



Strengthening Genebank–Farmer Linkages in Nigeria

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Introduction

In Nigeria, the Seed for Resilience project has taken root through a collaborative effort led by the National Centre for Genetic Resources and Biotechnology (NACGRAB). This initiative aims to enhance the sustainable use of plant genetic resources by connecting national genebanks with smallholder farmers via Germplasm User Groups (GUGs). Operating across three distinct agro-ecological zones—Oyo, Niger, and Kano—the project has focused on participatory varietal selection (PVS), seed diversity fairs, and farmer-led seed multiplication of sorghum and cowpea.

This brief synthesizes the key findings from a multi-year impact assessment conducted between 2021 and 2024.

Methodology

The evaluation adopted a mixed-methods approach, combining quantitative surveys (n=324), qualitative interviews (n=24) and focus group discussions (n=21). A total of 477

SUMMARY

This brief examines how Nigeria’s national genebank, through germplasm user groups, has enhanced smallholder access to diverse, resilient crop varieties. It highlights improved seed use, crop diversity, livelihoods and climate resilience. Findings underscore the importance of community engagement in bridging bridges between genebanks and farmers for sustainable agricultural development.

farmers were sampled across the three states, with 277 GUG members and 200 non-members acting as a control group. Data were collected on access to genetic resources, changes in crop diversity, household livelihoods and perceptions of the genebank’s value. Surveys were conducted in the local languages (Yoruba, Nupe and Hausa) to ensure inclusivity and accuracy in data collection.

BOX 1 National Centre for Genetic Resources and Biotechnology (NACGRAB)

The National Centre for Genetic Resources and Biotechnology (NACGRAB), established in 1987 in Ibadan, Nigeria, serves as the country’s principal institution for conserving plant genetic resources. Its genebank houses over 13,800 accessions encompassing key crops like sorghum, pearl millet, cowpea, maize and groundnut. NACGRAB employs diverse conservation methods, including seed storage, *in vitro* techniques, and a 12-hectare field genebank that maintains over 300 species, notably indigenous and underutilized plants.

Collaborating with initiatives like the Seeds for Resilience project, NACGRAB enhances the utilization of conserved germplasm by farmers, promoting climate-resilient agriculture. The center also digitizes its collections through platforms like Genesys, improving global accessibility.



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.

Formation and Activities of GUGs

The engagement model centered on establishing GUGs within diverse farming communities. Supported by a technical working group of scientists, breeders, and researchers, the GUGs participated in seed diversity fairs and PVS trials involving 150 accessions each of sorghum and cowpea. Following the initial evaluations on research plots, preferred cultivars were introduced in farmers' fields for on-farm trials, and successful varieties were multiplied and redistributed among both GUG and non-GUG members.

Regular meetings, knowledge exchange forums, and visits from extension agents have solidified the GUGs as key platforms for knowledge transfer, community networking, and seed distribution. Women made up 27.5% of GUG participants, highlighting efforts towards more inclusive access, although gender disparities persist.

Key Findings

Enhanced Awareness and Use of Genebank Resources

GUG membership significantly increased farmers' awareness and use of the national genebank. While 96% of GUG members knew about NACGRAB, only 21.7% of non-members had heard of it. Similarly, 86.5% of GUG members reported plans to grow seeds obtained from the genebank on more land in the next five years, compared to 43.7% of non-GUG members (Figure 1). This points to a strong ripple effect initiated through GUG participation.

Improved Seed Access and Diversity on Farms

More than 60% of GUG members reported growing more varieties post-intervention, compared to a baseline of mono-cropping or reliance on traditional varieties. Farmers noted changes in agronomic practices, crop type, and seed sources. Importantly, genebank seeds were perceived as superior in terms of yield, pest resistance, early maturity, and resilience to climate variability.

Resilience and Climate Adaptation

Participation in GUGs helped buffer farmers against environmental stress. Although 76.9% of all respondents experienced extreme weather in the past year, GUG members reported greater resilience and less crop damage. Varieties selected through PVS were often drought-tolerant, pest-resistant, and high-yielding, helping to stabilize production.

Livelihood and Income Benefits

Agriculture accounted for 71.6% of household income among respondents. Notably, 35.1% of GUG members derived 80–100% of their household income from farming, compared to just 18.8% of non-members. The improved yields and reduced input costs associated with high-performing genebank varieties directly contributed to this shift.

Knowledge Exchange and Community Impact

GUG members cited that knowledge sharing was a major benefit. About 60% had shared learnings from user group meetings, and 75.6% had passed on seeds to other farmers. This dissemination was not limited to formal exchanges; seed sharing through kinship and friendship networks significantly broadened the genebank's reach, creating a de facto community seed system.

