Partnerships for promoting NUS. Some Bioversity International's experiences

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Outline

1. **Introduction**
   - What are Neglected and Underutilized Species?
   - Common Features of NUS
   - Strategic Factors for Promoting NUS
2. **Partnerships**
   - Partnership in Global Efforts
   - Global Institutions
   - Regional and Crop Networks
   - African Regional Networks
   - Other Initiatives
3. **Some Case Studies**
   - Case study one: Domestication of Wild Plant Species in West Africa
   - Case Study two: Priority NUS Assessment in Africa
   - Case Study three: An International Experience in Testing NUS in Lebanon
   - Case study four: Genetic Resources Policy Initiative
4. **Conclusion**.

What are Neglected and Underutilized Species?

- Neglected and Underutilized Species are species whose potential has not been fully realized,
- They are non-commodity crops, and are part of a larger biodiversity portfolio, more popular in the past and neglected today by users' groups and in particular by research and development sector
- They include thousands of locally domesticated and wild species which are rich in nutrients and are adapted to low input agriculture.
- Such local foods contribute to dietary diversity and play a key role in supporting rural livelihoods.

Common features of neglected and underutilized species

- Of local importance in consumption and production systems,
- Highly adapted to agro-ecological niches/marginal areas,
- Receive scarce attention by national agricultural and biodiversity conservation policies, research and development,
- Represented only by ecotypes/landraces,
- Their use relies solely on indigenous knowledge,
- Scarcely represented in *ex situ* collections.

Strategic factors for promoting NUS

There are several strategic factors that need to be taken into account to successfully promote underutilized species and, at the same time, ensure that benefits are equally distributed among community members. These include:

- Recognizing underutilized species as a public good to ensure the continued availability and accessibility of plant genetic material to present and future generations.

Strategic factors….

- Carry out research through case study approaches focusing on groups of species to make the best use of limited resources and facilitate scaling-up and mainstreaming of results;
- Mainstream gender-sensitive approaches in management and use: these will allow women - who are too often marginalized - to enhance their capacity to manage, conserve and use underutilized species in a sustainable way and by doing so - strengthen their economic status.

Strategic factors…end.

- Promote cooperation among stakeholder groups and create national, regional and international synergies: this is not an option but a necessity, isolated efforts and success stories need to be linked and disseminated;
- **Therefore inter-disciplinary, inter institutional and inter country collaboration are critical to safeguarding the rich potential of NUS for the benefit of present and future generations.**

Partnership

- A **partnership** is an agreement in which parties concur to cooperate to advance their mutual interests,
- Partnerships present the involved parties with special challenges that must be navigated unto agreement,
- Overarching goals, levels of give-and-take, areas of responsibility, lines of authority and, how success is evaluated and distributed, and often a variety of other factors must all be negotiated.

Partnerships

1. Local level
2. National level
3. Regional or global level

Village

Country

Regional/
Continenta

Partnership can be subject specific or global

Partners in a global effort

Many actors work to promote the use of neglected and underutilized species. These include

- UN agencies (e.g. FAO) and conventions (e.g. CBD) with global mandates for agriculture, biodiversity and sustainable development,
- Regional organizations concerned with the distinctive, economically and culturally important species of a region,
- Institutions in developed countries working on so-called ‘minor crops’, ‘new crops’, or ‘orphan crops’,
- Several NGOs and local communities.

Global Institutions

Global agencies sponsor several regional networks on NUS, e.g.

- FAO Programme on the Promotion and Development of Non-Wood Forest Products, the Underutilized Tropical Fruits in Asia Networks (UTFANET), the Southern and Eastern Africa Network on Underutilized crops (SEANUC) etc.
- The International Centre for Underutilized Crops (ICUC in UK), works to increase the use of underutilized crops for food, medicine, industrial products and for environmental quality through direct promotion and improvement.
- The Centre International de Hautes Etudes Agronomiques Méditerranéennes (CIHEAM), works through the Network on “Identification, Conservation and Use of Wild Plants in the Mediterranean Region” (MEDUSA)

Global Institutions

- The CGIAR Future Harvest Centres , including Bioversity International (ex IPGRI), carry out research to study underutilized and neglected species, even if these are not among their main mandated crops, e.g.
  - IITA conserves bambara groundnut genetic resources and CIP works on Andean roots and tubers;
  - GFAR supports the Global Facilitation Unit for Underutilized Species.

