crop Trust staff continue to collaborate where invited with various initiatives and discussions arising in the context of the new 2022–2024 Investment Plan.</p> <p>As usual, the Policy Module will be working across the system to address the need for general compliance with Plant Treaty obligations. More particularly, in 2021 CGIAR will need to respond to Resolution 12 of the Eighth Governing Body concerning cooperation between the Plant Treaty and CGIAR with respect to joint capacity-building projects to support Plant Treaty implementation, reporting on Centers’ implementation of the CGIAR IA Principles, and minting Global Information System Digital Object Identifiers for improved materials distributed by CGIAR Centers with a Standard Material Transfer Agreement.</p>
<p>Non CGIAR</p>	<p>Joint CGIAR–NARS capacity building and collecting projects are planned in eight target countries (Chad, Mauritania, Myanmar, Niger, Papua New Guinea, South Sudan, Sudan, and Togo).</p> <p>CGIAR partners will contribute to capacity building of five national genebanks in Ethiopia, Ghana, Kenya, Nigeria, and Zambia in a Crop Trust-coordinated project funded by the German Government. The five national genebanks will also participate in the adoption and development of GG-CE.</p> <p>Diverse projects are continuing on seed quality management with Aarhus University, and impact assessment continues with Michigan State University.</p> <p>Close collaboration and interactions continue with the Plant Treaty, the Commission on Genetic Resources for Food and Agriculture and the International Plant Protection Convention Secretariat and its members.</p> <p>The Genebank Platform is working with the United Kingdom’s Open University to develop a distance learning course, “Genetic Resources Policies for CGIAR Scientists”. The course comprises seven modules, with videos, text, quizzes, live sessions with experts, and online tools for future use. The course should take learners approximately 20 hours to complete.</p> <p>Collaboration continues with the German Corporation for International Cooperation (GIZ) ABS Capacity Development Initiative to finalize guidelines on integrating ABS considerations in CGIAR R&D project life cycles.</p>

Table 3: Planned Budget 2021

	Planned budget				Comments on major changes
	W1/2	W3/bilateral	Center Own fund	Total	
Module 1	12.56	14.62	0	27.18	
Module 2	0.82	0.59	0	1.41	
Module 3	0.78	0	0	0.78	
Platform Management & Support Cost	0.75	0	0	0.75	
Platform Total	14.91	15.21	0	30.12	

Table 4: Status of W1/2 funding

	2020 Forecast (W1/W2) *	2021 Budget (W1/W2)	Comments on major changes
Personnel	6.99	6.99	
Consultancy			
Travel	0.25	0.25	
Operational Expenses	6.60	6.60	
Collaborators & Partnerships	0.51	0.51	
Capital & Equipment	0.50	0.50	
Closeout costs		0.06	2022 costs for project finalization
CRP Total budget	14.85	14.91	

* 2020 expenditures to be updated based on approved 2020 financial report