

Bring NUS back to the table!

by Stefano Padulosi

NUS, or Neglected and Underutilized Species, are wild, cultivated or semi-domesticated non-commodity crops at the margin of mainstream agriculture. Their contribution to tackling food and nutrition insecurity and climate change vulnerability is huge and can no longer be overlooked. They might not be 'neglected' for much longer.



Finger millet. Photo: Bioversity/S. Padulosi

NUS (Neglected and Underutilised Species), also called orphan, abandoned, lost, underused, local, minor, traditional, alternative, niche, or underdeveloped crops are part of a large portfolio of useful species cultivated and nurtured for centuries by users around the world, predominantly local communities. Although NUS have been neglected and underused, they hold great potential: hardy and highly nutritious, these vegetables, pulses, cereals, and fruits form a universe of tastes and flavours that have been shaping traditional systems everywhere. NUS species are impressive: 539 vegetables and 645 fruits in Africa, 2800 edible fruits in the Tropics, 200 leafy vegetables in Kenya, 228 vegetables in southeast Asia and 137 indigenous vegetables in Italy.

NUS versus commodity crops

All countries have a rich NUS basket as part of their unique cultural heritage. Unfortunately these species are

disappearing from the field because of their scarce competitiveness in modern agriculture.

This marginalisation raises great concerns in our capacities to feed the world and feed it well. Food today is seen as a pure 'commodity crop yield', lacking nutrition or agro-ecological considerations. Therefore, the main concerns in production systems are crop intensification, heavy use of agrochemicals, mechanisation, standardisation of agronomic practices and unprecedented decline of crop species and varieties in cultivation.

Marginalised by research -- and sadly also by development efforts — NUS lose out in national markets and survive only in small local or niche markets. Once symbols of people's cultural identity and sources of their pride, NUS have now become gourmet food for the wealthy. Interestingly, supermarket shelves seem to be loaded with a tremendous diversity of foods, but a closer look reveals that such 'diversity'

is the result of intense food processing from only a few crops and varieties. The over 5,000 edible crops estimated to exist today are largely untapped by current food systems, dominated by maize, wheat, and rice that provide more than 50% of the world's plant-derived calories to the world.

The last 60 years of research investments over few resource-intensive crops—the so-called 'Green revolution'—have led to higher yields and important contributions to reduce hunger in the world. However, this huge achievement has been accompanied by a major downside: the heavy erosion of our plant-based diets and the loss of the biological foundation on which our farming practices are based. A staggering 75% of crop diversity has been lost in the course of last century (an estimated 300,000 varieties). Just twelve crops together with five animal species provide 75% of the world's food, and of the 137 most important crops in the world, 20 are cultivated over 80% of the global agricultural area and the remaining 117 on a mere 20%. These trends are worsening every year.

Not helpful either is the poor conservation of NUS: most samples safeguarded in ex situ gene banks around the world represent very marginally NUS genetic resources, which are mainly maintained by farmers in the field.

Finally, monocropping a limited number of resource-intensive crops has led to land degradation and marginalisation of smallholder agriculture.

NUS are the solution

Globally, 800 million people are food insecure, 2 billion suffer from micronutrient deficiencies and 2.1 billion are overweight or obese. A new Green revolution is needed to tackle

the daunting problems of malnutrition in its diverse forms. This cannot succeed without agrobiodiversity. NUS hold the key to this new revolution. Food-based solutions that diversify what we grow and what we eat provide enduring benefits to local communities and the environment by addressing these problems at their base.

So what should be done to reverse this condition of extreme vulnerability within our food systems? The answer rests with NUS and their sustainable use enhancement.

Clearly, the world needs to continue securing the production of staple crops to feed the world, but that effort must be complemented by parallel investments on the many nutritious and resilient crops found in the NUS basket. Diversifying the production systems with the injection of various NUS will buffer food systems against socio-economic shocks and at the same time strengthen the health of agroecosystems, support smallholder agriculture, safeguard food cultures and associated economies that revolve around local crops and traditions now fast disappearing. In addition, many NUS are drought-resilient, so they hold potential to tackle negative climate change impacts.