Regional and Crop Networks

Other international plant genetic resources networks are also engaged in these efforts including

- REMERFI (the Mesoamerican Plant Genetic Resources Network);
- PROSEA Foundation, PROTA Foundation (which cover plant genetic resources of South-East Asia and Africa, respectively);
- BAMNET (the Bambara International Network);
- Taro Genetic Resources Network (TaroGen)
- ECP/GR (European Cooperative Programme for Crop Genetic Resources Networks);
- CACTCN-PGR (the Central Asia and Trans-Caucasus Network on Plant Genetic Resources);
- WANANET (the West Asia and North Africa Network for Plant Genetic Resources);
- AARINENA (Association of Agricultural Research Institutes in the Near East and North Africa).

NB: Bioversity is present and plays key role in most of these Networks.

African Regional Networks

- The SADC Plant Genetic Resources Centre (SPGRC) conserves and guarantees safe access to crop and wild plant genetic resources in Southern Africa;
- The Eastern Africa Plant Genetic Resources Network (EAPGREN), a regional joint project of National Agricultural Research Systems of the ASARECA member countries,
- The Genetic Resources Network for West and Central Africa (GRENEWECA), a regional joint network of National Agricultural Research Systems of West and Central Africa;

Other Initiatives

- The Genetic Resources Policy Initiative (**GRPI 1 & 2**) based at Bioversity International, build National Partners capacities for the Implementation of IT on PGRFA ,

- The Regional Universities Forum for Capacity Building in Agriculture (**RUFORUM**) collaborates with Bioversity International to develop human and institutional capacities for enhancing the conservation and use of Neglected and Underutilized Species of crops in West, Eastern and Southern Africa;

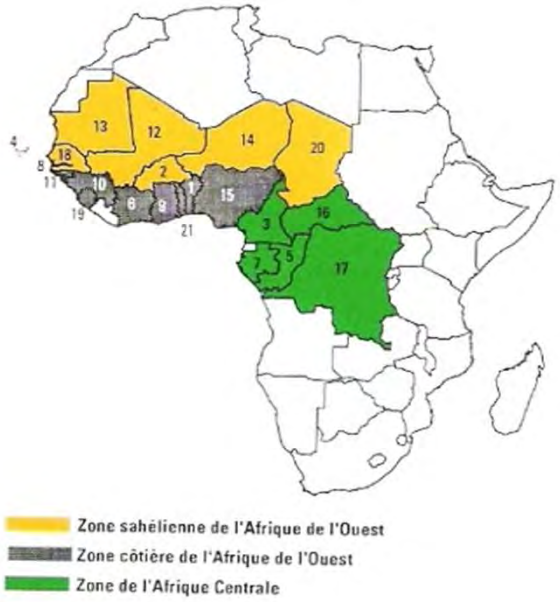
- The Young Professionals' Platform for Agricultural Research for Development (**YPARD**), a global on-line and off-line Communication and Discussion Platform to enable Young Professionals over the world to express their ideas and realize their full potential towards a dynamic research for development.

- At the local level in many countries, both in the developed and developing world, NGOs, farmers ' associations, ecological and biological farming groups, processors, marketers and consumers champion the conservation and increased use of NUS.

SOME CASE STUDIES

Case Study One:

Domestication of Wild plant Species in West Africa



Local communities in Benin, Mali, Niger and Nigeria, develop methods/practices for domesticating wild species of yam, forest fruit trees and leafy vegetables.

