



Crop Trust Ref: CONT-1007

ANNEX A
Project Proposal



ANNEX A

**Project Proposal and Budget
Phase 1 (2023-2024)**

**BOLD WP1: Capacity and resource development of
Ecuador's national genebank**

Key information	
<p>Name of Implementing Institutions: INIAP and IICA Instituto Nacional de Investigaciones Agropecuarias (INIAP) and Official institute name: Inter-American Instituto for Cooperation on Agriculture (IICA) Name of signatory: Rodolfo Campos Arceu – Representative in Ecuador Name of technical focal point: Julio Daniel Escobar – Specialist in Biotechnology (julio.escobar@iica.int) Office address: Av. 12 de Octubre N24-584 y Francisco Salazar (esq.), edif. Torre Sol Verde, piso 2. Correo postal: Apartado 17-03-00201. Quito, Ecuador Email address: iica.ec@iica.int; Contact number: (593-2) 290-9002 / 290-9003 / 290-9004 / Cel.: 099-736-802</p>	
Country location: Ecuador	Budget requested (US\$): 155,038.10
<p>Name of Project Leader, Position Name: César Tapia Position: Leader DENAREF</p>	<p>Name of Alternate Contact, Position Name: Alvaro Monteros Position: Researcher DENAREF</p>
<p>Contact Details of Project Leader Email: cesar.tapia@iniap.gob.ec Telephone: 59322360089 Mobile number: 593992521219 Mailing address: Panamerica sur km 1, sector Cutuglahua</p>	<p>Contact Details of Alternate Contact Email: alvaro.monteros@iniap.gob.ec Telephone: 59322360089 Mobile number: 593996763609 Mailing address: Panamerica sur km 1, sector Cutuglahua</p>
Project Start Date	01/07/2023
Project End Date	31/12/2024
Date Proposal Submitted	26/04/2023
Date Proposal approved	DD/MM/YYYY

A. Improvement plan							
Please refer to the review report to complete this table. Include only those recommendations that can be achieved by end of 2024. A recommendation could have multiple activities. Add one activity per row.							
#	Review recommendation	Activities to address recommendation	Start date (mm/yy)	End date (mm/yy)	Amount requested (in US\$)	In-kind support (in US\$)	Notes
1	Prioritize the unique genetic diversity in the collection, identify duplicates and gaps for further acquisition for long-term conservation	Conduct a complete inventory check and collect full information (complete passport data) at Santa Catalina and all INIAP stations and store all data in DENAREF's central database by December 2024. Install a barcoding label system for seed, field and <i>in vitro</i> genebanks and train staff on the use of the system to facilitate use of the inventory, save time and avoid errors by 2023	Jul-23	Jun-24	5,000.00	500	
2	Update the 5-year strategic plan for the genebank that sets out long-term conservation and use goals and participation in the global PGR system	Update and implement the 5-year strategic plan for DENAREF that sets out a vision, financial and staffing plan to meet genebank standards for sustainable long-term conservation and use by 2023. Reorient the focus of DENAREF on the long-term conservation and availability of well documented unique national germplasm by 2023.	Jul-23	Jun-24	3,000.00	500	
3	Increase the number, expertise and specialization of staff through career development, capacity development and succession planning of permanent staff to support all	Develop a succession plan, capacity development plan and career development plan for staff by 2023. Assign well organized teams for each genebank operation with a leader and a deputy, permanent technicians, and specialized workers to perform routine genebank operations by 2024.	Jul-23	Dec-23	0	300	
4	Seek support from the government for continued sustainable funding for core genebank operations to reduce reliance on unreliable project funds.	Develop a funding plan for how to better access the discretionary funds available through FIASA until the amount allocated directly to DENAREF is sufficient to provide sustainable resourcing for the genebank by 2023. Fill staffing gaps by recruiting 5 additional staff or deploying existing staff to support expansion of activities in the areas of documentation, seed storage, viability testing, seed regeneration, germplasm health and <i>in vitro</i> conservation by 2024.	Jul-23	Dec-23	0	1,000	
5	Update the accession-level information for the genebank and use the information to enhance efficiency of genebank operations	Purchase and install a centralized heavy-duty stabilizer/surge suppressor by 2023 to provide a stable power supply to avoid damage to electrical equipment (both for computer and laboratory equipment and facilities). Adopt a suitable database system (GRIN-Global CE) to include inventory, viability, regeneration, distribution, germplasm health and characterization data and images by 2024. Complete data input of all available data from paper files to the system by December 2024. Digitize under a standard format the data from all distribution by 2024 onwards.	Jul-23	Dec-23	5,800.00	100	
			Jul-23	Jun-24	3,000.00	1,000	
			Jul-23	Dec-24	3,000.00	1,000	
			Jul-23	Dec-24	3,000.00	1,000	

