



TECHNICAL BRIEF

Toward a National Agenda for Neglected and Underutilized Species in Ghana

Authors

Daniel Nyadanu¹; Ronnie Vernooy²

1 Cocoa Research Institute of Ghana / NUS Network, Ghana

2 Bioversity International, the Netherlands

 Bioversity International / R. Vernooy



 Selling NUS at the Nkurakan market

Background

In October 2021, a *National Roundtable on the conservation and sustainable use of Neglected and Underutilized Species (NUS)* was held in Accra, organized by the NUS Network of Ghana, the Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT), and the Embassy of the Kingdom of the Netherlands in Ghana. The Roundtable brought together representatives of civil society, government and the private sector, who drafted an outline of a national action plan for NUS (Vernooy and Nyadanu, 2021). In the same year, a coalition of regional and international research and development organizations published the *Global Manifesto on Forgotten Foods*, a call for concerted action to safeguard and promote forgotten foods through innovation, policy development and research. The Manifesto placed smallholder farmers at the center of the action agenda as the producers and custodians of forgotten foods and related knowledge and as co-creators of new knowledge and practice (AARINENA et al., 2021).



 National consultation workshop banner / NUS Network, Ghana

About NUS

NUS, also called orphan/forgotten/opportunity crops, include cultivated, semi-domesticated and wild species and traditional varieties that have been produced and consumed for ages for their food, fiber, fodder, oil, and medicinal properties, but whose roles and importance have been undervalued and neglected by researchers, policy makers and markets. NUS are often nutrient rich and contribute to food and nutrition security, income generation, good health and wellbeing. They are embedded in cultural and ethnic identities and traditions, which have been passed on over many generations (AARINENA et al., 2021). NUS are an essential part of agricultural systems in the global south and part of daily eating habits for many rural communities. NUS contribute to food security by increasing food availability during the lean period and maintaining production under harsh conditions and on marginal soils. They enable communities to engage in diversified income-generating activities throughout the year while buffering seasonal, social and climate driven variability. The early maturation and shorter growth cycle of some NUS also contribute to food security. Many NUS exhibit higher tolerance to stresses, such as drought, pests and diseases, compared to mainstream crops. Thus, they play an important role in making food systems more resilient to climate change.

NUS are embedded in farmer-managed seed systems in which farmers maintain control over seeds they use, exchange, multiply and conserve based on socio-cultural and socio-economic relationships. This requires the development of localized, flexible approaches that combine farmer-managed and community-based seed sharing with formal scientific and technical support. In Africa, farmer-managed seed systems, which include custodian farmers, community seed banks and community-based seed businesses, supply a very large part of the total seeds used in agriculture, notably to smallholder farmers, but policy and legal support in many countries for these systems is absent or deficient (Vernooy et al., 2023). Many national policies, including plant breeders' rights and seed certification laws, are designed for formal systems and don't account for the needs of the farmer-managed systems and traditional varieties. However, in recent times, some attention has been paid to farmer-managed seed systems. In Nigeria, the government has recently started to recognize the importance of farmer- and community-managed seed systems, a positive development (de Boef et al., 2025).

The multiple benefits of NUS have been well described: contributing to agro-ecosystem services including the conservation of agrobiodiversity and associated (traditional) knowledge and culture; agronomic and environmental benefits; food, health and nutrition; community development; employment and income generation (Ndlovu et al., 2024; Glatzel et al., 2025).



📷 NUS found in Ghana: garden egg (*Solanum aethiopicum*); bitter melon vine (*Momordica charantia*); sour apple (*Annona squamosa*); cocoyam (*Colocasia esculenta*).

Despite the growing interest in NUS around the world, recent research highlights the need for more West African studies on how policies and governance can support the conservation and promotion of NUS in the region. This research argues for inclusion of NUS in sectoral policies, more support for NUS marketing and consumption, and adoption of best practices from around the world to mainstream NUS in food systems (El Bilali et al., 2025).

The National Agenda for Neglected and Underutilized Species (NUS) in Ghana aims to fill the identified policy gap. It is based on a national consultation process facilitated by the NUS Network of Ghana and the Alliance of Bioversity International and CIAT with the support of the Embassy of the Kingdom of the Netherlands in Ghana. The National Agenda has six interrelated action areas outlined below.

