



Genebank  
Platform



# Genebank Platform Annual Plan of Work and Budget (POWB) for 2019



**AfricaRice**  
Côte d'Ivoire



**Bioversity International**  
Belgium



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



**International Center for Tropical Agriculture**  
Colombia



**International Crops Research Institute for the Semi-Arid Tropics**  
India



**International Institute for Tropical Agriculture**  
Nigeria



**International Livestock Research Institute**  
Kenya



**International Maize and Wheat Improvement Center**  
Mexico



**International Potato Center**  
Peru



**International Rice Research Institute**  
Philippines



**World Agroforestry Center**  
Kenya



# Genebank Platform Plan of Work and Budget (POWB) 2019

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Name of the Platform	Genebank Platform
Name of the Lead Center	Crop Trust
List of participating Centers and other key partners	AfricaRice, Bioversity, CIAT, CIMMYT, CIP, ICARDA, ICRAF, ICRISAT, IITA, ILRI, IRRI

## 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 provision, in an effective and timely manner, of healthy, viable, documented germplasm from the 35 crop and tree collections, which are maintained safely in long-term conservation in accordance with Article 15 of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). Together, the 11 CGIAR genebanks are expected to distribute approximately 100,000 samples of germplasm in response to requests from up to 2000 external users and CGIAR scientists in 2019.

### Conservation Module

In addition to supporting the essential genebank operations, ten genebanks continue to work towards performance targets through optimisation efforts, including addressing backlogs of accessions for health-testing, disease-cleaning, regeneration and viability-testing. ICARDA, most notably, is regenerating large numbers of accessions in order to reconstitute its active collections in Morocco and Lebanon using safety duplicates obtained from the Svalbard Global Seed Vault.

There are very few deviations from the Genebank Platform proposal outputs and milestones. The progress on cryopreservation for sweet potato and yam has been slow. In both cases, protocols for cryopreservation have been extensively optimized but remain suboptimal in terms of achieving an acceptable regeneration rate. In the Use Module, Digital Object Identifiers were rapidly adopted by the CGIAR genebanks and the 100% target was reached one year early. However, progress is slow in associating trait data to genebank accessions and making it available online. Good quality phenotypic data is gradually being extracted for uploading into Genesys ([genesys-pgr.org](http://genesys-pgr.org)).

Several additional outputs are expected in 2019:

- **Metrics to illustrate diversity conservation**

Using three different methods developed in the past two years, the representation of 22 crop gene pools in CGIAR collections will be completed in 2019. This will allow the visualization through “diversity trees” of cultivar and wild species groups in the gene pool and mapping of accessions represented in the genebanks, allowing gaps to be highlighted. The work on diversity trees for banana, barley, beans, maize, rice and wheat in 2018 estimates that more than 70% of cultivar groups are represented in CGIAR genebanks by at least one accession, whereas the figure is as low as 24% for some crop wild relatives.

- **Efficiencies and new phase of technical review**

The costs of each genebank are in the process of being systematically collated and reviewed. Five costing reviews have taken place in 2018 and six are planned for 2019. Each genebank will be subject to external technical review, with the aim of covering at least six genebanks in 2019. The technical reviews will:

1. Validate the operating procedures, quality and risk management systems and reported status with respect to performance targets<sup>1</sup> in each genebank;
2. Review the capacity of the genebank and rate of operation;
3. Assess the scientific quality and efficiency of procedures.

Combining the results of the costing and technical reviews, the overall efficiency and effectiveness of the genebanks will be assessed across the system and individual budgets and workplans are expected to be revised in the course of 2020.

- **Alignment of ILRI-CIAT tropical forages collections**

Major progress was made in 2018 to compare and align the operating procedures and data relating to the tropical and sub-tropical forages collections in ILRI and CIAT. As a result, a number of critical actions have been identified for both CIAT and ILRI to undertake to harmonize and improve the status and management of their respective collections. Given the success of this alignment exercise, different genebanks holding shared crop collections will be considered for a similar process.

