

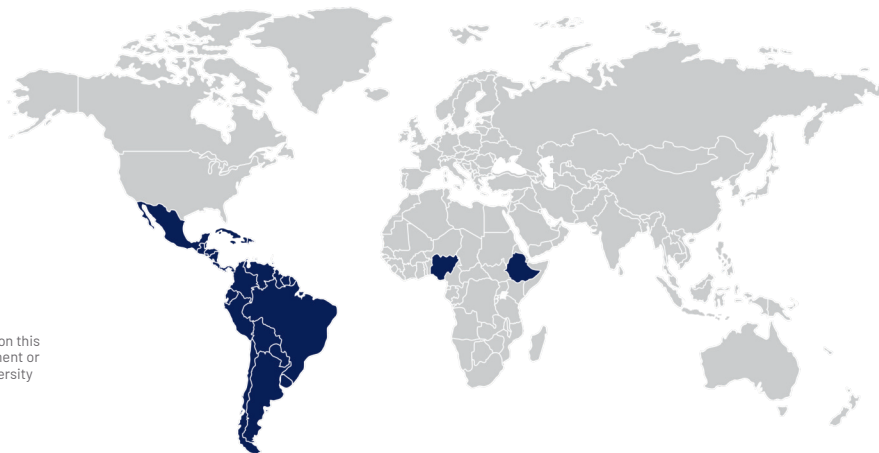
Goal

To facilitate informed and targeted utilization of crop diversity, the Digital Genebank at the Alliance of Bioversity International and CIAT conducts research to comprehensively analyze the genetic composition of the three key genebank collections: beans, cassava, and tropical forages. Our efforts aim to strengthen the conservation and add value to the collections facilitating access to crop diversity and bridging gaps between conservation, plant breeding endeavors, farming communities, and scientific research.



Where we work

Primarily based in Colombia, our work extends to identifying and providing solutions for sites where the three collections are grown in the Global South. We collaborate closely with national and international genebanks in Latin America and Africa.



The boundaries and names shown on this map do not imply official endorsement or acceptance by the Alliance of Bioversity International and CIAT.

How we do it



We leverage genomics, digital phenotyping, and information systems:

- **Genetic composition assessment:** Assessing genetic composition through diversity studies (e.g., identifying redundancy, intra- and inter-accession diversity) to guide genebank curators in collection management activities, including selecting materials for rejuvenation and cryo-conservation efforts.
- **Enhancing genebank value:** Enhancing the value of genebank accessions through allele mining for nutrient quality, pest and disease resistance, and climate resilience.
- **NIRS nutrient prediction:** Using NIRS* to predict nutrient content from entire seeds in the bean collection, facilitating the characterization of the collection and access to highly nutritious varieties.

**Near Infrared Reflectance Spectroscopy*



We conserve, analyze, and distribute tissue and DNA derived from the three genebank collections—beans, cassava, and tropical forages, including their wild relatives—to offer accessible crop diversity for research purposes.



Promote regional collaboration among national genebanks in Latin America through sharing knowledge on genomics of genebanks and other priorities within an established Community of Practice.

The impact

- **Conservation and germplasm evaluation:** Genetic analysis, including redundancy studies, has supported decision-making to optimize conservation strategies—reducing costs—while also providing valuable insights to strengthen germplasm evaluation and use.
- **Selection of resilient crop varieties:** A subset of selected promising accessions with potential resistance to Cassava brown streak disease or tolerance to heat or drought conditions are available, thereby reducing selection time for breeding purposes.
- **Capacity strengthening and networking:** Facilitated capacity strengthening and networking among staff and students from national genebanks and universities in Latin America.

Actions for innovation



Enhancing genebank management:

- Automating the characterization of genebank collections through genomics, phenotyping, and integration of diverse data types.
- Improving protocols for high-quality DNA extraction to support diverse genetic analyses.
- Utilizing cytometry for accurate ploidy characterization, supporting breeding and conservation efforts.



Facilitating access to crop solutions:

Mining alleles for current and emerging abiotic and biotic stressors to identify potential parents or underutilized varieties conserved in the genebank.



Advancing knowledge and exploration of crop diversity:

Increasing knowledge and information about genebank accessions through comprehensive data analysis, dissemination, and collaboration with curators, breeders, and physiologists to explore the hidden treasures of crop diversity in cassava, beans, and tropical forages.



Facilitating regional knowledge exchange:

Promoting knowledge exchange in the region through a sustained Community of Practice, fostering collaboration and innovation among genebank stakeholders.



Our partnerships



To know more about the program, visit us:



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