Recent NUS-focused and related policy developments in Ghana

NUS in Ghana are primarily owned, conserved and used by local farmer communities based on a long history of on-farm cultivation and collecting from the wild. Farming communities maintain ownership through conservation, saving, exchange and, to a limited extent, local sales of farm-saved seeds. The National Genebank of Ghana, housed by the Council for Scientific and Industrial Research-Plant Genetic Resources Institute (CSIR-PGRI), conserves germplasm of crops, including NUS, from Ghana and abroad. This collection is held in public trust and small amounts of seeds, including NUS, are distributed for free for research and direct use by farmers. Among others, the National Genebank receives support for its work on NUS through the Building Opportunities for Lesser-known Diversity in Edible Resources (BOLDER) initiative implemented by the Crop Trust with funds from the Government of Norway (<https://bold.croptrust.org/focus-areas/opportunity-crops/>).

A 2021 literature review on NUS in Ghana, which examined national policy support for these crops, revealed that the country lacked an enabling environment for NUS development. The study noted that government, research, and extension services paid minimal attention to NUS and there was little institutional collaboration toward developing a national NUS policy or agenda (Vernooy, 2021). NUS did not receive much attention from public policies and investments. Agricultural policies were often biased towards commercial crops (cassava, maize, rice) with little to no focus on NUS (Nyadanu et al., 2016). For example, input subsidies (e.g. fertilizer and improved seeds) for commercial crops were promoted to let farmers abandon NUS.

However, in recent years, some progress has been made and the conservation and sustainable use of NUS have gained some traction at the national level. NUS are being integrated to some extent into recent agricultural, biodiversity, climate change adaptation, and nutrition policies. In particular:

- The *National Biodiversity Strategy and Action Plan (NBSAP II, 2016–2020)* recognizes the need to conserve traditional varieties and indigenous knowledge (MESTI, 2016).
- The *National Climate Change Adaptation Plan (EPA, 2021)* highlights crop diversification with local varieties as a resilience measure.

- The *Planting for Food and Jobs Phase II (2023–2028)* framework emphasizes diversification and promotes indigenous crops.
- The *Food and Agriculture Sector Development Policy (FASDEP II)* and the *Medium-Term Agriculture Sector Investment Plan (METASIP III)* include objectives on sustainable intensification and value addition for indigenous crops (MoFA, 2023).
- A recent *Ghana Seed Sector Assessment* identified eight areas for intervention to transform the Ghanaian seed sector, among which are the promotion of production and consumption of African leafy vegetables; support for the local production of root and tuber crops; and strengthening the production of quality seed in the informal and intermediary seed systems of (Bonnand et al., 2024).
- The *African Vegetable Rescue Plan 2025–2035* has been developed to unlock the potential of indigenous and indigenized vegetables of the African continent through a holistic ex situ and in situ conservation strategy. The plan also aims to promote their consumption by incorporating African vegetables in school feeding programs and homestead production (World Vegetable Center, 2024). The Council for Scientific and Industrial Research-Plant Genetic Resources Institute (CSIR-PGRI) in Ghana contributed to the Plan.



📷 NUS for sale at the market: banana (*Musa sp.*), Aidan fruit locally known as prekesse (*Tetrapleura tetraptera*)

- The Feed Ghana programme (2025-2028) aims to accelerate the transformation of the agricultural sector and provide more food to the people and raw materials to agro-industry, thereby increasing exports and reducing imports. The programme gives priority to 10 food crops and their value chains, two of which are NUS: plantain and yam. Of the nine subprogrammes, the one on institutional farming (at schools, prisons, security agencies, faith-based groups) could potentially have a NUS dimension (MoFA, 2025).

These initiatives collectively provide entry points for mainstreaming NUS in national planning and financing instruments.

