PHOTO: MANON KONINGSTEN

Germplasm User Groups as Bridges to the National Genebank of Kenya

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The Promise of GUGs in Bridging the Access Gap

The national genebank of Kenya, housed at the Genetic Resources Research Institute (GeRRI) (Box 1), plays a vital role in conserving and distributing genetic diversity. However, its direct relevance to local farmers has historically been limited by low visibility and poor integration with community seed systems. The creation of Germplasm User Groups (GUGs) – community-level farmer organizations affiliated with the genebank (Box 2) –offers a promising bridge between institutional seed conservation and farmer-level varietal use.

SUMMARY

The challenge of connecting *ex situ* conservation efforts with smallholder farmers has long hindered the full potential of national genebanks in Africa. In Kenya, recent engagement through germplasm user groups (GUGs) has offered a new framework for addressing this disconnect. This brief summarizes key insights from a study of 500 farmers in western Kenya, focusing on how GUGs mediate relationships between farmers and the Genetic Resources Research Institute (GeRRI), and what this means for the future of crop diversity and food security in smallholder systems. While sorghum was the principal crop studied, the findings reflect broader issues related to seed access, group dynamics and institutional collaboration.

A survey was conducted across Busia and Siaya counties, targeting 500 farmers selected through stratified random sampling. Participants were grouped into three categories: GUG members who had received seeds, GUG members who had not and non-members. Data focused on demographics, farming practices, seed access and awareness of the national genebank.

Survey data show that farmers who are members of GUGs and who received seeds from the genebank are more likely to grow genetically diverse crops, particularly sorghum. These farmers also reported modestly higher incomes and slightly larger land allocations to farming compared to non-members. Importantly, group meetings provided members with training opportunities, exposure to new varieties, and access to institutional support, all of which contributed to increased seed access and knowledge.

BOX 1 Genetic Resources Research Institute (GeRRI)

The national genebank of Kenya, housed at the Genetic Resources Research Institute (GeRRI) under KALRO, conserves over 51,000 accessions of 2,000 plant species, including key crops like sorghum, finger millet, and legumes. Operational since 1988, the genebank uses both cold storage and field genebanks to preserve seeds and vegetative material. Through initiatives like Seeds for Resilience, GeRRI works with farmers to promote climate-resilient varieties and enhance food security. It also employs tools like the GRIN-Global Community Edition (GGCE) to improve data accessibility. GeRRI plays a vital role in safeguarding Kenya's crop diversity.

PHOTO: LUIS SALAZAR/CROP TRUST

BOX 2 About Seeds for Resilience

The Seeds for Resilience project, led by the Crop Trust since 2019, works to strengthen national genebanks in Ethiopia, Ghana, Kenya, Nigeria and Zambia. These genebanks conserve the crop diversity that is essential for developing climate-resilient, nutritious and productive crops. A key feature of the project is its collaboration with farmers, who evaluate and select varieties best suited to local needs. This farmer engagement helps prioritize seeds that are most useful for improving food security. By enhancing genebank operations and connecting them with farming communities, the project supports agricultural resilience across Africa. The goal is to make a wider range of climate-resilient seeds available to farmers, supporting sustainable agriculture and benefiting those most affected by climate challenges, particularly women, who play key roles in African farming systems.

Awareness and Knowledge of the Genebank

Despite the efforts of GeRRI, general awareness of the genebank remains low. Among non-GUG farmers, 94.2% reported being unaware of the genebank's existence (Figure 1). Even among GUG members, significant gaps remain: nearly one in five GUG members who received seeds were not aware of the genebank, and nearly half of GUG members who did not receive seeds also lacked awareness. Attendance at group meetings, rather than group membership alone, emerged as the strongest predictor of awareness.

Attending GUG meetings significantly increased familiarity with the genebank's role, while membership status alone did not. Middle-aged adults showed higher awareness compared to younger farmers, likely reflecting their greater engagement in community structures. Interestingly, education level did not significantly predict genebank knowledge, suggesting that informal learning within groups may be more influential than formal education in this context.

Group Dynamics and Access to Seeds

Participation in GUGs improved seed access for both men and women, though gendered differences were evident. A higher proportion of male members (51.4%) reported a significant increase in seed access, compared to 43.2% of women. Nevertheless, 46.5% of female members acknowledged at least slight improvements, suggesting that GUGs can positively influence women's access, albeit to a lesser degree.

Requests for seeds through GUGs also increased substantially following group engagement. Among women, requests made once a year rose from 4.9% to 25.5%, while requests two to three times a year increased among men from 21.6% to 37.8%. The most frequently requested crop was sorghum, likely reflecting its promotion through the current project. However, maize and finger millet also featured prominently, indicating wider demand that could inform future genebank outreach.

The Role of Group Meetings in Capacity Building

Beyond seed distribution, GUGs served as critical sites for farmer learning, experimentation, and collaboration. Farmers reported that meetings allowed for comparative assessments of genebank and local seed varieties, exchange of planting techniques, and access to informal credit mechanisms like table banking. These interactions contributed to a broader sense of cohesion and mutual accountability within the groups, strengthening their collective efficacy.

