



Call for applications to a training course on Food systems: from agronomy to human health

Dates and venue: 2-6 December 2013, Entebbe, Uganda

Deadline for application: 28 October 2013

We hereby invite young scientists from **Ethiopia, Malawi, Mozambique, Kenya, Uganda** to submit a Research Note and apply for participation in a training course on: Value Chain Research on Neglected and Underutilized Species of Plants.

Background

Neglected and underutilised plant species (NUS) include hundreds of locally domesticated and wild species which are rich in nutrients and adapted to low-input agriculture. Such local and traditional foods contribute to dietary diversity and play a key role in supporting rural livelihoods. Many NUS species are also essential in traditional pharmacology. NUS are important resources both in strategies to prevent and treat undernutrition and to adapting to the effects of biotic and abiotic stresses, including managing risks relating to climate change. Furthermore, the commercialization of NUS can provide income opportunities.

Due to the intensification of agriculture and the change of food markets towards a narrow range of commodity food crops, the diversity of NUS and associated local knowledge is rapidly being lost. There is an alarming shift towards a simplified diet in both rural and urban areas and NUS tend to be regarded as 'poor man's food' due to lack of knowledge and awareness of their contribution to cultural identity, livelihoods, health and nutrition. Research, therefore, on the role of NUS in food systems needs strengthening. Better understanding of the nutrient and other beneficial contents of NUS and the role of diet diversity in traditional food systems would be an essential and positive step towards health-promotion activities, policies and strategies.

A Partnership of five African and two European organizations¹ are implementing the project **"Building human and institutional capacity for enhancing the conservation and use of Neglected and Underutilized Species of crops in West Africa, and Eastern and Southern Africa"**. The project is funded by the European Union in cooperation with the ACP Science and Technology Programme during 2009-2013.

¹ Regional Universities Forum for Capacity Building in Agriculture (RUFORUM), Uganda; International Foundation for Science (IFS), Sweden; Bioersity International, Italy; African Network for Agriculture, Agroforestry and Natural Resources Education (ANAFE), Kenya; Institut de Recherche et de Développement sur la Biodiversité des Plantes Cultivées, Aromatiques et Médicinales (IRDCAM), Benin; Plant Genetic Resources Research Institute (PGRRI), Ghana; University of Nairobi, Kenya; and University of Malawi, Malawi. The project is associated with Crops for the Future and the CGIAR Research Programmes on Climate Change, Agriculture and Food Security, and on Agriculture for Improved Nutrition and Health.

The objective is to contribute towards poverty reduction and greater food and nutrition security in West Africa, and Eastern and Southern Africa through enhanced conservation and use of neglected and underutilized species (NUS).

This call

The EU-NUS project aims to strengthen the ability of young scientists to develop, manage and publish inter-disciplinary, multi-stakeholder research projects on NUS. To this end, the project provides training on **Food systems research**, with a focus on underutilized crops research, targeting young scientists who are nationals of **Ethiopia, Malawi, Mozambique, Kenya, Uganda**

The course is jointly organized by:

- Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) - www.ruforum.org/
- Bioversity International - www.bioversityinternational.org/
- University of Nairobi
- Lilongwe University of Agriculture and Natural Resources

The course will be conducted in English and held **2-6 December 2013, Entebbe, Uganda**.

The cost of the course, travel, accommodation and daily living for the successful candidate will be covered by the program.

Objectives and course content

The objective of this course is to develop capacity to assess and measure agricultural biodiversity in the context of food and nutrition security in African food systems.

Trainees will learn and apply tools and methodologies on assessing agricultural biodiversity – local traditional foods and neglected and underutilized species (NUS) – from a food and nutrition systems approach: from “farm to fork” to consumer. The course will specifically develop knowledge and skills to:

1. Assess agricultural biodiversity from a nutrition perspective on farm, using various qualitative methods (focus groups, interviews and rapid assessments) and nutrition and ecology indicators.
2. Understand how to use food composition tables, measure consumption patterns of a variety of foods, understand how to measure intra-household food distribution and food usage and traditions.
3. Measure diet diversity and quality using varying survey tools and methods and interpret results.
4. Understand nutritional status of populations including anthropometry, visual signs of micronutrient deficiencies and selected biochemical micronutrient levels.
5. Undertake multi-sectoral food systems approach to research that includes various sectors: agriculture, health and education.
6. Carry out a rapid field assessment of an improved food and nutrition system.
7. Promote a food-based approach to nutrition.