Challenges

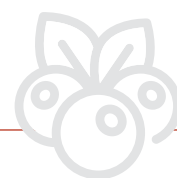
Despite the progress made at policy level, work on NUS remains hampered by several, interrelated challenges (Mmbando, 2025):

- Lack of knowledge about plant properties (genetic makeup, growth cycle, nutritional and medicinal values), proper management practices (e.g. input supply, spacing, harvesting time) and uses.
- Undervalued or misappraised (e.g. considered to be poor people's food).
- Gender-blind or gender-insensitive initiatives and interventions that ignore the role of women as custodians, managers, users, and sellers of NUS. Women play a central role in conserving, cultivating and marketing of NUS. They act as custodians of traditional knowledge, seed systems and are innovators in the kitchen. Promoting NUS can contribute to women's empowerment.
- Weak seed systems.
- Weak and cumbersome food and seed authenticity protocols.
- Poor extension and research due to lack of knowledge, interest and incentives.
- Poor processing techniques, infrastructural facilities (storage, drying) and support services.
- Non-existing or weak value chains and marketing opportunities.
- Limited integration of NUS into national agricultural research agendas and extension curricula, which continue to prioritize major cereals and export crops (Nyadanu and Lowor, 2024).

- Weak coordination among NUS stakeholders, including research institutes, traditional authorities, and private actors, leading to fragmented efforts and duplication (Adomako et al., 2025).
- Lack of- or misoriented, incoherent policy and institutional support (e.g. absence of a national policy or strategy on NUS; subsidies for a few monocrops and export crops).
- Deforestation, soil erosion, environmental pollution.
- Impact of climate change on cultivation (e.g. new pest and diseases, drought, flooding).

To address these challenges, six interrelated national action areas are presented.

Six national action areas



1

Strengthening the traditional and scientific knowledge base

- Design and carry out a series of studies of the genetic and phenotypical characteristics, the chemical composition, the agronomic, environmental, nutritional and socio-economic values, and the post-harvest and value addition management of NUS found in Ghana, in particular of those species that have not yet been or hardly been studied.
- Compile and publish a national NUS catalogue that includes ethno-botanical uses and develop a system to maintain the catalogue up to date.
- Disseminate the NUS catalogue through the national educational system and promote its use in relevant curricula, courses and practical activities (e.g. school gardening).
- Develop and regularly update a compendium of publications on NUS in Ghana published on websites and in journals.

2

Rescuing and conserving NUS ex situ and in situ

- Protecting and restoring (degraded) agro-ecosystems and natural habitats where NUS are cultivated and grow.
- Support the NUS conservation activities of the National Genebank and establish and support community seed banks to conserve, exchange and promote the responsible consumption of local NUS.
- Adopt a protocol for collaboration between the National Genebank and community seed banks on the conservation and sustainable use of NUS.
- Increasing NUS population sizes to maintain genetic diversity and adaptive capacity and select climate-resilient NUS for multiple-location testing and multiplication.
- Training farmers, for example in Farmer Field Schools, in using climate-smart conservation and sustainable use practices.

3

Resilient seed systems: selection, management, multiplication and improvement

- Develop simple-to-use guidelines for NUS seed/seedling management at community and field levels, e.g. through the establishment of community field banks, nurseries and seed gardens.
- Development of breeding programmes and pipelines to develop improved varieties and resolve genetic constraints of NUS.
- Use citizen science methods, such as the triadic comparison of technologies approach developed by the Alliance of Bioversity International and CIAT, to support demand-driven crop improvement (plant breeding) of NUS (Voss et al., 2025).
- Develop training materials for and support community-based quality seed production, including the maintenance of seed purity, and marketing of NUS seeds/seedlings.
- Engage seed traders to increase the demand for production and distribution of quality NUS seed.
- Training in and regular use of seed and food authentication techniques and (digital) tools to avoid fraudulent practices.

4

Harvesting, value addition and distribution

- Integrate NUS into crop diversification strategies to decrease the dependence on high-input crops and increase the resilience of food systems while conserving local biodiversity and related knowledge.
- Collaborate with farmers and their organizations in developing low-cost solutions to challenges related to quality seed(ing) production, cultivation, harvesting, processing (for example, solar dryers), preservation, packaging and marketing of NUS.
- Build high-quality community warehouses to store NUS harvests, managed by farmer groups.
- Create better access to markets through short supply chains, alternative retail structures and new product development (supported by novel digital solutions).
- Provide financial support, such as micro-credit, to small-scale and community-based NUS processors.
- Establish public-private partnerships to foster product innovation and investment in NUS-based enterprises.