- **Communities of Practice**

Genebank staff responsible for seed quality management (SQM) from across the system will create a formal Community of Practice (CoP) in 2019. The CoP will aim to meet in 2019 and share and assess results of SQM experiments, improved practices and re-testing data. With support from Aarhus University, CGIAR genebanks will continue to focus on improving seed longevity and adjusting re-test intervals, both significant efficiencies.

The genebank staff working on field and in vitro collections will also form a second CoP to focus on standards and improvements of clonal crop and live plant collections, building on efforts undertaken in the Genebanks CRP to develop standards and share practices for cryopreservation.

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<sup>1</sup> % availability, safety duplication and documentation of accessions

- **Collecting**

In 2019, five CGIAR genebanks will be carrying out collecting missions with national partners to gather targeted landrace diversity to improve representation in collections. These projects include banana in Papua New Guinea, Cook Islands and Samoa, yam and Bambara groundnut in Cameroon, sweet potato in East and Southern Africa, dryland cereals and grain legumes in Sub-Saharan Africa and dryland cereals in Lebanon and Tajikistan. A core part of the projects involves capacity building of national partners.

- **Germplasm Health Units**

In 2019, the GHU working group will continue to establish and document the GHU-Quality Management System for all Centre units and develop next-generation sequencing protocols for virus indexing of clonal crops at Bioversity, CIAT, CIP, and IITA. The GHU group is planning to hold a consultation with CGIAR scientists in Morocco in April to solicit feedback on the services of the GHUs and the proposed “Greenpass” system that aims to gain international recognition for CGIAR standards of phytosanitary control and facilitate the flow of germplasm across international borders.

## **Use Module**

- **Trait data in Genesys ([genesys-pgr.org/](http://genesys-pgr.org/))**

In 2018, new datasets of phenotypic data and germplasm subsets were uploaded for the first time into Genesys, the global accession data web portal, including a first dataset from a CGIAR genebank. In 2019, more datasets are expected to be uploaded by CGIAR genebanks, targeting specifically data contributed by several retiring genebank managers.

- **Genotyping**

More than 14,000 samples of 900 accessions from seven genebanks will be genotyped using a DArTseq platform to provide a baseline by which the heterozygosity or genetic variability within accessions will be assessed. The results of a first round of genotyping will be available in 2019 and will feed into further research with the aim of improving both the management of collections and the use of samples for research and breeding. In 2019, as a major effort to ensure that a wider range of stakeholders benefit from such a project, a capacity building workshop will be held with NARS researchers.

## **Policy Module**

- **Improving the Multilateral System**

2019 will be a very important year for the renegotiation of the multilateral system of access and benefit-sharing under the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). The Policy Module will coordinate representation of CGIAR in three informal consultation meetings (in January, March, April) with key negotiators convened by the Treaty Secretariat, the 9th session of the Working Group to Enhance Functioning of the

Multilateral System (in June), and the 8th session of the ITPGRFA Governing Body (November 2019).

- **Promoting Centers' compliance with genetic resources policies and laws**

The Policy Module will develop a number of tools to promote Centers' compliance with international and national genetic resources laws including:

- a full revision of the 2009 *Centers' Guide to the use of the Standard Material Transfer Agreement* to reflect all the developments under the ITPGRFA in the last 10 years as well as Centers' own evolving uses of genetic resources;
- guidance notes for Centers' public disclosures concerning restrictive licenses and intellectual property over genetic resources;
- guidelines for seeking prior informed consent when collecting/accessing genetic resources or traditional knowledge;
- compilations of legal clauses for Centers to use when developing agreements for generating, publishing, sharing genomic sequence information.

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

The use of W1/2 strictly follows the Genebank Platform proposal. The use of funds for the essential operations of the genebanks is under major review as part of the costing review initiated in 2018, which represents the first intensive assessment of genebank costs since the costing study took place in 2009-2010. Unlike the first costing study, this review is coupled with a technical review that will look at capacity and operation of the genebanks. One of the key aims of both of these reviews will be to identify potential efficiencies as well as to ensure each genebank has appropriate capacity to do their jobs effectively. The results will provide critical recommendations for future funding.

In 2018, the Crop Trust provided USD 9.1 million in funding to the Genebank Platform, including income from the endowment and funds raised from bilateral donors. The contribution from the Crop Trust to the Genebank Platform in 2019 is USD 11.5 million, which will involve a major fund-raising effort by the Crop Trust.

