



BOOK OF ABSTRACTS

- I. SESSION DESCRIPTION
- II. SESSION PROGRAM
- III. ABSTRACTS

I. SESSION DESCRIPTION

ID: T8

Neglected and Underutilized Plant Species and the Ecosystem Services in the Tropics: The Role of Local Knowledge

Hosts:

	Title	Name	Organisation	E-mail
Host:		Joshua Idassi	Sustainable Agriculture, and Natural Resources, South Carolina State University	jidassi@scsu.edu
Co-hosts:		Philipina F. Shayo	Nelson Mandela African Institution of Science and Technology	shayop@nm-aist.ac.tz
		Osei Yobuah	North Carolina A&T State University	oyeboah@ncat.edu

Abstract:

Neglected and Underutilized Plant Species (NUPS) are those plant species that little attention is paid to their ecosystem services, socio-economic needs, and local knowledge of the indigenous population. NUPS are wild or semi-domesticated plant varieties and non-forest timber species adapted to a local ecosystem (Padulosi et al. 2013). The neglect by agronomic and forestry researchers, policymakers, genetic erosion, loss of local knowledge, markets, and climate change are major challenges to the sustainable management and use of NUPS. Many of these NUPS varieties along with a wealth of traditional knowledge about their management and use are disappearing at an alarming rate. Reversing the neglect, tackling these challenges, and ensuring that NUPS are conserved and used sustainably, means taking urgent action, and in this plenary session we will present strategic steps taken by our stakeholders showing the tremendous ecosystem services opportunities for fighting malnutrition, hunger, and poverty. This is the time to act for NUPS. The main aims of our session are to encourage collaboration in researching and outreach on local knowledge (using both qualitative and quantitative methods), promoting ecosystem services for NUPS, conserving, sustainably using NUPS, and coordinating activities and multi-stakeholder platforms across sectors. Finally, under the auspices of potential NUPS ecosystem system benefits, for our expected outcomes, we will put in place strategic frameworks that will utilize local knowledge and suggest financial incentives enhancing valuation tools showing how to optimize the net economic benefits of NUPS while encouraging bio-diversification, and conservation against climate change. A list of success stories will be drafted and archived.



Keywords: Ecosystem services, traditional knowledge, stakeholders, financial incentives, poverty reduction, socio-economic needs, climate change, and sustainability.

Citation: Padulosi, S., Thompson, J., Rudebjer, P. 2013. Fighting poverty, hunger, and malnutrition with neglected and underutilized species (NUS): needs, challenges, and the way forward. Bioversity International, Rome.

Goals and objectives of the session:

The main goal of our session is to encourage and promote collaboration in research and outreach to gain knowledge of NUPS. Specific objective: 1. Conduct both qualitative and quantitative methods to promote ecosystem services for NUPS; 2. To assess the conservation and the sustainable utilization of NUPS, and 3. Coordinate activities and multi-stakeholder financial incentives to optimize the use of local knowledge and net economic benefits of NUPS to encourage bio-diversification, and conservation against climate change.

Planned output / Deliverables:

1. Local knowledge strategic framework
2. Financial incentives enhancing valuation tool
3. A drafted list of success stories

Related to ESP Working Group/National Network:

Thematic working group: TWG 8 – Cultural services & Values

II. SESSION PROGRAM

Date of session: Friday, 10 June 2022

Time of session: 10:00–10:30

Timetable speakers

Time	First name	Surname	Organization	Title of presentation
10:00–10:15	Hussein	Bizimana	Rwanda Water Resources Board (RWB)	Constructed Wetlands as Reliable Methods for Grey Wastewater Treatment in Rwanda
10:15–10:30	Ana	Leite	Department of International Environmental and Development Studies (NORAGRIC), Norwegian University of Life Sciences, Ås, Norway	Woody Wild Edible Plants used by different Ethnic Groups in the woodlands of Guinea-Bissau

3rd ESP Africa Conference

8-10 June 2022 | Musanze, Rwanda

Ecosystem services for the future: Delivering value for Nature, Livelihoods and Economic Investment

HYBRID EVENT

ESP
Ecosystem Services Partnership

III. ABSTRACTS

Abstracts are ordered based on the session program. The first author is the presenting author unless indicated otherwise.