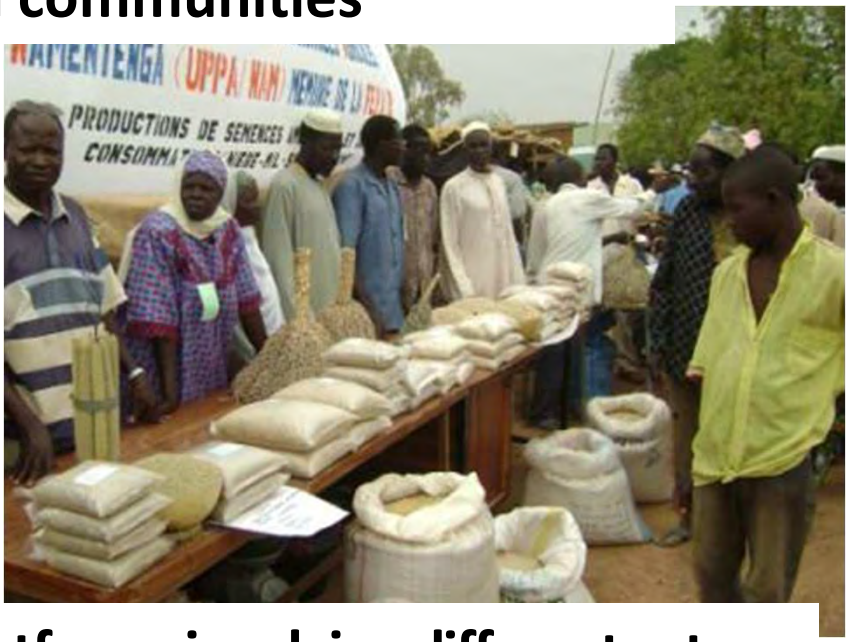
Domesticated yam, and leafy vegetables.

Testing domesticated varieties

Men and women farmers test newly domesticated plants for productivity, tolerance to pest and diseases, food quality and adaptability to local environment

Seeds are multiplied in traditional seed systems and shared with other communities (e.g. yam, traditional leafy vegetables domestication in Benin, Niger and Nigeria).

Empowering local communities



Initiate new partnerships and platforms involving different actors

Adapting local and national legislations to the existing context

Tougouri, Burkina Faso, Seed bank and underground genebank

Lessons learned

- Thanks to local communities' efforts and innovation systems, crop and tree genetic diversity is enhanced,
- Some of the domesticated varieties have very useful traits such as tolerance to pests and diseases, adaptability to climate variation, or are nutrient rich and good for dietary diversity,
- The domesticated varieties and other useful local varieties are represented by only ecotypes and landraces and therefore are not accepted in national catalogues for seed multiplication and use,
- **Efforts should be made to adapt national and regional seed legislations to local realities in order to value the potential of Neglected and underutilized species.**

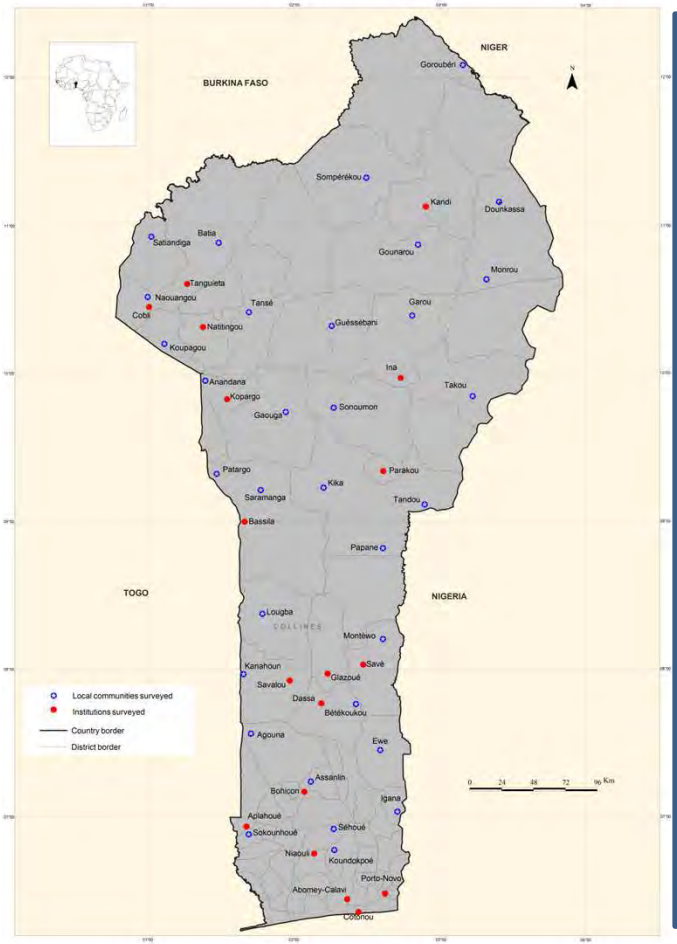
Case Study Two:

Priority NUS Assessment in Africa

(Dansi Alexandre et al 2012)

- With the support of RUFORUM and Bioversity International, four African countries are carrying out national fact finding studies on the diversity of Neglected and Underutilized Species (NUS) of food crops in their respective countries: Benin, Ghana, Kenya and Malawi.
- **The case study of Benin, which is the most advanced is summarized here.**

Results from BENIN Study



Data were collected from different parts of the country and research and development institutions using focus group discussions, direct observations, individual interviews and field visits using a questionnaire

The Outcomes

- The project excluded pure medicinal species, spices, and oil crops,
- A total of 41 crop species were listed as neglected and underutilized by 580 interviewees.
- Out of these 41 species:
  - 14 have been assessed with low scores for the 10 criteria used (not in danger)
  - **27** have been assessed with high scores (Need urgent action).

Priority NUS species

- Out of the **27** priority species identified by local communities, 8 are already being given attention by Universities in Benin. They are:
  - *Acmella oleracea ,*
  - *Adansonia digitata ,*
  - *Digitaria exilis*,
  - *Irvingia gabonensis,*
  - *Justicia tenella*,
  - *Parkia biglobosa*
  - *Sesamum radiatum*,
  - *Sorghum bicolor*.

NB: It remains 19 priority species that need urgent intervention

Priority NUS according to their importance and consumption

Species widely distributed and highly consumed	Species widely distributed but slightly consumed
Citrullus lanatus Corchorus olitorius Crassocephalum rubens Crassocephalum crepidioc Cucumeropsis mannii Ipomea batatas Launaea taraxacifolia Macrotyloma geocarpum Pennisetum glaucum Vigna subterranea **10**	Ceratotheca sesamoides Cleome gynandra Dioscorea dumetorum Cyperus esculentus **04**
Species highly consumed but present in limited areas	**Species slightly consumed and present only in a limited area**
Bidens pilosa Cajanus cajan **02**	Blighia sapida Sesamum indicum Sphenostylis stenocarpa **03**