## TABLES

Table 2A: Planned Milestones

C1	C2	Column 3	Column 4	Column 5	Column 6	7a	7b	7c	7d
<b>Module</b>	<b>Mapped to Sub-IDO</b>	<b>2022 Module outcomes</b>	<b>Milestone</b>	<b>Choose one of the following: Milestone</b> 1) Identical to proposal 2) Reworded/ rephrased from proposal 3) new/ changed	<b>Means of verification</b>	<b>CGIAR Cross-Cutting Markers for the milestone</b> 0=not targeted; 1=significant; 2=principal N/A = not applicable			
						<b>for gender</b>	<b>for youth</b>	<b>for CapDev</b>	<b>for CC</b>
Module 1: Conservation	Increased conservation and use of genetic resources	Outcome 1.1 Disease-free, viable, documented germplasm made available	1. 81% accessions available 2. 62% seed accessions safety duplicated 3. 75% clonal accessions safety duplicated	1	Genesys Online reporting & External validation	N/A	N/A	N/A	N/A
		Outcome 1.2 Crop diversity conserved in a rational and effective global system	4. 60 SOPs in place and 18 audited 5. Diversity trees developed representing 22 crop genepools	1 2	Published SOPs Diversity trees	N/A	N/A	2 1	N/A

Module 2: Use		Outcome 2.0 More effective access and use of germplasm enabled	6. Use of DOIs promoted in 11 NARS genebanks 7. Uploading of at least one new phenotypic dataset per genebank into Genesys	1  1	Genesys	N/A	N/A	1  1	N/A
Module 3: Policy		Outcome 3: Supportive policy environment developed	8. Guidance Notes for Centers Disclosures concerning restrictive licenses and IP over intellectual assets incorporating genetic resources 9. Representation at eight international policy meetings, plus CGIAR reports to ITPGRFA Governing Body, CGRFA and specialized subsidiary bodies.	1  1	Reports	N/A	N/A	1  1	N/A



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

Platform	Module	Status (ongoing, new)	Planned studies/ learning exercises in the coming year	Geographic scope	Who is commissioning this study
Genebank	Conservation	Ongoing	Costing reviews at ICRISAT, ILRI, IITA, Bioversity, AfricaRice and ICRAF	Global	Platform management
	Conservation	Ongoing	Document audits of Acquisition, Safety Duplication and Information management Standard Operating Procedures (SOPs) in nine genebanks	Global	Platform management
	Conservation	Ongoing	Conclusion of Genebank Impacts Workplan involving six fellows conducting short studies in different genebanks	Global	Platform management
	Conservation	New	External technical reviews and validation of quality management systems (QMS) at six genebanks	Global	Platform management
	Conservation	Ongoing	Genebank Operations and Advanced Learning and other capacity building workshops	Global	Platform management

**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)
AFS CRPs	Implementation of Digital Object Identifiers (DOIs) Fund-raising and business plan development with WHEAT
EiB Platform	Collaboration over the use of digitizing technologies Potential collaboration in a NARS capacity building workshop on DArTSeq
Big Data Platform	Data architecture visioning meeting and follow up
Non CGIAR	Collecting projects in Papua New Guinea, Cook Islands, Samoa, Ghana, Cameroon, Niger, Nigeria, Burkina Faso, Sierra Leone, Kenya, Mozambique, Tanzania, Uganda, Lebanon, Tajikistan in partnership with Bioversity, CIP, ICARDA, ICRISAT and IITA
Other international	WorldVeg and CePaCT

**Table 3: Planned Budget**

	Planned budget (USD)				Comments on major changes
	W1/2	W3/ bilateral	Center Own fund	Total	
Module 1: Conservation	15.94	11.53	0	27.47	
Module 2: Use	1.35	0	0	1.35	
Module 3: Policy	0.78	0	0	0.78	
Platform Management and Support Cost	0.69	0	0	0.69	
<b>Platform Total</b>	<b>18.75</b>	<b>11.53</b>	<b>0</b>	<b>30.28</b>	