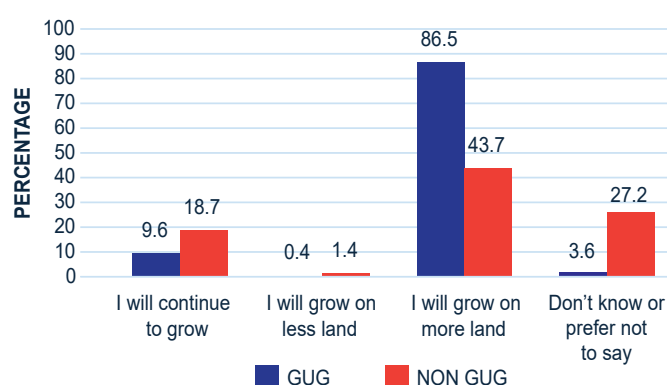


Figure 1. Utilization of genebank seeds in the next five years

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 | Bisola Khadijat Oladimeji

My experience as an impact fellow has broadened my horizons and sharpened my interpersonal skills. I now better understand the challenges farmers face in accessing genebank materials particularly in remote areas and also the need for the genebanks to regenerate true to type seeds and be able to distribute to farmers in these areas. Our work to increase crop diversity will lead to improved livelihoods.

I am grateful to Crop Trust for the training. I am thankful to the Seeds for Resilience team engaged in this study who helped me address potential biases and limitations and helped to navigate the work effectively. This helped me ensure data accuracy and reliability. I gained better understanding of the importance of data in informed decision making. I want to specially thank the Director of the NACGRAB, Doctor Anthony Ugochukwu Okere and the staff of NACGRAB for their unwavering support.



The skills I gained have made me better in other aspects of my job and life in general. I have been applying the skills to my job and will be able to apply it to future projects.

Changing Perceptions of Crop Conservation

Initial skepticism about the genebank's relevance gave way to appreciation as farmers witnessed the benefits of preserved traditional and underutilized varieties. The reintroduction of old favorites – such as yellow sorghum and climbing cowpea – was particularly valued. These varieties, once thought extinct, now play a role in dietary diversity, cultural preservation, and niche market development.

Challenges Persist

Despite strong outcomes, challenges remain. Farmers cited difficulties accessing sufficient quantities of seed, late seed delivery and limited exposure to the full range of crops stored at NACGRAB. Broader issues – such as climate stress, limited infrastructure and insecure land tenure – also affect adoption and scaling potential. Notably, fe-

male participation, though improving, remains constrained by socio-cultural norms.

Insights from Focus Groups and Interviews

Focus group discussions revealed that farmers were particularly motivated by the opportunity to test and choose their own preferred varieties, reversing the top-down model of seed introduction. Many described the experience of visiting the genebank or participating in seed diversity fairs as transformative. The ability to observe 150 accessions and select those suited to local conditions empowered them to make informed agronomic decisions. Knowledge gained included pest and disease management, seed storage techniques, and sustainable agronomic practices such as crop rotation and intercropping.



Photo 1. Abubakar Alhassan, impact enumerator collecting data on kobol tool of female respondents of some GUG members of Nnaweyegi community of Niger State, Nigeria.



Photo 2. Sunday Osewa (Impact enumerator), Bisola Oladimeji (Impact fellow) and GUG members during a focus group discussion in Igbo-Ora town of Oyo State, Nigeria.

Recommendations

Strengthen Community-Based Seed Multiplication

To scale adoption and reduce dependency on the genebank for direct seed supply, GUGs should be supported to function as decentralized seed producers. This could include capacity-building in quality seed production and local distribution systems.

Enhance Participation of Women and Youth

Deliberate strategies are needed to overcome gendered barriers to GUG participation. This includes flexible meeting times, child-care support during events, and targeted outreach to women's farmer groups.

Increase Genebank Visibility and Crop Range

Expanding the range of crops disseminated and improving farmer awareness of available accessions can broaden the appeal and utility of the genebank. Local language communication tools and digital catalogues could assist in this.

Improve Infrastructure and Timeliness of Seed Delivery

More efficient logistics and better planning are essential to ensure timely seed distribution. Local storage hubs managed by GUGs might alleviate some of these delays.

Embed Monitoring and Farmer Feedback Loops

A participatory monitoring framework that includes seasonal feedback from GUGs could help refine seed selection, improve future varietal releases, and adjust extension support accordingly.

Conclusion

The Seeds for Resilience project in Nigeria demonstrates the critical role of GUGs in bridging the gap between national genebanks and smallholder farmers. Through participatory varietal selection, seed multiplication and sustained engagement, GUGs have increased access to crop diversity, improved livelihoods and bolstered climate resilience. These outcomes reinforce the importance of community-centered approaches for achieving sustainable agricultural development and genetic resource conservation.

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

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