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#	Review recommendation	Activities to address recommendation			Amount requested (in US\$)	In-kind support (in US\$)	Notes
		Start date (mm/yy)	End date (mm/yy)	Amount requested (in US\$)			
		Duplicate all files generated by DENAREF staff in the cloud or in an external secure hard disk on a weekly basis in order to avoid loss of valuable data by 2024, onwards.	Jul-23	Dec-24	2,000.00	1,000	
		Share characterization data online with citation to INIAP by 2025 for use by national partners.	Jan-24	Dec-24	3,000.00	1,000	
6	Improve the efficient use of facilities and reduce significant risk of loss of accessions during conservation of clonal crops	Virus test all samples kept <i>in vitro</i> by 2026.	Oct-23	Dec-24	6,000.00	3,000	
		Review protocols on frequency of subculturing and slow growth conditions to avoid loss of genetic integrity and the accession by 2024.	Jul-23	Jun-24	1,500.00	500	
		Purchase 6 electronic pruning scissors to increase efficiency of field management of clonal tree crops by 2023.	Jul-23	Dec-23	6,000.00	200	
7	Manage regeneration and characterization activities, improve the protocols and document SOPs to eliminate the backlogs and risk of loss of genetic integrity of the accessions	Review procedures, improve protocols and document SOPs to ensure that all genebank standards are followed to ensure genetic, physical, and physiological quality by 2023.	Jul-23	Jun-24	1,500.00	3,300	
		Assess and prioritize accessions for regeneration and characterization (seed quality and quantity) and develop a 5-year plan for regeneration by 2023.	Jul-23	Jun-24	1,500.00	4,500	
		Establish a reference image database of seeds and plants by 2024 to use for accession true-to-type verification along the regeneration process.	Jul-23	Dec-24	3,790.00	1,000	
8	Reduce risk of loss of seed accessions from reduced longevity during storage by increasing initial viability testing and monitoring following genebank standards.	Improve protocols using published germination testing protocols (ISTA, Kew Seed information database) and document SOP for viability testing by 2023.	Jul-23	Jun-24	1,500.00	500	
		Test initial viability of seeds from regeneration before storage from 2023.	Jul-23	Dec-24	6,000.00	3,000	
		Enter viability testing data into the database by 2023 to allow informed decision making for regeneration.	Jul-23	Jun-24	1,500.00	500	
9	Improve the efficient use of facilities and reduce significant risk of loss of accessions during seed processing and drying	Purchase 2 moisture content determination balances by early 2023.	Jul-23	Dec-23	6,000.00	200	
		Purchase 1 seed vacuum counter by 2023 for the seed processing laboratory.	Jul-23	Dec-23	2,500.00	200	

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#	Review recommendation	Activities to address recommendation			Amount requested (in US\$)	In-kind support (in US\$)	Notes
		Start date (mm/yy)	End date (mm/yy)				
10	Improve the efficient use of facilities and reduce significant risk of loss of accessions during seed packing and storage.	Replace the vacuum sealer by 2023 with a Fuji impulse tabletop vacuum sealer to use vacuum packaging to ensure pouches are well sealed and increase longevity. Purchase heavy duty mobile shelving for the cold rooms to expand the usable space for long-term conservation by 2023.	Jul-23	Dec-23	2,000.00	200	
11	Reduce risk of loss of accessions in the seed genebank through remote monitoring and alarm system for the cold rooms and drying room and install smoke alarms and fire alarms.	Improve physical security of the genebank by installing a security system (locks and cameras) and by identifying flooding/earthquake escape routes for staff safety in DENAREF Install smoke alarms and fire alarms in the drying room, data storage and entry areas and laboratories by 2023. Install external digital monitors for temperature and relative humidity in the drying room and seed stores by 2023. Purchase software for a monitoring control system that sends alerts to a designated genebank staff for the storage and drying facilities by 2023.	Jul-23	Dec-23	6,000.00	200	
12	Enhance the use of the germplasm through improving access to information about the accessions and improving distribution	Develop a genebank page for the INIAP website and upload remaining data to Genesys by 2024 to increase visibility of the collections. Incorporate DOIs in the data management system for tracking germplasm by 2023. Collect feedback from users to improve the service provided by 2023.	Jul-23	Dec-24	5,790.00	200	
13	Adopt a quality management system (QMS) with written policies and SOPs, risk assessment, capacity building and succession plans to improve efficiency, security and sustainability.	Revise the workflows along the basic functions and operations of a national genebank by 2023. Implement a full risk assessment, including staff safety, fire, and security risks by 2023. Update genebank policy and operations manual, including detailed workflows for all operations and develop detailed genebank SOPs for all genebank operations by 2023. Request INIAP management to support the attendance of appropriate staff in capacity building events on QMS.	Jul-23	Jun-24	1,500.00	1,000	
			Jul-23	Jun-24	1,500.00	500	
			Jul-23	Jun-24	1,500.00	400	
			Jul-23	Jun-24	1,500.00	1,000	
			Jul-23	Dec-23	1,500.00	500	
			Jul-23	Jun-24	3,000.00	1,000	
			Jul-23	Aug-23	0	200	

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		Start date (mm/yy)	End date (mm/yy)	End date (mm/yy)			
14	Prioritize unique accessions that require safety duplication and arrange for safety duplication of these accessions.		Equipment and supplies inventory and maintenance		5,631.00	0	
		Jul-23	Determine priority unique germplasm accessions for safety-duplication by 2024.	May-24	1,500.00	1,000	
		Jul-23	Document SOP for safety-duplication by 2024.	May-24	1,500.00	500	

B. Detailed Workplan

Please include sufficient details on your planned activities to achieve the project outputs as well as the specific deliverables that you commit to produce by the end date of each activity. Add rows as necessary. Align this table to Section A Improvement Plan.

