Objectives

• To make the germplasm (and accompanying relevant information) of any material in the in-trust collections available at any time to users around the world. The procedures followed are those approved by the Governing Body of the International Treaty mentioned above.

• To improve conservation technologies, so that the 64,000 accesses of more than 720 species can be better conserved at lower costs. This includes providing new services such as the development of cost-effective DNA banking for when users need samples for genomic studies. This way, they do not need to access a given plant germplasm every time.

• To increase the genetic, biological, and social relevance of the collections, so that geneticists, breeders, biologists, agronomists, farmers, and the public will find the diversity corresponding to their needs. This is achieved by continually comparing the variability existing on farms and in the wild with that present in the genebank. This implies a continuing characterization of the collections, using conventional and molecular tools.

• To continue training young scientists who often share the same conservation challenges. The Program participates in distance education courses and provides technical information to different biodiversity institutes of LAC, towards their inventories and in situ conservation efforts.

Outputs and impact

• In 34 years of work, the genebank at CIAT has distributed 545,451 samples to people and institutions in more than 110 countries.

• Significant advances were made in such fields as the identification of new species, internal genetic copies, conservation technologies, and pathogen screening.

• The entire designated collection of cassava was certified free of diseases of quarantine importance.

• Several young scientists from the NARS of LAC, Africa, and Southeast Asia were trained in conservation technologies.

Main activities and projects

• New methods for slow growth of cassava clones in vitro.

• Ultradrying seeds of beans and forages to delay regeneration.

• Conserving botanic seeds of cassava and wild species of Manihot.

• Identifying internal genetic copies to prevent costly redundancy.

• Molecular methods for the early diagnosis of seedborne diseases of quarantine importance.

• Identifying new species of Phaseolus.

• Exploring the structure of genetic diversity in bean species along space and time gradients.

• Phylogeny and phylogeography of Phaseolus taxa.

• Studying domestication processes in five bean crops.

• Establishing crop germplasm registries for beans, cassava, and forages.

1. For an explanation of acronyms and abbreviations see www.ciat.cgiar.org/newsroom/pdf/acronyms_syntheses.pdf
• Regenerating unique germplasm collections in the countries associated with the Global Crop Diversity Trust.
• Creating safety backups of the in-trust collections with CIMMYT, CIP, and the Svalbard Global Seed Vault.
• Best practices for ex situ conservation and norms for the safe movement of crop germplasm.
• Dynamic and integrated conservation strategy with CONABIO (Mexico) and INBio (Costa Rica).

Main partners and collaborators and associated projects
**Brazil:** Embrapa/CENARGEN–Brasília (research on genetic diversity of beans and cassava, in cooperation with CNPAF and CNPMF) •
**Colombia:** CORPOICA national program on plant genetic resources (genetic diversity assessment and research on conservation technologies for clonal crops); ICA (development of plant quarantine protocols); UNAL–Bogotá (research on genetic diversity of beans); UNAL–Medellín (research in tissue physiology) • **Costa Rica:** CATIE (research on conservation technologies for clonal crops; orientation of MSc students; development of training manuals); INBio (interface ex situ and in situ conservation for wild species of Phaseolus and Manihot in Costa Rica); Universidad de Costa Rica (research on genetic diversity of beans) • **Mexico:** CICY (genetic resources of Mayan agriculture); CONABIO (interface ex situ and in situ conservation for wild species of Phaseolus and Manihot in Mexico); INIFAP (research on genetic diversity of beans) • **Peru:** INIA (research on genetic diversity of beans and cassava) • **UK:** Royal Botanic Gardens, Kew (taxonomy of forage legumes); University of Reading (research in seed physiology) • **USA:** Smithsonian Institution (taxonomy of forage legumes, and wild species of beans and cassava); The Nature Conservancy (in situ conservation of wild species of beans and cassava in LAC countries); University of California–Davis (research on genetic diversity of beans and crop domestication); USDA (ARS–Beltsville, research in genetic diversity and coevolution with pathogens); USDA (ARS–Fort Collins, research in seed and tissue physiology); USDA (ARS–Pullman, research on genetic diversity of beans)

CGIAR centers
Bioversity International (legal issues; public awareness); CIAT programs; IFPRI (economics of ex situ conservation); ILRI (characterization of forages); SGRP (various)

Donors
BMZ (Germany) • European Union • Global Crop Diversity Trust • MADR (Colombia) • USAID • World Bank

Team members
• Dr Ir Daniel G. Debouck, Coordination, genetic diversity, and legal issues (d.debouck@cgiar.org) •
• Ericson Aranzales, In vitro conservation (e.aranzales@cgiar.org) •
• María del Socorro Balcázar, Germplasm health (m.s.balcazar@cgiar.org) •
• Arsenio Ciprián, Germplasm production (a.ciprian@cgiar.org) •
• Maritza Cuervo, Germplasm health (m.cuervo@cgiar.org) •
• Jaime Roberto Guzmán, In vitro conservation (j.guzman@cgiar.org) •
• Ángela Hernández, Informatics (a.hernandez@cgiar.org) •
• Josefina Martínez, Web products (j.m.realpe@cgiar.org) •
• César Ocampo, Genetic quality (c.ocampo@cgiar.org) •
• Julio César Ramírez, Germplasm health (j.c.ramirez@cgiar.org) •
• Luis Guillermo Santos, Seed conservation (l.g.santos@cgiar.org) •
• Orlando Toro, Germplasm production (o.toro@cgiar.org) •

Contact: Dr Ir Daniel G. Debouck (d.debouck@cgiar.org)

March 2012