From a socio-economic standpoint, GUG meetings fostered valuable linkages to donor-funded projects and market opportunities, particularly through pooled harvests and joint bargaining. The meetings also functioned as platforms for intergenerational knowledge transfer. Older farmers, who made up a significant proportion of group

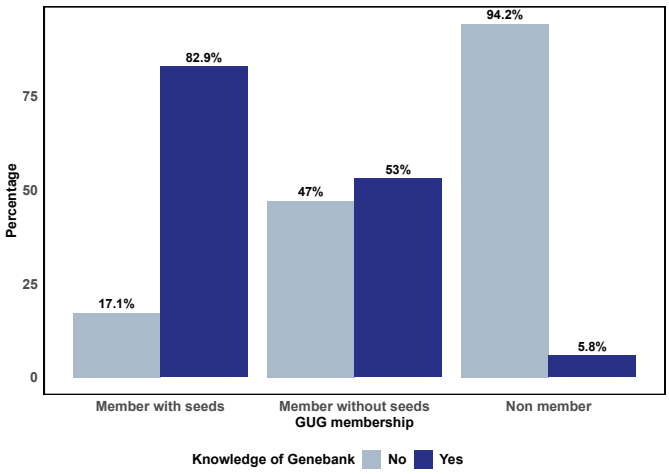

Figure 1. The levels of farmer awareness of the existence of the national genebank

BOX 3 Germplasm User Groups

Germplasm user groups (GUGs) are locally organized farmer collectives designed to foster collaboration, knowledge sharing and access to crop diversity in partnership with national genebanks. Developed with support from the Seeds for Resilience project, GUGs facilitate mutual learning and seed exchange tailored to local contexts. Their flexible structure allows adaptation to diverse social and agroecological conditions, making them effective conduits between genebanks and smallholder farming communities.

BOX 4 The Genebank Impacts Fellowship | Tobias Okando Recha

The opportunity to serve as a Seed for Resilience Impact Fellow at the Crop Trust offered me a transformative experience. Unlike my previous roles, this fellowship immersed me in a holistic, interdisciplinary research environment where I was equipped with both the theoretical frameworks and practical skills needed to assess impact comprehensively.

The Crop Trust team provided hands-on mentorship and structured support. I gained in-depth exposure to designing case studies, from conceptualizing research questions and identifying problems, to grounding the work within a clear theory of change and applying statistically sound methodologies. I was trained in mapping study areas, entering the field, recruiting and training enumerators, and ensuring high-quality data collection through digital tools.

The Impact Research Fellowship is not just a training program; it is a rigorous, skills-based initiative designed to strengthen researchers' ability to undertake large, complex, and interdisciplinary projects.

membership, shared agronomic practices and varietal experiences with younger farmers, helping to build continuity and resilience in farming communities.

Operational and Structural Challenges

Despite these benefits, GUGs face notable challenges. Limited seed availability from the genebank was a commonly cited constraint, especially in light of the high demand for diverse and adaptive varieties. Organizational shortcomings within the groups—such as poor leadership, weak time management, and internal mistrust—also undermined cohesion and operational efficiency. Younger farmers were often disengaged, and women faced subtle barriers to leadership and participation.

These challenges mirror findings in other parts of sub-Saharan Africa, where the success of farmer collectives often hinges on strong governance structures, inclusive practices, and external facilitation. In Kenya, the capacity of GUGs to function effectively as intermediaries is dependent not only on internal dynamics but also on the responsiveness of the genebank and its ability to meet local seed needs.

Recommendations

For Germplasm User Groups

Strengthen internal leadership and governance. GUGs should adopt transparent elections and decision-making protocols to build trust and accountability among members.

Photo 1. Meeting of Asiobu Community-Based Organization farmers to discuss the use of sorghum, varietal diversity, and group dynamics in Busia County. Photo: Tobias Okando Recha

Photo 2. Farmers evaluate different sorghum accessions growing at a demonstration field at the Kenya Agriculture and Livestock Research Organisation (KALRO) training centre in Busia, Western Kenya. The demonstration day was part of the Seeds for Resilience project. Photo: Neil Palmer for the Crop Trust.

Enhance inclusivity. Deliberate strategies to involve youth and women – through mentorship, incentives, and shared responsibilities – can address participation gaps.

Diversify seed portfolios. While maize, sorghum and beans remain central, expanding access to alternative crops that improve resilience to environmental challenges can improve the relevance of GUG activities.

Promote knowledge sharing. Meetings should continue to serve as forums for comparing varietal performance, exchanging agronomic techniques, and discussing adaptation strategies.

Facilitate collective resource acquisition and group savings: GUGs can leverage their collective structure to access agricultural inputs more affordably and efficiently. Implementing group savings schemes like table banking – where members pool funds and offer each other low-interest loans – can strengthen financial resilience, enhance cooperation, and support timely investment in farm productivity and household needs.

For the National Genebank of Kenya

Expand outreach efforts. Use radio, television, and mobile-based platforms to disseminate information about genebank services, especially targeting non-GUG farmers and younger demographics.

Improve seed supply logistics. Strengthen mechanisms for timely and equitable seed distribution, particularly in high-demand periods and in underserved areas.

Respond to farmer preferences. Tailor seed offerings based on region-specific demand, ensuring that promoted varieties align with farmer needs and environmental conditions.

Conclusion

The Kenyan case reinforces the value of locally organized groups in extending the reach of national genetic resources. While GUGs offer clear benefits in terms of seed access, knowledge transfer, and community resilience, they also require institutional support, strong internal organization, and inclusive participation to realize their full potential. By recognizing the complementary roles of *ex situ* conservation and farmer-led experimentation, national genebanks and user groups together can lay the foundation for more equitable, resilient, and diverse agricultural systems in Kenya and beyond.

Additional details can be found in the overview paper: Heaton et al., 2025

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