Methods

The course duration is five days, including four full days of in-class training and one full day of field work.

The course outline emphasizes the cross-cutting, multidisciplinary nature of food systems research. Each step of food system research, from farm to fork to consumer, is drawing on a unique set of quantitative and qualitative research (and development methods) from each sector. The most important methods are listed in Table 1. These will be introduced during Day 1 – 4, while the final day will be putting these methods into practice:

- Day 1: Measuring and analyzing agricultural biodiversity on farm, and nutritional functional diversity – involving the agriculture sector
- Day 2: Measuring and assessing composition, consumption/intake, and usage of foods sourced from ‘agrobiodiverse’ landscapes– involving agriculture, ethnobotany, skills attainment and knowledge in nutrition
- Day 3: Measuring and quantifying diet diversity and quality– involving nutritional and dietary assessment skills
- Day 4: Assessing nutritional outcomes – involving clinical health aspects
- Day 5: Putting theories into practice: how to do operations research and rapid assessments on food and nutrition systems in the field from farm to fork to human health.

Table 1. Overview of research methods

Elements of food systems	Research methods	Institutional capacity/sector
1. Agrobiodiversity on farms	<ul style="list-style-type: none">• Species richness• Nutritional functional diversity• Characterization (crop descriptors)	Agriculture
2. Composition, consumption and usage/safety	<ul style="list-style-type: none">• Food composition	Agriculture Health and nutrition (at household/village level)
3. Diet diversity and quality	<ul style="list-style-type: none">• Diet diversity scores	Nutrition
4. Nutrition and health outcomes	<ul style="list-style-type: none">• Anthropometry• Biochemical	Nutrition and Health

Who should apply?

The training course targets young scientists interested the link between agricultural systems and food systems, in particular nutrition systems that use and integrate agricultural biodiversity.

Given the multi-disciplinary nature of food systems research and enhancement, participants can come from a range of disciplinary background, such as agriculture, health and nutrition, socio-economic sciences, ethnobotany, etc.

Applicants eligible for this call should:

- **Be nationals of and living in Ethiopia, Malawi, Mozambique, Kenya, Uganda**
- Be national scientists attached to a university, research institution or a research oriented and not-for-profit NGO in the region

- Be under 40 years of age and at the beginning of their research career
- Have at least a Master's or equivalent degree from an accredited institution
- Be involved in agriculture and/or nutrition research of relevance to regional priority NUS of crops/fruits. **Please refer to the list of priority species and research themes (Annex 1)**
- We particularly welcome applications from female professionals.

Applications should include:

- Application form, including an Abstract/Research Note of not more than 400 words
- Curriculum Vitae

The application form and course information is available at

<http://www.bioversityinternational.org/capacity-strengthening/training-courses/>

Applications should be sent via email to: secretariat@rforum.org

Deadline for applications is 28th October, 2013

Please write in subject line: Food Systems

Late applications will not be considered.

Only selected participants will be notified.

Priority species and research topics for NUS research in Eastern and Southern Africa

A regional stakeholder workshop for Eastern and Southern Africa was held in Nairobi, Kenya on 26-28 July 2010 and was attended by 31 participants from Ethiopia, Kenya, Malawi, Mozambique and Uganda. The participants agreed on the following NUS priority species for the region.