Definitions:

Activities — A measurable amount of work performed to convert inputs (i.e. time and resources) into outputs.

Outputs — Knowledge, technical, or institutional advancement produced by research, engagement, and/or capacity development activities.

Deliverables — A specific, time-bound, tangible information and knowledge product that is linked to an output.

Project activities		Project outputs		Start date (mm/yy)	End date (mm/yy)	Project deliverables	Reference to the Recommendation	Budget
1 Partner genebanks' needs are assessed, and appropriate upgrading agreed.								
1.1	Update and implement the 5-year strategic plan for DENAREF that sets out a vision, financial and staffing plan to meet genebank standards for sustainable long-term conservation and use by 2023.	DENAREF has a five-year strategic plan with a vision and a financial and staffing plan to meet the genebank's standards for sustainable conservation and use.	Jul-23	Jun-24	Five-year strategic action plan	Update the 5-year strategic plan for the genebank that sets out long-term conservation and use goals and participation in the global PGR system	3,000.00	
1.2	Virus test all samples kept in vitro by 2026.	Virus tests for in vitro collections have been performed.	Oct-23	Dec-24	Andean tuber accessions are virus-free.	Improve the efficient use of facilities and reduce significant risk of loss of accessions during conservation of clonal crops	6,000.00	
1.3	Test initial viability of seeds from regeneration before storage from 2023.	The genebank tests viability of seeds prior to conservation.	Jul-23	Dec-24	Viability test results of seeds from regeneration	Reduce risk of loss of seed accessions from reduced longevity during storage by increasing initial viability testing and monitoring following genebank standards.	6,000.00	
1.4	Review protocols on frequency of subculturing and slow growth conditions to avoid loss of genetic integrity and the accession by 2024.	The in vitro laboratory has protocols in place to safeguard the integrity of the collections.	Jul-23	Jun-24	Updated protocols for in vitro conservation	Reduce risk of loss of seed accessions from reduced longevity during storage by increasing initial viability testing and monitoring following genebank standards.	1,500.00	
1.5	Review procedures, improve protocols and document SOPs to ensure that all genebank standards are followed to ensure genetic, physical, and physiological quality by 2023.	The genebank has protocols in place to safeguard the integrity of the collections.	Jul-23	Jun-24	Updated SOPs for seed conservation.	Manage regeneration and characterization activities, improve the protocols and document SOPs to eliminate the backlogs and risk of loss of genetic integrity of the accessions	1,500.00	
1.6	Improve protocols using published germination testing protocols (ISTA, Kew Seed information database) and document SOP for viability testing by 2023.	The genebank has protocols for germination testing to safeguard the integrity of the collections.	Jul-23	Jun-24	Updated SOPs for germination testing	Manage regeneration and characterization activities, improve the protocols and document SOPs to eliminate the backlogs and risk of loss of genetic integrity of the accessions	1,500.00	
1.7	Revise the workflows along the basic functions and operations of a national genebank by 2023.	The genebank has efficient workflows for basic functions and operations.	Jul-23	Jun-24	Workflow charts established and adopted	Adopt a quality management system (QMS) with written policies and SOPs, risk assessment, capacity building and	1,500.00	