1. Type of submission: Abstract

[T. Thematic Working Group sessions: T8 – Neglected and underutilized plant species and the ecosystem services in the tropics: the role of local knowledge](#)

Woody Wild Edible Plants used by different Ethnic Groups in the woodlands of Guinea–Bissau

Presenting author: Ana Leite

Other author(s): Aida Cuni–Sanchez

Affiliation: Department of International Environmental and Development Studies (NORAGRIC), Norwegian University of Life Sciences, Ås, Norway

Contact: ana.leite@nmbu.no

Local knowledge and management practices have been recognized as key elements in the designing of natural resource management strategies towards conservation and sustainable use. However, evidence of knowledge and practices variation within and across cultures relating to Wild Edible Plants (WEPs) use is not being consistently assessed. In a context of global change, such knowledge gap may imply the disappearance of important cultural and biological diversity directly impacting livelihoods strategies. Gathering of fruits, leaves and seeds of woody Wild Edible Plants (WEPs) is a common practice in multiple societies across the world, but is particularly relevant in poorer regions that cope with long–lasting food insecurity problems such as the dry savanna woodlands of West Africa. In this study we assessed variation in knowledge relating to the diversity, use and management of woody WEPs between four culturally different ethnic groups living in the northern savanna woodlands of Guinea–Bissau (West Africa): the Fulani (primarily pastoralists and Muslims) and Mandika, Balanta and Manjak

3rd ESP Africa Conference

8-10 June 2022 | Musanze, Rwanda

Ecosystem services for the future: Delivering value for Nature, Livelihoods and Economic Investment

HYBRID EVENT

ESP
Ecosystem Services Partnership

(primarily sedentary farmers, the former being Muslims and the last two animists). Empirical evidence was collected through focus groups discussions with female and male elders in 12 villages and walking interviews in the surrounded woodlands. We found that culture (related with ethnicity) linked with the institutional contexts influence woody WEPs knowledge, use and management. We argue that the understanding socio-cultural heterogeneity within a given area is crucial to build adequate management strategies.

Keywords: wild edible plants, West Africa, local knowledge, ethnicity, Guinea-Bissau

2. Type of submission: Abstract

[T. Thematic Working Group sessions: T8 – Neglected and underutilized plant species and the ecosystem services in the tropics: the role of local knowledge](#)

Constructed Wetlands as Reliable Methods for Grey Wastewater Treatment in Rwanda

Presenting author: Hussein Bizimana

Other author(s): Osman Sonmez, Bernard Musana Segatagara

Affiliation: Rwanda Water Resources Board, Rwanda

Contact: hussein.bizimana@rwb.rw

Constructed wetlands are currently the most widely recognized wastewater treatment option, especially in developing countries where they have the potential for improving water quality and creating valuable wildlife habitat in an ecosystem with treatment requirements relatively simple for operation and maintenance cost. The lack of grey wastewater treatment facilities at the University of Rwanda, College of Science and Technology (UR-CST) in Rwanda, causes pollution in the surrounding localities of the Rugunga sector, where already a problem of poor sanitation is found. Consequently, to bring an engineered solution and treat grey wastewater produced at the University of Rwanda, College of Science and Technology (UR-CST), with high BOD concentration, high nutrients concentration, and high alkalinity; a Horizontal Sub-surface Flow pilot-scale constructed wetland was designed and can operate at the University of Rwanda,



College of Science and Technology. The study was carried out in a sedimentation tank of 5.5 m x 1.42 m x 1.2 m deep and a Horizontal Sub-surface constructed wetland of 4.5 m x 2.5 m x 1.42 m deep. The grey wastewater flow rate of 2.5 m³/d flew through vegetated wetland and sandy pilot plants. The filter media utilized, consist of 0.6 to 2 mm of coarse sand and hydraulically designed 0.00003472 m/s of conductivity, and cattails (*Typha latifolia* spp) were used as plants species. The effluent flow rate of the plant is designed to be 1.5 m³/ day and the retention time will be 24 hrs. 72% to 79% of BOD, COD, and TSS removals are estimated to be achieved, while the nutrients (Nitrogen and Phosphate) removal is estimated to be in the range of 34% to 53%. Treated water is within national standards. A treated water reuse system was developed where water will be used in the campus irrigation system.

Keywords: constructed wetlands, hydraulic conductivity, grey wastewater, cattails