📷 NUS used for a healthy beverage: sobolo (*bissap*) drink made with African rosemallow (cranberry hibiscus) leaves (*Hibiscus acetosella*), ginger, pineapple and herbs.

5

Responsible consumption and use

- Raise awareness about and promote the responsible consumption and use of NUS in public institutions such as ministries, hospitals, colleges and schools through awareness raising, education, and public procurement schemes.
- Promote the integration of NUS in farming and gardening (i.e. mixed cropping systems) and stimulate home-consumption.
- Promote and demonstrate the use of NUS in culinary activities, food fairs, dining establishments, and school gardens.
- Support research on value addition activities (e.g. small agri-business development) for new uses of NUS for health, nutritional, ornamental, and medicinal purposes.
- Sensitize farmers about the economic value and potential of NUS.

6

Creating an enabling environment through education, extension, policy and research

- Develop and invest in a national research and capacity building agenda for NUS which could be implemented under a multi-sectoral platform that promotes and supports NUS activities in education, extension, policy and research.
- Implement existing policies, laws and regulations that recognize, promote, reward and support NUS cultivation, consumption and use.
- Include NUS in national frameworks, policies, programs that address agriculture, food and nutrition security.
- Recognize and empower NUS custodian farmers and community seed banks to become champions of NUS from local to national levels and support their rights to benefit from the conservation and sustainable use of NUS.
- Promote and support youth and women engagement in NUS value chains through targeted capacity building and access to finance.
- Train extension agents in all aspects related to NUS; and introduce NUS in the school curriculum from the very start.
- Develop digital tools (e.g., NUS identification App, NUS information portals, mobile-based seed exchange platforms) for data gathering, sharing and traceability.
- Introduce and promote NUS on national/local TV and radio and social media through talks, interviews, recipes, stories and farming videos.