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1.8 Update genebank policy and operations manual, including detailed workflows for all operations and develop detailed genebank SOPs for all genebank operations by 2023.	The genebank has policies, operations manual and SOP.	Jul-23	Jun-24	SOPs and policies updated and developed if not available	Adopt a quality management system (QMS) with written policies and SOPs, risk assessment, capacity building and succession plans to improve efficiency, security and sustainability.	3,000.00
1.9 Document SOP for safety-duplication by 2024.	The genebank is able safeguard germplasm through safety duplication.	Jul-23	May-24	Updated SOPs for safety duplication	Prioritize unique accessions that require safety duplication and arrange for safety duplication of these accessions.	1,500.00
1.10 Implement a full risk assessment, including staff safety, fire, and security risks by 2023.	DENAREF has a risk, personnel and fire safety system in place.	Jul-23	Dec-23	Risk management plan in place	Adopt a quality management system (QMS) with written policies and SOPs, risk assessment, capacity building and succession plans to improve efficiency, security and sustainability.	1,500.00
1.11 Determine priority unique germplasm accessions for safety-duplication by 2024.	The genebank is able safeguard germplasm through safety duplication.	Jul-23	May-24	List of priority accessions for safety duplication	Prioritize unique accessions that require safety duplication and arrange for safety duplication of these accessions.	1,500.00
1.12 Assess and prioritize accessions for regeneration and characterization (seed quality and quantity) and develop a 5-year plan for regeneration by 2023.	The genebank bank has a plan for the regeneration and characterization of collections.	Jul-23	Jun-24	List of priority accessions for regeneration and characterization	Manage regeneration and characterization activities, improve the protocols and document SOPs to eliminate the backlogs and risk of loss of genetic integrity of the accessions	1,500.00
1.13 Develop a funding plan for how to better access the discretionary funds available through FIASA until the amount allocated directly to DENAREF is sufficient to provide sustainable resourcing for the genebank by 2023.	DENAREF has a funding plan to access sustainable FIASA funds for the genebank	Jul-23	Dec-23	Funding plan developed	Seek support from the government for continued sustainable funding for core genebank operations to reduce reliance on unreliable project funds.	0
2 Partner genebanks have human capacity to operate effectively and efficiently.						
2.1 Develop a succession plan, capacity development plan and career development plan for staff by 2023.	DENAREF has a adequate trained staff for genebank operations.	Jul-23	Dec-23	Succession, capacity development, and career	Increase the number, expertise and specialization of staff through career development, capacity development	0

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2.2 Assign well organized teams for each genebank operation with a leader and a deputy, permanent technicians, and specialized workers to perform routine genebank operations by 2024.	Staff roles are clear to carry out genebank operations.	Jul-23	Jun-24	development plans developed Staff plan developed	and succession planning of permanent staff to support all Increase the number, expertise and specialization of staff through career development, capacity development and succession planning of permanent staff to support all	0
2.3 Fill staffing gaps by recruiting 5 additional staff or deploying existing staff to support expansion of activities in the areas of documentation, seed storage, viability testing, seed regeneration, germplasm health and in vitro conservation by 2024.	DENAREF has a adequate trained staff for genebank operations.	Jul-23	Dec-24	Plan for recruitment to fill gaps available	Increase the number, expertise and specialization of staff through career development, capacity development and succession planning of permanent staff to support all	0
2.4 Request INIAP management to support the attendance of appropriate staff in capacity building events on QMS.	DENAREF has a adequate trained staff for genebank operations.	Jul-23	Aug-23	Request support for staff to participate in QMS-related training	Adopt a quality management system (QMS) with written policies and SOPs, risk assessment, capacity building and succession plans to improve efficiency, security and sustainability.	0
3 Partner genebanks are equipped to operate effectively and efficiently.						
3.1 Purchase and install a centralized heavy-duty stabilizer/surge suppressor by 2023 to provide a stable power supply to avoid damage to electrical equipment (both for computer and laboratory equipment and facilities).	Stable electricity system in the germplasm bank facilities.	Jul-23	Dec-23	Power stabilizer/surge suppressor installed	Update the accession-level information for the genebank and use the information to enhance efficiency of genebank operations	5,800.00
3.2 Purchase 6 electronic pruning scissors to increase efficiency of field management of clonal tree crops by 2023.	Collections of fruit and forest species with appropriate agronomic management	Jul-23	Dec-23	Pruning scissors procured	Improve the efficient use of facilities and reduce significant risk of loss of accessions during conservation of clonal crops	6,000.00
3.3 Purchase 2 moisture content determination balances by early 2023.	Germplasm preserved with humidity percentages according to international standards.	Jul-23	Dec-23	Moisture content balances procured	Improve the efficient use of facilities and reduce significant risk of loss of accessions during seed processing and drying	6,000.00

