

# APBAConf2025 Artemis Side Event

**Theme: Winning the Race against Food Insecurity, Malnutrition, and Climate Change**

**Date:** October 7, 2025 | **Venue:** Elephant Hills Resort, Victoria Falls, Zimbabwe

## Artemis: Empowering Breeders with AI-Enabled Tools

### Day 2: October 7th, 2025

- Morning session: 11:00 – 13:00 (on-station phenotyping)
- Afternoon session: 14:00 – 15:30 (on-farm phenotyping)

Venue: Matetsi room

### Background and Rationale

Breeders in the Global South urgently need practical tools that save time and improve phenotyping quality. Most high-tech AI systems remain too costly or complex for breeding programs. The Artemis Project, implemented by the Alliance of Bioversity International and CIAT with support by the Gates Foundation, offers simple smartphone-based AI tools for real-time field data collection on key traits like plant counts, flowering, pod development, and disease symptoms processed via computer vision.

A key strength is that Artemis is co-designed with breeders and partners. Breeding teams test early versions, provide feedback, and shape tool development to fit their needs. Alongside computer vision, the team uses language models to help with trial documentation and insight generation. A Google Research keynote places these efforts in the wider context of AI innovation and challenges in breeding.

### Objectives

- Showcase advancements in AI-based tools for low-resourced breeding teams to adapt to climate change
- Demonstrate the Artemis technology and share learnings on its application in real-world conditions
- Draw in insights from practitioners and promote participation in the Artemis innovation process
- Provide expert perspectives on AI's role in breeding's future.

### Program Narrative

#### Morning Session (11:00–13:00 | On-Station Phenotyping)

The morning begins with a Google Research keynote on the role of AI in food security. Next, we explore the “phenotyping bottleneck”, followed by an introduction to Artemis. A live demo shows how breeders can easily collect and analyze field data using smartphones and a

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pushcart called “Bruno”. The morning closes with a panel including breeders, researchers, and donors. During lunch, participants can try out the Bruno and Ona app.

## **Afternoon Session (14:00–15:30 | On-Farm Phenotyping)**

The afternoon focuses on involving farmers using the Tricot approach and shares on-farm phenotyping experiences with Artemis. Ndizi is introduced as a language model supporting documentation and interpretation tasks. The event concludes with a panel on future directions for farmer-centered AI in breeding.

## **Speakers and Moderators**

- Tavonga Siyavora- GoogleResearch
- David Guerenna- Alliance of Bioversity International and CIAT
- Roy Odama- Alliance of Bioversity International and CIAT
- Mina Mjema- Alliance of Bioversity International and CIAT
- Hana Gadjasova- Alliance of Bioversity International and CIAT
- Lennart Woltering- Alliance of Bioversity International and CIAT
- Violet Lasdun - London School of Economics
- Panelists -tbc

## **Target Audience**

Breeders, breeding program leads, data managers in national agricultural research systems (NARS), donors, CGIAR and partner organization staff, early-career scientists, and technical experts in phenotyping and AI.