Some of the priority NUS species of Benin

Seeds of *Macrotyloma geocarpum*

Seeds of *Macrotyloma geocarpum*

Crassocephalum rubens

Seeds of *Macrotyloma geocarpum*

Launaea taraxacifolia

Seeds of *Macrotyloma geocarpum*

Egussi: *Citrulus lanatus* & *Cucumeropsis manni*

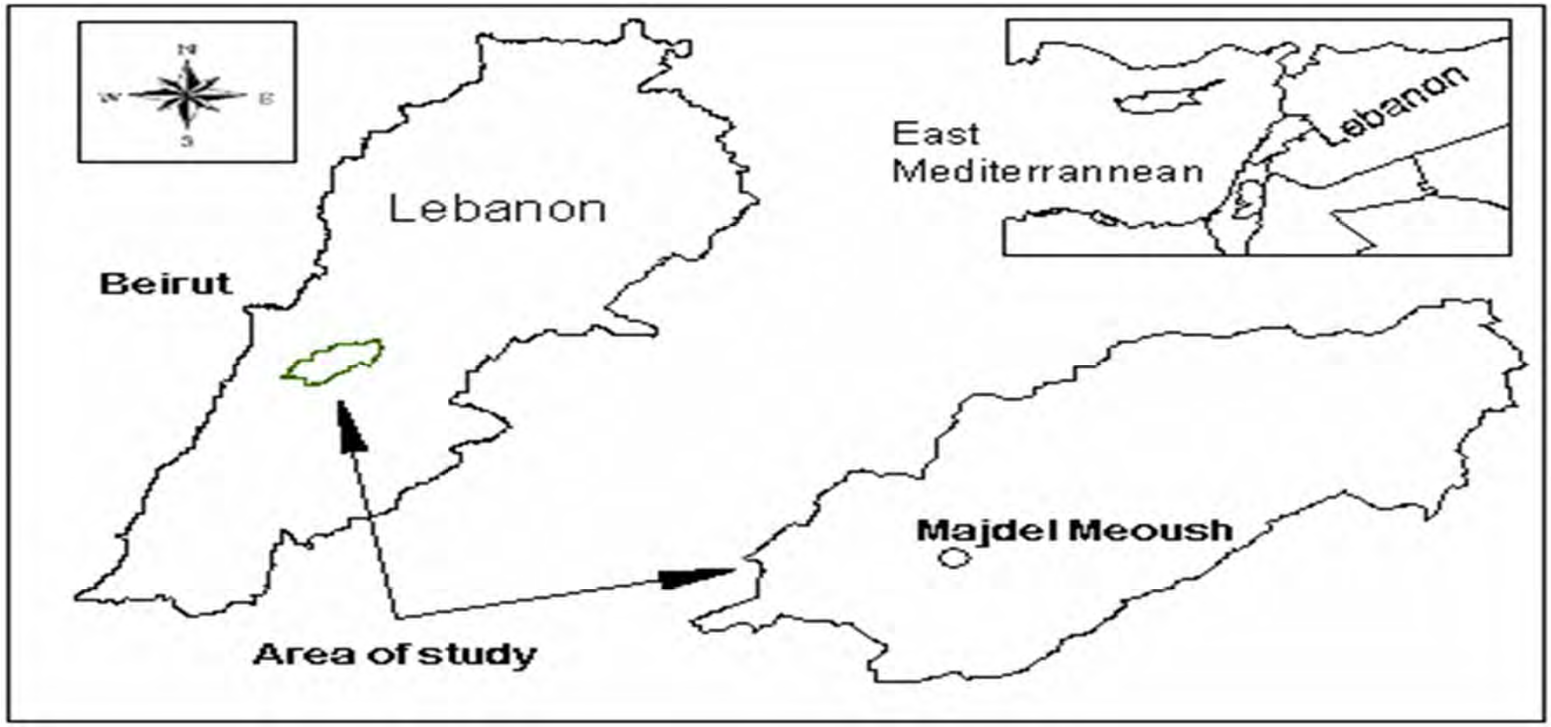
Lessons learned

- This national fact finding study of the neglected and underutilized crop species was very useful and provided a lot of ethno botanic information on importance and roles played by these species in local communities.
- Such studies should be carried out in more developing countries to safeguard useful plant species that may otherwise disappear.

Case Study Three:

An international experience in Testing Neglected and underutilized Plant Species of Lebanon

(Dr Jihad Noun, 2006)



Partnership in germplasm evaluation

Thanks to international collaboration, this useful plant diversity has been characterized and evaluated.

The project partners included:

- **Bioversity (ex IPGRI) CWANA office in Aleppo Syria.**
- **INAPG (Institut National Agronomique Paris-Grignon), France**
- **National Council for Scientific Research (CNRS)**

Funding Institutions

- Lebanese Ministry of Agriculture
- National Council for Scientific Research (CNRS)
- European Union
- USAID Development projects
- Holy-Spirit University of Kaslik, Lebanon
- University of Catania, Italy

Objectives of the project

- Assessment and survey of genetic diversity:

  More than 3000 vascular plant species (778 Genera, 113 families) hundreds of which are traditionally useful species
- Indigenous knowledge of all wild useful species.

The study focused on:

- Characterization (inter and intra sp. level)
- Domestication efforts and agronomic practices testing

Four species were investigated.