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3.4 Purchase 1 seed vacuum counter by 2023 for the seed processing laboratory.	Proper handling of seeds prior to cold storage	Jul-23	Dec-23	Seed counter procured	Improve the efficient use of facilities and reduce significant risk of loss of accessions during seed processing and drying	2,500.00
3.5 Replace the vacuum sealer by 2023 with a Fuji impulse tabletop vacuum sealer to use vacuum packaging to ensure pouches are well sealed and increase longevity.	Proper handling of seeds prior to cold storage	Jul-23	Dec-23	Seed packaging sealer procured	Improve the efficient use of facilities and reduce significant risk of loss of accessions during seed packing and storage.	2,000.00
3.6 Purchase heavy duty mobile shelving for the cold rooms to expand the usable space for long-term conservation by 2023.	Work space for long-term conservation is expanded	Jul-23	Oct-23	Mobile shelves procured	Improve the efficient use of facilities and reduce significant risk of loss of accessions during seed packing and storage.	25,000.00
3.7 Improve physical security of the genebank by installing a security system (locks and cameras) and by identifying flooding/earthquake escape routes for staff safety in DENAREF	Genebank with a security system and evacuation plans for emergency	Jul-23	Dec-23	Security system in operation	Reduce risk of loss of accessions in the seed genebank through remote monitoring and alarm system for the cold rooms and drying room and install smoke alarms and fire alarms.	6,000.00
3.8 Install smoke alarms and fire alarms in the drying room, data storage and entry areas and laboratories by 2023.	Genebank facilities with smoke detectors and fire alarms	Jul-23	Dec-23	Smoke detectors and fire alarms installed	Reduce risk of loss of accessions in the seed genebank through remote monitoring and alarm system for the cold rooms and drying room and install smoke alarms and fire alarms.	3,500.00
3.9 Install external digital monitors for temperature and relative humidity in the drying room and seed stores by 2023.	Drying room and cold chambers with external digital temperature and humidity monitors	Jul-23	Dec-23	External digital temperature and humidity monitors procured	Reduce risk of loss of accessions in the seed genebank through remote monitoring and alarm system for the cold rooms and drying room and install smoke alarms and fire alarms.	2,700.00
3.10 Purchase software for a monitoring control system that sends alerts to a designated genebank staff for the storage and drying facilities by 2023.	Storage and drying facilities with automated monitoring and control system	Jul-23	Dec-23	Automated monitoring and control system installed	Reduce risk of loss of accessions in the seed genebank through remote monitoring and alarm system for the cold rooms and drying room and install smoke alarms and fire alarms.	1,000.00
3.11 Reorient the focus of DENAREF on the long-term conservation and	DENAREF makes a proposal to INIAP's Direction of Research to regulate that	Jul-23	Dec-23	Proposal submitted to the	Update the 5-year strategic plan for the genebank that sets out long-term	0

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3.12	availability of well documented unique national germplasm by 2023.	project using germplasm and/or facilities contribute to cover the costs of maintenance and replacement of equipment.	Ensure equipment are functioning and supplies adequate	Jul-23	Dec-24	Research Department	conservation and use goals and participation in the global PGR system	5,631.00
4 Partner genebanks manage data effectively for conservation and use.								
4.1	Install a barcoding label system for seed, field and in vitro genebanks and train staff on the use of the system to facilitate use of the inventory, save time and avoid errors by 2023	The genebank has a system to facilitate the use of the inventory, save time, and avoid errors.		Jul-23	Jun-24	Barcoding system installed	Prioritize the unique genetic diversity in the collection, identify duplicates and gaps for further acquisition for long-term conservation	15,000.00
4.2	Conduct a complete inventory check and collect full information (complete passport data) at Santa Catalina and all INIAP stations and store all data in DENAREF's central database by December 2024.	The genebank's database has a complete inventory of all the information from the six experimental stations.		Jul-23	Jun-24	Updated information on accessions conserved at the six stations	Prioritize the unique genetic diversity in the collection, identify duplicates and gaps for further acquisition for long-term conservation	5,000.00
4.3	Adopt a suitable database system (GRIN-Global CE) to include inventory, viability, regeneration, distribution, germplasm health and characterization data and images by 2024.	The genebank adopts an appropriate database system (GRIN-Global EC).		Jul-23	Jun-24	GGCE installed and use for data management	Update the accession-level information for the genebank and use the information to enhance efficiency of genebank operations	3,000.00
4.4	Share characterization data online with citation to INIAP by 2025 for use by national partners.	DENAREF shares online characterization data with national partners while respecting intellectual property rights.		Jan-24	Dec-24	Characterization database available online	Update the accession-level information for the genebank and use the information to enhance efficiency of genebank operations	3,000.00
4.5	Complete data input of all available data from paper files to the system by December 2024.	The genebank has digitized data from paper.		Jul-23	Dec-24	Data migrated to database system	Update the accession-level information for the genebank and use the information to enhance efficiency of genebank operations	3,000.00

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4.6	Digitize under a standard format the data from all distribution by 2024 onwards.	The genebank has a standard format for all germplasm distribution data.	Jul-23	Dec-24	Distribution data in database system	Update the accession-level information for the genebank and use the information to enhance efficiency of genebank operations	3,000.00
4.7	Enter viability testing data into the database by 2023 to allow informed decision making for regeneration.	The genebank has viability information to enable informed decision making for regeneration.	Jul-23	Jun-24	Viability testing data in database system	Reduce risk of loss of seed accessions from reduced longevity during storage by increasing initial viability testing and monitoring following genebank standards.	1,500.00
4.8	Establish a reference image database of seeds and plants by 2024 to use for accession true-to-type verification along the regeneration process.	The genebank has reference photo documentation of seeds and plants.	Jul-23	Dec-24	Reference image database of seeds and plants in database.	Manage regeneration and characterization activities, improve the protocols and document SOPs to eliminate the backlogs and risk of loss of genetic integrity of the accessions	3,790.00
4.9	Incorporate DOIs in the data management system for tracking germplasm by 2023.	The genebank has accession data with DOI in the data management system.	Jul-23	Jun-24	List of accessions with DOI assigned	Enhance the use of the germplasm through improving access to information about the accessions and improving distribution	710.00
4.10	Duplicate all files generated by DENAREF staff in the cloud or in an external secure hard disk on a weekly basis in order to avoid loss of valuable data by 2024 onwards.	Genebank data is secure.	Jul-23	Dec-24	Automated data back-up system in operation	Update the accession-level information for the genebank and use the information to enhance efficiency of genebank operations	2,000.00
5 Partner genebanks increase the diversity of varietal options available to farmers and other users.							
5.1	Collect feedback from users to improve the service provided by 2023.	DENAREF improves the services provided by the genebank to users.	Jul-23	Jun-24	Feedback results available	Enhance the use of the germplasm through improving access to information about the accessions and improving distribution	1,500.00
5.2	Develop a genebank page for the INIAP website and upload remaining data to Genesys by 2024 to increase visibility of the collections.	DENAREF has a genebank site on the INIAP website.	Jul-23	Dec-24	Web page set-up and running on the INIAP website	Enhance the use of the germplasm through improving access to information about the accessions and improving distribution	5,790.00

