



Conservation and Prioritization of Indigenous Vegetables in the Philippines

Research Brief #04

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Nutrition-related problems are a widespread challenge in the Philippines. Many factors contribute to these problems - the availability and affordability of vegetables, for example, which are jeopardized by challenges such as **seasonality** and **inconsistent yields** due to the impacts of **climate change**. **Crop improvement and on-farm diversification**, particularly using **indigenous vegetables (IVs)**, can help address these challenges, while also improving **rural livelihoods, nutrition, and food security**; and even safeguarding **local culture and tradition**.

Key Findings

Conservation initiatives and **seed supply systems** of indigenous vegetables (IVs) are mostly **small-scale**; limited in **geographical scope** and **focus crops**; and require **sustained funding**. Furthermore, **collaboration** between the formal and informal sectors on conservation and evaluation of IVs is limited.

IVs are **healthy** and **inexpensive** food alternatives to major crops that are affected by seasonality. Their **adaptability, plasticity, and resilience** to biotic and abiotic stresses also provide farmers with the needed coping strategies to confront climate change. Despite their many advantages, **production** of IVs is **small-scale** and in **scattered** areas.

Diversity studies in plant genetic resources have helped to identify IV accessions with favorable traits (such as high nutritional quality) and support the development of locally adapted vegetable cultivars. Currently, however, most of these studies rely on **morphological traits** to determine variability.

Recommendations

Support collection, conservation, evaluation, and seed system activities of the **prioritized species** highlighted in this research brief (Table 1). Prioritizing specific IVs' species ensures the efficient **allocation of resources** for their conservation and use.

Strengthen **collaboration** between the formal and informal sectors on conservation and seed supply initiatives of IVs. This will enable a more effective sharing of germplasm, information, resources and expertise- supporting the **scaling-up** of such initiatives.

Maintain **institutional support** for a sustainable and successful implementation of IVs conservation activities, especially by providing **technical support** such as training on seed saving. Improve **funding** towards genebanks and Community Seed Banks.

Incentivize the production, consumption, and conservation of IVs by communities, for example spaces that support IVs conservation in rural and urban areas can be protected or established. This can also help broaden the **scope** of existing initiatives.

Background

National experts recommend that a **healthy food plate** for Filipino adults must include **33% of vegetables**, however the average Filipino consumes only **9.5%** (DOST-FNRI, 2021). Expectedly, nutrition-related problems are a widespread challenge across age groups. In 2021, the rate of **stunting** among children under 5 years old reached **26.7%**; about **15.5%** of children aged 6 months to–5 years old suffered from **vitamin A deficiency**; and the overall prevalence of **anemia** was **10.4%** (DOST-FNRI, 2022).

Many factors contribute to these alarming figures, the **availability and affordability of vegetables** for example, which are jeopardized by seasonality and inconsistent yields due to the impacts of climate change.

Moreover, despite being one of the countries with the highest biodiversity of plant species and endemism covering 25 plant genera that can be found nowhere else in the world, **the diversity of plant species cultivated in the Philippines has decreased** through the years with 27-38% of food energy consumed being non-native to the region (www.croptrust.org).

Crop improvement and on-farm diversification, particularly using **indigenous vegetables (IVs)**, can help address many of the afore mentioned challenges while also providing multiple other benefits. Effective **conservation initiatives** and **seed supply systems**, as well as a systematic **prioritization** of IVs, are crucial to increase **farmers' access** to and **adoption** of well-adapted cultivars of IVs.

Priority Species

The **National Plant Genetic Resources Laboratory (NPGRL)** of the Institute of Plant Breeding, at the University of the Philippines Los Baños, serves as the national repository and maintains the **largest collection of IVs** in the country.

Given the **wide variety of IV species** and the **limited availability of resources** (such as funding) it is necessary to **prioritize certain IV species** so that existing resources are allocated efficiently for their conservation.

The selection of **priority species** (listed in **Table 1**) is based on criteria such as high potential for utilization, high nutritional quality, varied functional properties and wide adaptability. The absence or very few accessions collected, cultural importance, and potential as a sustainable food source are also considered.

Research actions including collection and characterization; regeneration and multiplication; evaluation; and seed distribution and exchange; have been **identified for these priority species**.