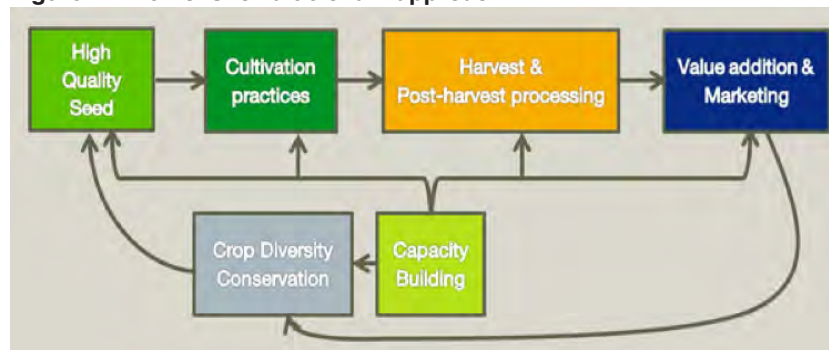
A methodological framework

The promotion of NUS is an opportunity to increase traditional crop diversity and associated food traditions. Safeguarding traditional heritage is an important contribution to protecting the identity of local communities and reinforcing their confidence to counteract threats arising from globalisation trends and changes in lifestyles.

Women play a central role in using diverse NUS as well as in the nexus between agrobiodiversity and nutrition security of households. Therefore, women's capacity should be built, including through the dissemination of best practices for cultivation or value addition, the enhancement of marketing skills, and awareness raising of nutrition and better food preparation.

However, NUS lack the collaborative structures, information, data and services that are instead easily available for commodity crops. For example, extension agents are poorly trained on how to promote NUS and should also be targeted in capacity-building activities. Carrying out research programmes for the promotion of NUS is a great challenge for National Agricultural Research Systems (NARS) and so is the development of their value chains. To address these challenges, resources are

Figure 1: The holistic value chain approach



needed to strengthen capacities.

Dealing with NUS requires a collaborative approach among experts from different sectors and disciplines. Bioversity International has been working on NUS for more than two decades. It has developed a successful collaborative framework—the 'holistic value chain approach' (see Figure 1)—that has been tested on several NUS, including Andean grains and minor millets. This framework, followed in several projects (with support from the International Fund for Agricultural Development (IFAD) and the European Union) has allowed actors to work closely together to overcome the many bottlenecks encountered in the NUS value chains.

For example, farmers have engaged with scientists in surveying, collecting, conserving and selecting the genetic diversity of target species; food specialists worked closely with germplasm experts and consumers to develop more nutritious food, easier food technologies and attractive recipes; private companies participated in the marketing of raw and processed products; nutritionists, school teachers and media experts helped raising public awareness on the nutritional and health benefits related to NUS, and decision makers were involved with other stakeholders in the development of policies for removing obstacles along the value chains.

Positive impacts

Bioversity International's NUS project interventions using the holistic value chain approach has strengthened the resilience of livelihood systems in both urban and rural communities through a wider deployment of NUS at household level and in the value chains. More specifically, it has produced a number of encouraging outcomes in target areas: women and men farmers and other value chain actors gained knowledge to identify diverse, stress-tolerant, adapted crops with market

potential and ways to better document and monitor their use; climate-smart practices are being developed and disseminated; high quality seed of stress-tolerant varieties is produced by local communities and researchers; women's and men's farmer groups are increasingly generating more income thanks to their enhanced skills in cultivation, value addition and marketing; demand for nutritious products from NUS has increased, leading to enhanced nutrition, income and empowerment of vulnerable groups; capacities of farmers to manage weather-associated risks through NUS have been strengthened; market opportunities have been realised which in turn have created incentives for farmers to continue growing and safeguarding NUS on their farm; awareness among policy makers has been raised which led to a number of relevant policies for supporting wider uses (e.g. inclusion of NUS in school meal programmes in Brazil or in the national procurement system in India).

Looking back at the journey to promote NUS, progress has been made in many regards. However, NUS should be further encouraged, promoted and supported with policies at national and international level to create greater synergy among agencies that have been working on these issues in isolation. ■

About the author



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