BOLD Cutting Across Fields: Opportunities for Synergy in Seed Conservation and Seed Systems in East Africa


MICHAEL MAJOR

Summary

Plant genetic resources conserved in genebanks can reach farmers only when effective seed systems are in place, including breeding, seed production and dissemination. While conserving crop diversity is the core mission of genebanks, many in the Global South face funding and capacity constraints that limit the use of conserved materials beyond storage and variety development. Rich plant biodiversity conserved in national genebanks often does not translate into improved food and nutrition security for local communities. The *Biodiversity for Opportunities, Livelihoods and Development* (BOLD) project is establishing the foundations to bridge this gap. Working with the national genebanks of Tanzania and Uganda, BOLD brings together three interconnected fields: crop diversity conservation, seed systems and opportunity crop development. The work is across both staple crops (such as maize) and nutrition-rich crops (such as finger millet and Bambara groundnut). Through collaborative discussions, overlaps and gaps across these fields were identified and practical measures were outlined to strengthen field integration. Together, these efforts set a strong basis to support long-term farmer seed security and contribute to food and nutrition security at local and global scales.

Background and Challenges

Capacity and Resource Development

Tanzania and Uganda hold rich plant biodiversity. The BOLD Project has supported their national genebanks since 2021 to strengthen conservation capacity through improved seed processing equipment and facilities, standardized operating procedures (SOPs), upgraded data management systems linked to Genesys, and structured online and in-person training. These investments mean the genebanks can more reliably conserve and document both staple crops and nutrition-rich opportunity crops and respond more effectively to requests from breeders and seed system partners.

Genebank and Seed Systems

A well-functioning genebank contributes more than crop diversity conservation. It also plays a critical role in utilizing conserved materials within seed systems so farmers can access diverse, high-quality seed. Effective seed systems involve many actors: farmers, breeders, community seed banks, non-governmental organizations, national genebanks, and other stakeholders, working across breeding, seed production, and dissemination to maintain crop diversity (Westengen *et al*. 2023). Due to the complex nature of seed systems, integrating multiple actors is challenging. The BOLD project has therefore provided funding, capacity development, and networking opportunities to support the national genebanks of Tanzania and Uganda in strengthening their connections within national and regional seed systems.

Opportunity Crop Production

The BOLD Project also extends through BOLDER: *Building Opportunities for Lesser-known Diversity in Edible Resources,* launched in 2023. BOLDER collaborates with partners in Tanzania and Uganda and focuses on developing effective agricultural value chains for nutrition-rich opportunity crops in East Africa. Finger millet is a good example as it is rich in iron and calcium and contains essential amino acids that are lacking in maize-based diets. Developing the production and use of such opportunity crops could provide a solution to satisfy the growing nutritional demand and improve diet quality for consumers both locally and regionally.

BOLD partners in Tanzania and Uganda have identified crops such as finger millet and Bambara groundnut as initial focus crops for more coordinated work across conservation, seed systems and value chains.

BOLD Cutting Across Fields: Building Synergy for Sustainable Impact

During Phase 1 (2021–2025), BOLD supported these three workstreams largely as parallel efforts, laying strong foundations in each. National genebanks of Tanzania and Uganda sit at the center of connecting conservation, seed systems, and crop production, creating new opportunities for integrated action in future phases of the project.

To put this vision into action, BOLD hosted the "*BOLD Pathways to Sustainable Impacts*" workshop at the World Vegetable Center in Arusha, Tanzania in December 2025. Participants worked together to map how existing conservation, seed system and opportunity crop initiatives intersect in their countries, identify overlaps and gaps and outline practical measures for joint planning and communication. Through collaborative discussions, team-building activities and immersive field visits, the workshop brought together key actors from across the agricultural value chain in East Africa and marked an important first step toward cross-fields collaborations for sustainable crop diversity conservation and use.


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Eva Zaake, manager of the Uganda national genebank, actively participated in this workshop and emphasized the value of working across fields as her reflection after the workshop. She noted that stronger integration can reduce redundancy, improve communication among projects, and help identify and address gaps that lie at the intersections of conservation, seed systems, and crop production more timely and efficiently.

Mujuni Kabululu, also shared his positive post-workshop feedback as the Tanzania national genebank manager. Kabululu sees a promising framework that the national genebank may connect in all three fields in a holistic way. He envisions conserved materials gradually moving beyond cold storage to play a more active role in seed production and dissemination, enabling farmers to access diverse, high-quality seed of both staple and opportunity crops.

Following the workshop, Kabululu and his team proposed several actionable steps to strengthen cross-field synergies:

- Setting a unified platform for project planning, implementation and impact assessment
- Implement joint milestone planning and key performance indicators
- Develop shared knowledge and data platforms
- Synchronize stakeholder engagement activities
- Conduct joint risk and opportunity reviews
- Integrate reporting and communication outputs

Kabululu concluded that these across-field synergies point toward coordinated planning and execution, support resilient, high-impact, and sustainable outcomes across Tanzania's agricultural value chain. The initial steps taken under BOLD provide a strong foundation for future integration across fields in East Africa.

Conclusion

By strengthening core genebank operations and helping teams in Tanzania and Uganda connect with seed system partners, BOLD has started to shift how these genebanks operate. The Arusha workshop and the steps agreed afterwards show that teams are now planning together across fields that previously ran in parallel. The real test in the coming years will be whether this way of working helps more of the conserved diversity find its way into farmers' fields and onto people's plates in East Africa.

References

Westengen, O. T., Dalle, S. P., & Mulesa, T. H. (2023). Navigating toward resilient and inclusive seed systems. *PNAS*, 120(14), e2218777120. https://doi.org/10.1073/pnas.2218777120

Additional details can be found at https://bold.croptrust.org/

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Authors

Yue Yu
BRITE intern, Crop Trust
Ph.D. Candidate in Botany
University of British Columbia

Eva Zaake
Uganda National Genebank

Mujuni Kabululu
Tanzania Plant Health and Pesticides Authority

Catherine Aguilar, Nelissa Jamora, Michael Major
Crop Trust