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Table 1: Priority indigenous vegetables for collection, conservation, evaluation, and development of the seed system.

Crop	Reason for conservation*
Malunggay <i>Moringa oleifera</i>	High nutritional value - an excellent source of calcium and beta-carotene; wide adaptability; culturally important for Filipinos.
Birch flower <i>Broussonetia luzonica</i>	Endemic to the Philippines and culturally important to ethnolinguistic group Ilocanos; it has anti-cancer, anti-obesity and wound healing properties; flowers are good source of protein and potassium.
Gnetum <i>Gnetum gnemon</i>	Culturally important to Bisaya ethnolinguistic group; excellent source of protein, fiber, and ascorbic acid, no NPGRL collection.
Slender carpet-weed <i>Glinus oppositifolius</i>	Easy to multiply as seeds; has anti-diabetic properties, no NPGRL collection.
Bagbagkong <i>Telosma procumbens</i>	Present in the wild but diminishing population; excellent source of potassium and niacin, culturally important especially in Northern Luzon, only 1 accession in NPGRL collection.
Cowpea, <i>Vigna unguiculata subsp. unguiculata</i>	Seeds are rich in energy, fiber, phosphorus, and niacin, while young leaves and shoots are also rich in thiamin; can plant whole year round, drought tolerant, highly adaptable in wide range of environment.
Ricebean, <i>Vigna umbellata</i>	Several accessions are present in NPGRL collection, but these present accessions need further for collections to be more diverse; it is already widely adapted; a rich source of energy, fiber, calcium, phosphorus and thiamine.
Jute mallow, <i>Corchorus olitorius</i>	Nutritious (leaves are high in calcium, phosphorus, potassium, zinc, beta-carotene, vitamin A, riboflavin); widely adaptable; culturally important in many parts of the country, easy to multiply through seeds.
Amaranths, <i>Amaranthus spp.</i>	Will include Amaranth species such as <i>A. viridis</i> , <i>A. tricolor</i> , <i>A. spinosus</i> ; nutritious (e.g., <i>A. viridis</i> is rich in calcium, potassium, riboflavin); easy to multiply through seeds; characterized by a short life cycle; widely adaptable.

Source: Oraye, C.D., de Chavez, H.D., Aguilar, C.H.M., Makiling, F.C., Ladia, V.A. Jr., Enicola, E.E., Maghirang, R.G., Anunciado, M.S., Monville-Oro, E., Gonsalves, J., Hunter, D., Borelli, T., Mendonca, S. 2023. Conservation of Indigenous Vegetables in the Philippines: A Scoping Study. Alliance of Bioversity International and International Center for Tropical Agriculture - CIAT. Rome, Italy. 92 pages.

*Reasons mentioned are not exhaustive, please refer to the source for further details.



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Fruit and Vegetables for Sustainable Healthy Diets

Improving indigenous vegetable conservation initiatives and seed supply systems

Currently, **production of IVs** in the country is **small-scale**, in **scattered** areas- home gardens, school gardens, community gardens and marginal lands-often using traditional production practices.

Underlying their production are multiple IV **conservation initiatives** (involving community seed banks, genebanks, public breeding institutions, and the government), **seed supply**

systems and policies (e.g., promotion of vegetable growing in schools and commercialization of specific IVs), however the **coverage and implementation** of these can be **improved**, particularly by focusing efforts on the priority species mentioned above.

Most existing community seed banks (CSBs) and seed supply systems are also initiatives of non-government organizations and other informal organizations. Strengthening the collaboration between the **formal and informal sectors** on conservation and evaluation of IVs will enable a more effective sharing of germplasm, information, resources and expertise- supporting the scaling-up of such initiatives.

This research brief is based on a working paper titled '**Conservation of Indigenous Vegetables in the Philippines: A Scoping Study**'.

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The CGIAR Research Initiative on Fruit and Vegetables for Sustainable Healthy Diets (FRESH) aims to use an end-to-end approach to increase fruit and vegetable intake and in turn improve diet quality, nutrition and health outcomes while also improving livelihoods, empowering women and youth and mitigating negative environmental impacts.

PRIMARY IMPACT AREA

 Nutrition, health & food security



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