C. Implementation

1. Priority areas

From the list in Section A, which 3 items require urgent action? Explain why they are priority areas.

According to the evaluation carried out, we consider that the bank has several weaknesses that are reflected in the 15 recommendations and 62 activities. For us, the bank should be supported to carry out all the recommendations, since a genebank should be efficient in collection, conservation in cold chamber, field, in vitro and cryopreservation, regeneration and multiplication, characterization, documentation, security duplicates and distribution of germplasm, so that it can fulfill its function of conservation and use. For us, the priority areas would be those indicated for 2023, among which are the highest priority areas:

1. Manage regeneration and characterization activities, improve the protocols and document SOPs to eliminate the backlogs and risk of loss of genetic integrity of the accessions
2. Reduce risk of loss of seed accessions from reduced longevity during storage by increasing initial viability testing and monitoring following genebank standards.
3. Establish germplasm health testing activities to manage the health of all the accessions in the collection to support conservation and distribution.

Given the bank's limited financial resources in the last five years, it has not been able to monitor, regenerate and multiply the orthodox seed germplasm that is kept in cold storage. It is therefore urgent to carry out this activity, as well as to strengthen the entire documentation system, which is not included among the priority recommendations because only three areas were requested.

2. Project management

Describe how you intend to manage this project, i.e. monitoring, ensuring the delivery of high quality outputs, timely reporting, ensuring progress in line with the workplan, etc.

The project will be monitored on a quarterly basis with the support of INIAP's Planning Direction (<http://tecnologia.iniap.gob.ec/index.php/estaciones/mplanta/mdirec/mdplan>) and through monitoring matrices by activity and using the traffic light methodology, i.e., classifying the progress of each deliverable under the categories of achieved, mostly achieved, partially achieved, partially achieved / partial progress or not achieved. This allows us to make corrections in time to ensure that the work plan is met with high quality and on schedule.

3. Plan for communicating and publicizing results

Describe how you intend to communicate and publicize the results from this project. Please include suggestions of how your team could collaborate with the Global Crop Diversity Trust's Communication team to produce and share such outputs. Include names and positions of any individuals who would be involved in producing communications deliverables and publicizing project outputs.

The content generated will be based on the communication plan prepared by INIAP's Social Communication Unit, which is approved and verified by the General Secretariat of Communication of the Ecuadorian Government.

The INIAP communications team is currently made up of 3 people (communications analyst, graphic designer and communications assistant, <http://tecnologia.iniap.gob.ec/index.php/estaciones/mdgene/mdcomu>), a team with extensive experience and methodologies associated with scientific communication.

The project will have the following strategic points to achieve the greatest reach of visualization of the contents to the audiences of interest.

INIAP will manage its digital media such as the website, social networks Facebook, Twitter, Instagram and LinkedIn for the dissemination of information:

The different strategies to be applied during the project are presented below.

Content Strategy

- Coverage of activities on the development of the project.
- Create content of informative value for the learning of the audiences of interest.
- Create a biannual communication campaign to present the progress of the 2023 project.
- Create a biannual communications campaign on the importance of the Crop Trust and INIAP alliance in Ecuador.

Public Relations Strategy

- Develop a biannual media agenda on the project, to disseminate the 2023 objectives and activities.
- Publish collaborative information bulletins on project activities on the INIAP and Crop Trust website.
- Photo coverage to be shared with the Global Crop Diversity Trust team.

The different strategies will be jointly developed for the creation of informative content and the implementation of communication campaigns.

NOTE: It is important to point out that INIAP's Communication Unit does not currently have any type of budget assigned to it; therefore, all the activities to be carried out will be carried out with free tools.

4. Feasibility, Scope, and Limitations

Please comment on the feasibility, scope, and limitations of the proposed project, in particular regarding the delivery of the expected BOLD WP1 outputs and activities.

Feasibility:

There is a high % feasibility of the Project with the exception of the additional technical staff as indicated in the constraints.

