Diversity of Neglected and Underutilized Plant Species (NUS) in Perspective

A review of questions, tools, concepts and methods in preparation of Programme Sud Expert Plantes Développement Durable (SEPPD)

Hannes Gaisberger1, Marc Delétrè2, Saray Gaja4, Paul Bordoni3, Stefano Padulali3, Michael Hermann1, Elizabeth Arnaud1
1Bioversity International (Italy), 2Muséum National d’Histoire Naturelle (France), 3Crops of the Future (Malaysia), 4GBIF (Denmark)
Contact: h.gaisberger@cgiar.org

What are Plant NUS?
- Also called ‘Orphan Crops’, species and varieties of importance for the rural communities but to which little or no attention is paid by agricultural researchers, plant breeders and policymakers.
- NUS are not traded as commodities.
- Wild or semi-domesticated varieties and non-timber forest species adapted to particular, often quite local, environments.
- The lack of a consensual definition of NUS has been a major curb to their international recognition as a valuable component of agrobiodiversity

Why are Plant NUS important?
- NUS are ‘promising crops’ offering tremendous opportunities for fighting poverty, hunger and malnutrition.
- Resources to help make agricultural production systems more resilient to climate change.
- Value of NUS in traditional foods and cultures must be recognized to empower local communities (women in particular) and reaffirm their identity.
- Important role in advancing agroecological intensification.
- Many NUS are being lost at an alarming rate with a wealth of traditional knowledge about their cultivation and use.

An Atlas of NUS Hotspots – a resource needed for in situ conservation strategies

Identification of geographical areas of special interest, called ‘NUS hotspots’, in the inter-tropical zone, at the intersection between SEPP and Bioversity priority research areas to identify possible synergies or complementarities in data collect and analysis, avoiding duplication of research efforts.

A GIS-based approach that uses available georeferenced data from genebanks, herbarium and collectors to identify species-rich areas. Specific aims of this work are to:
- Draw a provisional list of priority NUS species for the inter-tropical zone where SEP partners are located;
- Identify the essential criteria for the identification of hotspots of NUS-diversity and compile baseline maps of priority areas and observation sites;
- Draft methodological guidelines for fine-tuning Bioversity’s agrobiodiversity strategy and research activities within the framework of SEPPD.

The final dataset used for the Atlas consisted of 85,511 records, altogether representing 590 species distributed in 107 families.

Collaboration with GBIF and SEPPD for NUS data enhancement

- There is an urgent need for assessing world patterns of distribution of NUS and identifying ‘hotspots’, areas where NUS experience exceptional loss of habitat or are at higher risk of losing habitat as a result of global change.
- This preliminary work permits to build upon the dataset produced and identify gaps in genebank and herbaria collections with regard to NUS in order to propose adapted research actions and conservation plans.
- Collecting more georeferenced data, mapping the occurrences of NUS to refine the Atlas is a key activity for the development of a Global monitoring system on in situ conservation and on farm management of Plant Genetic Resources.