# Roots of Resilience:

## The Preservation of Traditional Seeds in Zambian Agriculture

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# Abstract

Preserving indigenous seeds and crops in Zambia is vital for food sovereignty, cultural identity, and agricultural resilience. While traditional crops offer important nutritional and ecological benefits, they have often been overlooked in favour of hybrid seeds. Organizations like the Zambia Agricultural Research Institute (ZARI) and the National Plant Genetic Resources Centre (NPGRC) have started conservation efforts, but limited funding and policy preferences have reduced their impact. To address this, it is important to strengthen community seed banks, support farmer-led research, and include indigenous crops in public food security programs. Protecting farmers' rights to save, exchange, and replant seeds, along with targeted subsidies and participatory breeding, can help smallholders, protect biodiversity, and improve nutrition. Promoting indigenous crops gives Zambia a way to build a resilient, inclusive, and independent agricultural system that supports rural communities and national food security.



*Keywords: Indigenous seeds: Food sovereignty: Biodiversity: Resilience: Farmer rights: Zambia*


# 1. Introduction

Across Africa, smallholder farmers support local food systems by using a variety of seeds that reflect generations of adaptation and cultural tradition. Traditional or indigenous seeds[1] are key to food sovereignty because they help farmers stay independent from corporate seed markets and outside inputs (De Schutter, 2009; De Schutter, 2011; De Schutter, 2014). Traditional seeds in African communities are more than just products, they are part of a shared heritage, exchanged and kept alive through social networks that strengthen cultural identity and ecological resilience (Kameri-Mbote, 2003; Kameri-Mbote, 2005; Kameri-Mbote, 2010). Traditional or indigenous crops are closely tied to local farming systems, supporting nutrition and livelihoods while reducing the need for outside inputs (Simon, 2020). These scholars show that although modern seed companies offer hybrids that boost yields, they also create dependence on fertilizers, pesticides, and irrigation, which can weaken the ability of local food systems to adapt.

In Zambia, the tension between modern and indigenous seed systems is clear. Agriculture is dominated by smallholder farmers, who make up over 70% of rural households and depend heavily on seed systems for their livelihoods (Chileshe, 2019; Banda, 2022). Traditional crops such as sorghum, millet, cowpeas, and traditional groundnut varieties have been cultivated for generations. These crops offer drought tolerance, nutritional diversity, and cultural continuity (Zulu, 2020; Siatwiinda et al., 2025; Ziba, 2025). Yet, government policies and subsidies have prioritised hybrid maize. This has created dependency on commercial seed companies and external inputs, while marginalising indigenous crops. The lack of preservation initiatives and limited institutional support threatens the survival of these traditional varieties. Many Zambians lose access to culturally significant foods, and dietary diversity narrows (Nkhoma, 2025; Kabuya, 2025).

*[1] Traditional or indigenous crops/seeds are farmer-managed plant varieties, often landraces, cultivated and preserved across generations; they embody genetic diversity, resilience to local conditions, and cultural significance, maintained through saving, replanting, and community exchange rather than reliance on commercial seed systems.*

This neglect forms the central case for this article: Zambia needs a complementary seed system that integrates modern productivity gains with the resilience, sovereignty, and biodiversity upheld by indigenous seeds.

## 2. Rationale

The erosion of traditional seeds and crops poses serious challenges for Zambia's agricultural system and cultural identity. Farmers now depend on hybrid maize, which requires annual purchase and costly inputs like fertilisers and pesticides. This dependency raises production costs and undermines farmer autonomy (Hichaambwa & Jayne, 2014). At the same time, traditional crops that once sustained communities during droughts are underfunded and underutilised.

The persistence of this problem stems from policy bias, weak institutional support, and limited investment in farmer-led seed systems. Without adequate preservation, Zambia risks losing genetic diversity, traditional knowledge, and culturally significant foods. This threatens not only food security but also the resilience of rural communities in the face of climate variability (Zulu, 2020; Ziba, 2025).

## 3. Proposed Solutions

Addressing the erosion of indigenous seed systems in Zambia requires coordinated action that strengthens both community and institutional efforts. Expanding seed banks across districts, supported with training, infrastructure, and funding, will secure diverse indigenous varieties and preserve them for future generations. Farmer-led programs that scale up ZARI's research outputs can ensure traditional crop innovations reach rural communities directly, while integrating indigenous foods into public initiatives such as school feeding programs will diversify diets, reduce reliance on hybrid seed varieties, improve nutrition, and reinforce cultural heritage.