Scope:

We consider that the scope of the project is adequate contemplating all the plant genetic resources whether native, forest, medicinal both native and exotic, genetic improvement lines, wild relatives and wild edible species.

Limitations:

1. Additional staff: the recommendation to increase the DENAREF-INIAP staff with five people does not depend on the project coordinator or INIAP authorities alone, but on the current restrictions of the national government on staff reduction in the public sector. Steps will be taken to justify the increase in personnel to the Ministry of Finance.
2. It is highly recommended that the budget given to INIAP should be managed by a fund manager since INIAP has a very slow public sector system (public procurement) that could jeopardize the execution of activities. One alternative is for the Inter-American Institute for Cooperation on Agriculture (IICA) to manage the Project's budget, for which preliminary discussions have been held. IICA would be willing to do so with an overhead charge of 8.1%.

5. Sustainability of the project

Please provide a plan for the continuation of the work beyond the funding period and indicate the availability of additional funding if necessary.

In 2022, budget allocated allowed to start with processes to improve field conservation, equipment maintenance, agrochemical stock, partial labor and technical personnel for two experimental stations. By 2023, the budget was cut by 40% compared to 2022, which will affect the hiring of technical personnel, labor and only maintenance of cold chambers and in vitro, and a small item for conservation of collections in the field in three experimental stations. During 2023 we will take several steps to ensure that Ecuadorian government complies with its obligation to provide a stable budget each year for the INIAP genebank, in accordance with the current Law on Agrobiodiversity, Seeds and Promotion of Sustainable Agriculture, however, it is difficult to assure funding from the government.

D. Risk management

Assess what risks could affect goal achievement. Also describe the risks that could have a negative impact on cross-cutting issues (human rights, women's rights and gender equality, climate and the environment, and anti-corruption. See Risk Matrix below as guide to risk assessment.

Identification	Analysis			Management	
Risk	Probability	Impact	Overall risk	Risk-reducing measures	
<i>[Risks that could affect goal achievement]</i>					
Lack of government support in terms of technical staff and budget	Likely	Major	High	Ongoing management of the Ministry of Finance	
Time delay in the purchase of equipment due to import or customs clearance	Possible	Moderate	Significant	Purchase of equipment with companies that guarantee delivery in the required times	
Lack of personnel specialized in certain topics, such as seed health tests	Likely	Major	High	Commitment of the authorities to support with technical personnel	
<i>[Cross-cutting issues: Negative impact on human rights, women's rights, and gender equality]</i>					
Risks of gender-based violence, exploitation, discrimination and abuse	Possible	Minor	Low	Application of the corresponding laws by the state authorities	
<i>[Cross-cutting issues: Negative impact on climate and the environment]</i>					
Risks of loss of accessions in field from drought, flooding	Possible	Moderate	Significant	Actions of safety duplication	
<i>[Cross-cutting issues: Negative impact on anti-corruption]</i>					
Fraud, theft, reputational loss, operational, legal- and compliance-related	Possible	Minor	Low	Application of the corresponding laws by the state authorities	
RISK MATRIX					
Risk category	Consequence/Impact				
Likelihood	Severe	Major	Moderate	Minor	Insignificant
Almost certain	High	High	High	Significant	Significant
Likely	High	High	Significant	Significant	Moderate
Possible	High	Significant	Significant	Moderate	Low
Unlikely	High	Significant	Moderate	Low	Low
Rare	Significant	Significant	Moderate	Low	Low
Risk Level					
High:	high risk; immediate action required				
Significant:	significant risk; attention needed				
Moderate:	moderate risk; management responsibility must be specified				
Low:	low risk; manage by routine procedures				

E. Genebank key performance indicators (KPI)

Refer to the review report to complete this table. Please complete for years 2021 and 2022. Add comment if not applicable, not relevant, or not available.

Indicators	Number of accessions			
	2021	2022	2023	2024
Composition of collections				
1. Number of accessions in total		28,654	28654	29000
2. Number of seed accessions		16,736	16736	17082
3. Number of accessions conserved <i>in vitro</i>		997	1027	1040
4. Number of field bank accessions		8,415	8415	8415
Availability				
5. Available for immediate distribution		1,152	1152	2152
6. Viability tested		526	1276	2026
7. Viability above 85%		486	1236	1986
8. Health tested		100	150	200
9. Adequate seed number		2,618	3368	4118
10. Included in MLS		4,226	4226	5000
11. Regenerated or multiplied (annual)		4,226	4976	5726
12. Samples subcultured (annual)		1,000	1000	1000
13. Accessions conserved <i>in vitro</i> that have been rejuvenated in the field/greenhouse (annual)		0	40	60
Safety duplication				
14. Conserved in LTS		238	238	238
15. Safety duplicated inside the country		0	100	200
16. Safety duplicated at Svalbard or other site outside country		168	168	300
17. Field collection maintained in at least two locations		0	115	115
Distribution				
18. Total distributed nationally (annual)		Archived in paper, not available	100	100
19. Total distributed internationally (annual)		0	100	100
20. Top 3 country recipients		0	0	0
Information				
21. Minimum passport data (available online)		22012 in FAO WIEWS	22512	22712
22. Minimum characterization data (available online)		0	150	150
23. Average passport data completeness index (from Genesys)		n.a.	5110	5510
QMS				
24. Elements of QMS in place* (out of 8)		0	1	0
25. Number of SOPs written		0	1	1
26. Number of SOPs reviewed and approved		0	1	1
Use				
27. Number of germplasm requests received annually		Archived in paper, not available	40	40
28. Regular feedback from genebank users requested (Y/N)		0	Y	Y

