Bean Pathology Laboratory
Research from LAC for Global Impact

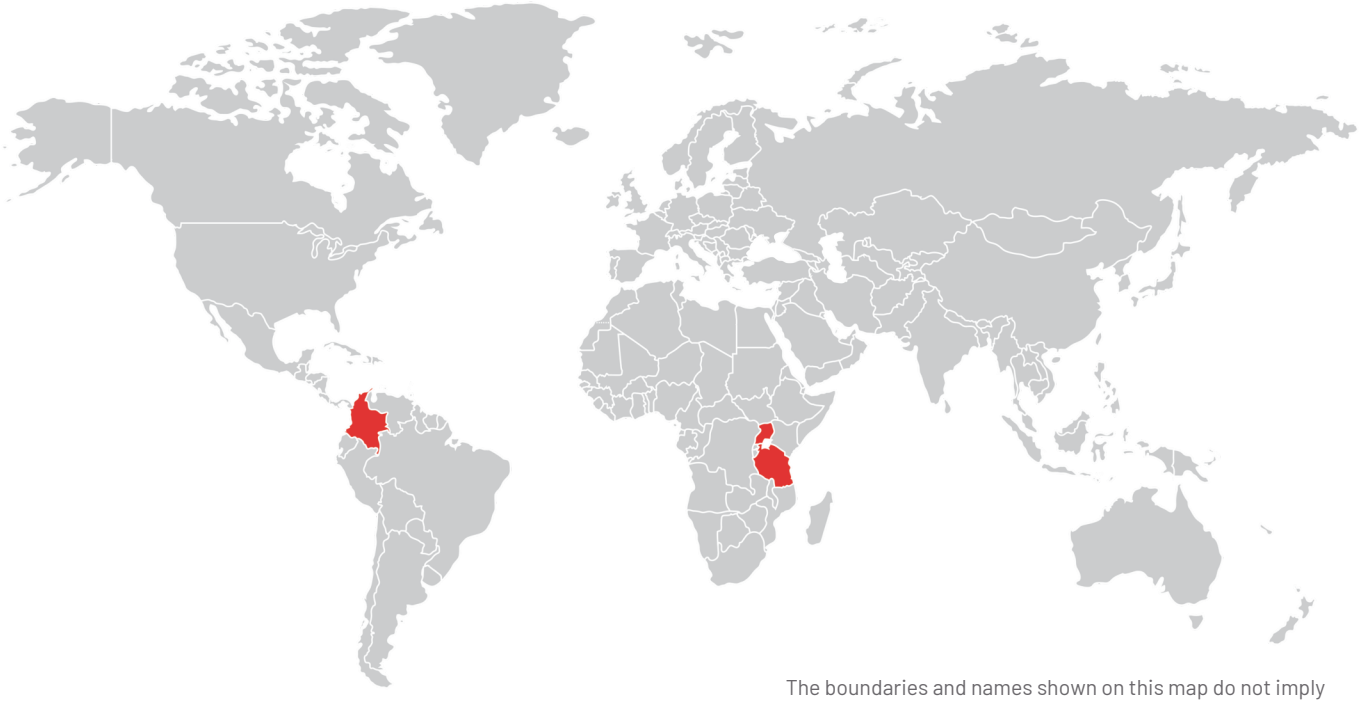
Goal

The Bean Pathology Lab at the Alliance of Bioversity International and CIAT, Americas Hub, is part of the Bean Team strategy, whose main goal is to contribute to more sustainable crop production in the tropics. The focus of our research is to support the selection of resistant germplasm against the most economically relevant diseases affecting bean production, and to train partners in disease diagnostic and field assessment. To accomplish this goal, our Lab performs systematic controlled pathogen characterization, updates information on variety performance in production zones, and designs research activities to respond to the needs of Bean breeders and, ultimately, farmers.

Where we work

Latin America and Africa

The Bean Pathology Lab is located at Palmira campus, and collaborates with other Alliance Labs at CIAT-Kawanda and CIAT-Arusha.



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

- **Pathogen characterization and selection for bean testing:** Target diseases are defined in conjunction with the breeding program based on the needs of the production zones. The most consistent diseases in recent years are foliar diseases such as angular leaf spot, anthracnose, common bacterial blight (CBB), and root rot complex.
- **Germplasm Evaluation under artificial conditions:** The Pathology Lab provides artificial pathogen inoculum to infect breeding populations at the experimental station, in order to select resistant plants and discard the susceptible ones. Additionally, smaller nurseries are tested under greenhouse conditions with two main purposes: to select bean parents resistant to specific diseases, and to confirm resistance against multiple pathogens in the best advanced lines obtained by the breeding program.
- **Resistance validation under field conditions:** Germplasm shared by the Palmira breeding program with regional breeders in Central America and Africa serves as a feedback loop to adjust our phenotyping strategy at Palmira.
- **Multi-Stress Resistance Testing:** Inoculating and evaluating germplasm under combined biotic and abiotic stress conditions to identify varieties with combined stress resilience.
- **Methodology Development:** Creating medium-throughput evaluation techniques to optimize and accelerate the selection of bean germplasm with resistance to multiple pathogens.

Infraestructure

The lab is well-equipped with state-of-the-art facilities, including:

Mesh houses equipped with an automatic irrigation system

Greenhouses equipped with automatic humidification systems

A dedicated microbiology laboratory with pathogen collections

Basic macroscopy setups for pathogen isolation, purification, and downstream processing

To know more about the program, visit us:

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