Sustaining these efforts calls for legal and institutional reforms that protect farmers' rights to save, exchange, and sell seeds, while safeguarding indigenous knowledge. Government support and agricultural extension services should incentivize

traditional crop cultivation alongside hybrids, making indigenous crops economically viable. Collaboration among government, research institutions, civil society, and local seed companies is essential to empower farmers, preserve biodiversity, and strengthen Zambia's food security for the future (Mwanza et al., 2024; UNICEF Zambia, 2024).

## 4. Policy Direction

Government institutions such as the Zambia Agricultural Research Institute (ZARI) and the National Plant Genetic Resources Centre (NPGRC), among others, play a critical role in promoting crop diversity. ZARI conducts research on legumes and cereals, collaborating with international partners to improve traditional varieties while preserving resilience traits (Chileshe, 2019; Banda, 2022). The NPGRC, housed at Mount Makulu in Chilanga, conserves thousands of accessions of indigenous crop varieties, ensuring long-term preservation of Zambia's genetic resources. These initiatives show that the government has recognised the importance of crop diversity, but their impact remains limited because national agricultural policy has historically prioritised hybrid maize. This emphasis has left indigenous crops underfunded and underutilised, despite their proven role in climate resilience, nutrition, and cultural continuity.

Civil society organisations such as the Zambia Alliance for Agroecology and Biodiversity (ZAAB) and local seed companies like Kamano Seed have attempted to fill this gap, but their reach remains modest compared to the dominance of commercial seed systems (Kabuya, 2025; Zulu, 2020; Ziba, 2025). Adequate policy direction would mean scaling up ZARI's research outputs into farmer-led seed banks, expanding NPGRC's conservation work into community-based programs, and integrating indigenous crops into national food security strategies. It would also require protecting farmer rights, including the ability to save, exchange, and replant seeds without restrictions from seed laws or corporate patents (Hichaambwa & Jayne, 2014; Chileshe, 2019). Furthermore, the government should provide targeted subsidies and extension services for traditional crops, promote their inclusion in school feeding programs, and invest in participatory breeding that combines

resilience traits with productivity. Sustainable action requires collaboration between government, research institutions, NGOs, and farmers. Only through such coordinated efforts can Zambia safeguard its indigenous seed heritage while building a resilient and inclusive agricultural system.

## 5. Expected Results

If these actions are implemented, Zambia can anticipate significant improvements across its agricultural system and rural communities. Indigenous crops will strengthen smallholder farmers' ability to withstand droughts and erratic rainfall, thereby enhancing resilience in the face of climate variability (Mwanza, Nsenduluka & Shumba, 2024). By diversifying production beyond maize, households will gain access to nutritionally rich foods, reducing micronutrient deficiencies and improving overall dietary health (UNICEF Zambia, 2024). Strengthening farmer-managed seed systems will reduce dependency on commercial seed companies, lowering production costs and restoring autonomy to rural farmers. This empowerment will allow communities to sustain their livelihoods without the burden of recurring input purchases.

Equally important, traditional foods will continue to serve as cultural anchors, reinforcing Zambia's identity, hospitality, and community life. At the national level, diversified seed systems will mitigate vulnerability to climate shocks and market volatility, ensuring more stable food supplies and contributing to long-term food security. Such changes will not only safeguard biodiversity but also promote rural development by aligning agricultural practices with ecological sustainability and cultural preservation (Siatwiinda et al., 2025). In this way, the promotion of indigenous crops becomes both a practical solution to agricultural challenges and a pathway to preserving Zambia's heritage for future generations.

## 6. Conclusion

The preservation of indigenous seeds and crops in Zambia is both an agricultural and cultural imperative, central to food sovereignty and national resilience. Institutions such as ZARI and the NPGRC have laid important foundations for crop diversity, but their impact has been constrained by policy bias toward hybrid maize and limited investment in traditional crops. Civil society organizations and local seed companies have attempted to bridge this gap, yet their reach remains modest compared to commercial seed systems.

A sustainable future requires strengthening community seed banks, expanding research into farmer-led programs, and integrating indigenous crops into public food security initiatives. Protecting farmer rights, alongside targeted subsidies and participatory breeding, will enhance resilience and productivity. If implemented, these measures will safeguard biodiversity, empower smallholder farmers, improve nutrition, and preserve cultural heritage. Ultimately, promoting indigenous crops offers Zambia a pathway to a resilient, inclusive, and sovereign agricultural system that secures rural livelihoods and strengthens national food security for generations to come.

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