*The 8 key QMS elements are: 1-Science & Operations, 2-Policy, 3-Risk, 4-Staff, 5-Equipment, Infrastructure, & Reagents, 6-User satisfaction, 7-Information management, 8-Suppliers & Services. See Figure 1 in Lusty, Charlotte, Janny van Beem, and Fiona R. Hay. 2021. "A Performance Management System for Long-Term Germplasm Conservation in CGIAR Genebanks: Aiming for Quality, Efficiency and Improvement" *Plants* 10, no. 12: 2627. <https://doi.org/10.3390/plants10122627>

F. Contribution to BOLD Project targets

Please complete for years 2021 and 2022, if data is available. Add targets for years 2023, 2024, and 2030.

RESULTS LEVEL	EXPECTED RESULT	INDICATOR	2021	2022	2023 Target	2024 Target	2030 Target
Impacts	Genetic diversity of crops & their wild relatives is sustainably conserved by genebanks for long-term availability & access by farmers, breeders & other users	1. Total number of seed samples that are conserved in either medium- or long-term conservation facilities by partner genebanks		28,654	28,654	29,000	
		2. Number of seed samples distributed by partner genebanks		0	100	100	
		3. Number of farmers accessing diversity from partner genebanks		5	200	200	
Outcome 1	Genebanks effectively manage crop diversity for long-term use by farmers, breeders, and other users, including safety duplication	4. a. Number of seed samples in partner genebanks that is available for immediate distribution		0	1,152	2,152	
		b. Number of seed samples in partner genebanks that is safety duplicated		100	100	100	
RESULTS LEVEL	EXPECTED RESULT	INDICATOR	2021	2022	2023 Target	2024 Target	2030 Target
Output 1.1	Technical capacity needs of partner genebanks identified and addressed	5. Number of improvement findings addressed per genebank		0	1	1	
Output 1.2	Staff capacity needs of partner genebanks identified and addressed	6. Number of staff from partner genebanks trained on genebank operations, including conservation policy		0	2	2	
Output 1.3	Partner genebanks manage data effectively for conservation and use	7. Number of accessions in partner genebanks with data publicly available online		2	5,412	5,912	
Output 1.4	Partner genebanks increase the diversity of varietal options available to farmers	8. Number of user groups established and functioning at national level by partner genebanks		0	2	3	

G. Budget Overview

Refer to Excel file -- WP1 Annex A2 Budget template to complete this table.

Requested budget (from Crop Trust)

Budget items	Costs (USD)			Budget details
	2023	2024	Total	
1.Personnel	21,000	24,000	45,000	Part-time support for project implementation
2.Supplies and services	18,016	14,606	32,621	Includes the costs of renovation and upgrades and the purchase of essential supplies
3.Equipment	62,300	0	62,300	Includes the purchase of essential equipment
4.Travel and Meetings	1,000	2,500	3,500	Meetings and consultations on inventory and strategic plan
5.Indirect costs	8,531	3,087	11,617	Includes 8.1% institutional costs
Total costs	110,603.06	44,435.05	155,038.10	

In-kind support (from partner)

Budget items	Costs (USD)			Budget details
	2023	2024	Total	
1.Personnel	16,800.00	16,800.00	33,600.00	This item is 10% of the salary of 8 DENAREF technicians.
2.Supplies and services	4,000.00	4,000.00	8,000.00	This item refers to internet services, electricity, electricity, water and gas.
3.Equipment	12,600.00	12,600.00	25,200.00	this item refers to the equipment of the genebank in cold chamber, in vitro, and field.
4.Travel and Meetings	-----	-----	-----	
5.Indirect costs	1,200.00	1,200.00	2,400.00	This item refers to indirect expenses related to secretarial services.
Total costs	34,600.00	34,600.00	69,200.00	



ANNEX B
Disbursement and Reporting Schedule

Payment Amount USD	Conditions for Payment and Reporting Schedule
82,952.30	Receipt of signed Project Agreement
N/A	Submission of Q3 Financial Report for 2023 no later than 15 October 2023
60,977.05	Approval of technical and financial reports. These reports must be submitted no later than 31 January, 2024
N/A	Submission of Q3 Financial Report for 2024 no later than 15 October 2024
11,108.75	Approval of final technical and financial reports. These reports must be submitted no later than 31 January, 2025
155,038.10	Total