Cichorium intybus
leafy vegetable fresh and cooked

Gundelia tournefortii

Cooked vegetable and ornamental

Salvia fruticosa
medicinal plant

Origanum syriacum
domestic and industrial plant and condiment

Some results

- **Out of 1397 use citations documented**

– **628 medicinal uses**

  - **Kidneys 79 (prostate, diuretic)**
  - **Stomach 62 (digestion, diarrhea, etc.);**
  - **Respiratory 60 (cough, flue, cold, etc.);**
  - Etc.

– **769 are edible**

  - **Fresh 494 (Salad, fresh (snack food), fruits, etc)**
  - **Cooked 478 (boiled, fried, paste and fatayer etc.)**
  - **Aromatic exclusively 36**
  - **Etc.**

Lessons learned

- **Diverse uses of the plant species have been documented,**
- **Ethnic and gender diversity and variation from one village to another with regard to use were assessed**

Case study Four:
Genetic Resources Policy Initiative (GRPI)

- GRPI 2 supports participatory research and capacity building related to the implementation of the Treaty's multilateral system of access and benefit sharing.
- The project builds on the experiences and lessons learned of an earlier project, called the Genetic Resources Policy Initiative: strengthening national capacity to identify options

Main objective

The three main objectives of the project are to:

- Provide a transparent picture of the structure and relationships of policy actors who are important for the effective implementation of the ITPGRFA.
- Identify opportunities or needs for interaction with or inclusion of new actors that would benefit and could contribute to the implementation process.
- Examine changes in policy network structures and relationships over time and link them to policy implementation outcomes.

Expected Benefits

- Increased awareness about the ITPGRFA among key national policy makers.

Partners in the Project

- The study will be implemented in eight countries:
  - Bhutan,
  - Nepal,
  - Guatemala,
  - Costa Rica,
  - Côte d'Ivoire,
  - Burkina Faso,
  - Rwanda, and
  - Uganda.

  NB: In collaboration with Bioversity, FAO and University of Illinois.

Implementation framework

- Bioversity International is the main executing agency.
- The project falls under the overall coordination and guidance framework of the FAO
- It involves a team of researchers from Bioversity International, University of Illinois at Chicago and national research partners from each country.

Main Themes

- The project works on 5 Themes:
  - Development of Policies and Laws for the Implementation of the Multilateral Systems of Access and Benefit Sharing of the Treaty
  - Policy Network Analysis: Mapping and Understanding Linkages between Actors Involved in Policy Making in Relation to PGRAFA
  - Understanding the Country's Dependence on PGRFA Coming from Other Countries
  - Understanding the Role of Community Seed banks in Linking the Treaty to Farmers' Communities
  - Understanding Elements Involved in the Transfer of Technologies that are Important for PGRFA Conservation and Use in the Country.

Funding

- The project is supported by the Directorate-General for International Cooperation (DGIS) of the Netherlands Ministry of Foreign Affairs
- Duration: 2012-2014

Achievements

- The project is successfully launched in all 8 countries with very active supports from National Governments,
- National Teams are formed (National Research Institutes, Universities, Representatives of Ministries in charge of Agriculture, Environment, Legislation and Trade, Representatives of Farmers Organizations)
- In Burkina Faso, surveys to understand the country's dependence to other country have been conducted,
- A national stakeholders workshop examined the National Law on seed Legislation and noticed areas needing improvement to conform the ITPGRFA (especially Article 9 of the Treaty related to Farmers Rights and use of local varieties and NUS in agricultural production)
- A training course on GIS and Climate Analogue is foreseen for October 2013 for Burkina Faso and Cote d'Ivoire.

Lessons Learned

- Many countries worldwide have ratified the ITPGRFA, but do not put in place mechanism for its implementation
- Very few people are aware about the Treaty and what it entail,
- GRPI 1 and 2 help countries to develop needed capacities for implementation of the International Treaty for the benefit of their population.

Conclusion

- Neglected and underutilized species are so numerous and so diverse.
- They need attention from several institutions, disciplines and actors from public and private sectors.
- No single organization or institution can alone effectively address all the needs.
- Partnership is therefore a prerequisite to safeguarding this rich genetic diversity for the livelihoods of present and future generations.


THANKS