



INTERNATIONAL FOOD
POLICY RESEARCH INSTITUTE
sustainable solutions for ending hunger and poverty

A Tool to Support Cost-Effective Management of Collections

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Introduction

- Activity 2.4:
 - Develop and disseminate a decision-support tool to enhance the cost-effectiveness of collection management
 - Task group: IRRI (Ruaraidh - rice), WARDA (Ines - rice); CIMMYT (Tom - wheat); BIOVERSITY (Ines - musa); CIAT (Daniel - cassava); ILRI (Jean - forages); ICRISAT (Hari - chickpea), IFPRI (Melinda, Bonwoo, Daniela)



Phase 1

Koo et al. (2004, "Saving seeds")
produced cost reports (5 genebanks):

1. operation and total costs by genetic material
2. accession costs of new / existing material and for annual / in perpetuity time frames
3. genebank cost and total



Terminology

- Objectives (conservation and distribution/use)
- Operations (acquisition, regeneration, etc) per objective
- Activities (land preparation, data management, seed cleaning etc) per operation
- Cost components and cost allocation (size/time) per activity
- **Performance indicators**, to be defined



Framework

Objective	Specific Objective	Indicator	Operation	Activity	Cost Components
Conservation	Coverage of Genepool	- Diversity indicators (<i>Ex. Extinction probability, Reist-Marti et al. 2006</i>)	- Acquisition	-	- CC: seed health testing facility, greenhouse, lab/office equipment - QFC: scientific and technical staff - VC: labor for seed health testing, introductory planting, seed handling
	Ensuring security	- Seed longevity - Number of accession stored over time - Seed viability	- Security duplication / Back up collections	- Packing and shipping	- CC: - QFC: - VC: labor for packing and shipping
			- Long term storage	- Climate control	- CC: storage facility, storage equipment, back up power system, storage container - QFC: scientific and technical staff - VC: labor for storage
			- Germination testing	- Viability testing	- CC: germination testing facility, germination chamber, etc - QFC: scientific and technical staff - VC: labor for germination testing
Maintaining genetic integrity	- Number of accessions lost (depending on the crop and conservation method) - Genetic drift indicator	- Regeneration	- Embryo rescue - Land preparation - transplanting	- CC: screenhouse, storage, vernalizer, seed-cleaning equipment, seed-drying equipment, seed-processing facility, seed processing equipment, etc - QFC: scientific and technical staff - VC: labor for regeneration	

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Framework

Objective	Specific Objective	Indicator	Operation	Activity	Cost Components
Distribution (Use)	- Ensuring availability	- Seed longevity	Medium term storage	- Climate control	- CC: storage facility, storage equipment, backup power system, seed container - QFC: scientific and technical staff - VC: labor for medium term storage
		- Seed viability	Germination testing	- Viability testing	- CC: germination testing facility, germination chamber, etc - QFC: scientific and technical staff - VC: labor for germination testing
	- Distribution of material	- Number of accessions lost (depending on the crop and conservation method) - Genetic drift indicator	Regeneration	- Embryo rescue - Land preparation - Transplanting	- CC: screenhouse, storage, vernalizer, seed-cleaning equipment, seed-drying equipment, seed-processing facility, seed processing equipment, etc - QFC: scientific and technical staff - VC: labor for regeneration
		- Number of accessions distributed per year	Distribution (Shipment) / Dissemination	- Seed packing	- CC: seed health testing facility, greenhouse, lab/office equipment, Jacuzzi equipment, etc - QFC: scientific and technical staff - VC: labor for seed health testing duplication, packing and shipping
- Providing information	- Number of users	Data / Information management	- Recording traits	- CC: general facilities - QFC: scientific and technical staff - VC: labor for database management, catalogue management, etc.	

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Decision Tool

- [Tool](#) (link to excel file)



Outputs

- Simulations (tool)
- Genebank cost function, average accession cost (AC) as a function of:
 $AC = f$ (**performance indicators**,
crop characteristics,
genebank charact. (facilities, equip.)
staff charact. (number, skills),
location, etc.)