References

- AARINENA (Association of Agricultural Research Institutions in the Near East and North Africa); APAARI (Asia-Pacific Association of Agricultural Research Institutions); CFF (Crops For the Future); FARA (Forum for Agricultural Research in Africa); GFAR (Global Forum for Agricultural Research and Innovation); Alliance of Bioversity International and CIAT. (2021). Global Manifesto on Forgotten Foods. Alliance of Bioversity International and CIAT. <https://hdl.handle.net/10568/114530>
- Bonnand J; Schaap M; Dogor M; Melomey LD. (2024). Ghana seed sector assessment. Wageningen Centre for Development Innovation, Wageningen. <https://bit.ly/4ahQTfa>
- de Boef WS; Agbara C; Belo Z; Ali A; Aladele SE; Iloh AC; Angaraway II; Omoigui LO; Osho-Langunju B; Thijssen MH. (2025). Farmer- and Community-Managed Seed Systems: inputs for a Nigerian agenda. Wageningen Social & Economic Research, Wageningen, Report 2025-098.
- El Bilali H; Rokka S; Borelli T; Calabrese GJ; Lecci S; Otieno G; Tietiambou FRS; Bteich MR; Grazioli F; Kabre B; Seindira M; Karambiri S; Nanema J; Bakasso Y; Guimbo ID; Dambo L; Nouhou B; Hima HM; Ouedraogo N; Diawara AB; Ghione A; Dianin C; Gonnella M; Acasto F. (2025). Current policies for promoting neglected and underutilized species in Burkina Faso and Niger. *International Journal of Agricultural Sustainability* 23(1). <https://doi.org/10.1080/14735903.2025.2459541>
- EPA (Environmental Protection Agency). (2021). National Climate Change Adaptation Plan. Accra, Ghana.
- Glatzel K; Maina CC; Nyishimirente A; Klemm J; Qaim M. (2025). Leveraging the potential of neglected and underutilized crops for nutrition and climate resilience. Zentrum für Entwicklungsforschung (ZEF), Bonn. <https://bit.ly/3NJa02f>
- MESTI (Ministry of Environment, Science, Technology and Innovation). (2016). Ghana National Biodiversity Strategy and Action Plan (NBSAP II). Accra, Ghana.
- Mmbando GS. (2025). The current challenges and solutions on utilizing the potential of underutilized and neglected crops for Africa's food security. *Discover Plants* 2, 163. <https://doi.org/10.1007/s44372-025-00261-w>
- MoFA (Ministry of Food and Agriculture). (2023). Planting for Food and Jobs Phase II: Strategic Plan 2023–2028. Accra, Ghana.
- MoFA (Ministry of Food and Agriculture). (2025). Feed Ghana Programme. A four-year programme for agricultural transformation (2025–2028). Accra, Ghana.
- Ndlovu M; Scheelbeek P; Ngidi M; Mabhaudhi T. (2024). Underutilized crops for diverse, resilient and healthy agri-food systems: a systematic review of sub-Saharan Africa. *Frontiers in Sustainable Food Systems* 8:1498402. <https://doi.org/10.3389/fsufs.2024.1498402>
- Nyadanu D; Lowor S. (2024). Integrating neglected and underutilized species into Ghana's agricultural research and education systems. *Ghana Journal of Agricultural Science* 59(2), 45–57.
- Nyadanu D; Aboagye LM; Akromah R; Dansi A. (2016). Agrobiodiversity and challenges of on-farm conservation: the case of plant genetic resources of underutilized crop species in Ghana. *Genetic Resources and Crop Evolution* 63: 1397–1409. <https://doi.org/10.1007/s10722-015-0327-2>
- Vernooy R. (2021). Roles, trends and challenges of neglected and underutilized species in Ghana. A review of the literature. Bioversity International, Rome. <https://hdl.handle.net/10568/116206>
- Vernooy R; Nyadanu D. (2021). Roundtable: The Conservation and Sustainable Use of Neglected and Underutilized Species (NUS) in Ghana -Highlights-. The Alliance of Bioversity International and CIAT, Rome.
- Vernooy R; Adokorach J; Kimani D; Marwa A; Mayoyo A; Nyadanu D. (2023). On the margins: A review of policies and laws in support of farmer-managed seed systems in Africa. ISSD Africa, and Alliance of Bioversity International and CIAT, Rome. <https://hdl.handle.net/10568/128580>
- Voss R; de Sousa K; N'Danikou S; Shango A; Aglinglo LA; Laporte M-A; Legba EC; Houdegbe AC; Diarra DdY; Dolo A; Sidibe A; Ouedraogo CO; Coulibaly H; Achigan-Diko EG; Kileo A; Malulu D; Matumbo Z; Dinnsa F; van Heerwaarden J; van Etten J; Riar A; van Zonneveld M. (2025). Citizen science informs demand-driven breeding of opportunity crops. *Plants, People, Planet* 7(6), 1700–1713. <https://doi.org/10.1002/ppp3.70035>
- World Vegetable Center. (2024). African Vegetable Biodiversity Rescue Plan (2025–2035). World Vegetable Center – Eastern and Southern Africa, African Union Commission, Crop Trust, African Union Development Agency. Arusha, Tanzania. <https://bit.ly/3YYNXqN>



📷 Tiger nut on sale

Acknowledgements

We thank all the participants of the national consultation workshop on the National Agenda for Neglected and Underutilized Species (NUS) in Ghana, which took place on the 28 October 2025 at the Council for Scientific and Industrial Research–Food Research Institute in Accra, for their constructive feedback and inputs for this document. A special thanks goes to the Embassy of the Kingdom of the Netherlands in Accra for the financial and technical support.

CONTACTS

Daniel Nyadanu
Coordinator, NUS Network Ltd.
✉ dnyadanu@gmail.com

Ronnie Vernooy
Senior scientist
Bioversity International
✉ r.vernooy@cgiar.org



nusnetworkghana.org



Kingdom of the Netherlands

government.nl



alliancebioversityciat.org



cgiar.org

The Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT) is part of CGIAR, a global research partnership for a food-secure future dedicated to transforming food, land and water systems in a climate crisis.

January 2026