Cereals	Research questions
Grain Amaranth <i>Amaranthus</i> spp	<ul style="list-style-type: none"> • Can amaranth be integrated in existing cropping systems? • Do the current processing methods affect the nutrient content and bioavailability of nutrients from amaranth? • Can amaranth seed production be enhanced to improve food security in the region? • Can rural small-holder farmers be organized to produce amaranth on large scale to sustain cereal and weaning foods industry? • What is the range of culturally acceptable products that can be produced from grain amaranth to improve food security and nutrition in the region?
Finger millet <i>Eleusine coracana</i>	<ul style="list-style-type: none"> • Can finger millet be bred for early maturity? • How can threshing of finger millet be improve to reduce the labor and reduce post-harvest losses? • How can production and consumption of millet be enhanced to improve food security and dietary diversity in areas where it is not consumed? • Can de-branning improve acceptability (reduce musty taste) of millet while preserving nutrients and antioxidants? • What technological developments can improve the palatability of straw for livestock? • What are the different products that can be produced from millet straw?
Pearl Millet	<ul style="list-style-type: none"> • How can production and consumption of pearl millet be enhanced to improve food security and dietary diversity in areas where it is not consumed? • What are the strategies to reduce losses effected by birds? • Can pearl millet provide a good supplement for finger millet as staple and major grain used for making weaning foods? • What is the regional capacity to produce pearl millet for food?
Sim Sim (Sesame) Seed	<ul style="list-style-type: none"> • How can sim sim production in region be improved? • Do the current processing methods affect the content and bioavailability of nutrients from sim sim? • Can rural small-holder farmers be organized to produce sim sim on large scale to sustain demand? • What is the range of culturally acceptable products that can be produced from sim sim?
Legumes and pulses	Research questions
Cowpea <i>Vigna unguiculata</i> Bambara groundnut <i>Vigna subterranea</i>	<ul style="list-style-type: none"> • Are there genotypes of high-yielding varieties? • Is it possible to intercrop prioritized legumes with crops commonly grown in the region? • Are there varieties associated with efficient nitrogen fixing bacteria? • What are the mechanisms for promoting consumption of the prioritized

Lablab bean	legumes in the region?
Fruits	Research questions
Guava (<i>Psidium guajava</i>)	<ul style="list-style-type: none"> • Ethno-botanical surveys • Collection & inventories • Sharing germplasm within region • Morphological & genetic characterization • Adaptive research: Post harvest handling to address shelf life • Processing & value addition • Crop protection research • Market research
Prickly Pear (<i>Opuntia spp</i>)	<ul style="list-style-type: none"> • Domestication, propagation & production packages? • Consumer acceptability • Phenological studies (maybe develop flowering calendar?) • Nutritional studies
Mexican Wild Apple (<i>Uapaca spp</i>)	<ul style="list-style-type: none"> • Propagation and production studies • Breeding for fewer seeds & more pulp • Sexual identification studies • Value addition studies, marketing issues • Protection from pests • Nutritional studies
Roots and tubers	Research questions
Arrow Roots (<i>Colocasia spp</i>)	<ul style="list-style-type: none"> • Collection of germplasm • Propagation and production studies • Acceptability studies • Nutritional studies • Agronomic studies • Varietal selection • Preservation & processing • Marketing and promotion
Wild/Livingstone potato (<i>Plectranthus spp</i>)	<ul style="list-style-type: none"> • Propagation & production • Acceptability • Nutritional studies • Medicinal studies • Processing • Storage & keeping ability • Marketing
Yams (<i>Dioscorea Spp</i>)	<ul style="list-style-type: none"> • Propagation & production • Acceptability • Nutritional studies • Medicinal studies • Processing • Storage & keeping ability • Marketing

Leafy vegetables	Research questions
Vegetable amaranth <i>Amaranthus</i> spp	<ul style="list-style-type: none"> • Morphological and Genetic characterization of the different species • Assessment of commercial feasibility of the different amaranth types • Evaluation of the nutritional and health value (phytochemicals) of the different species • Physiological studies e.g water and nitrogen use efficiency • Intercropping systems with other NUS to assess the pest and disease control, yields and nutritional quality • Development of technologies to extend the shelf life for fresh vegetables, processing and product development • Value chain analysis and market research
African nightshades <i>(Solanum spp)</i>	<ul style="list-style-type: none"> • Assess the nutritional aspects as well as other phytochemicals • Physiological studies e.g water and nitrogen use efficiency • Shelf life studies and product development • Value chain analysis and market research • Traditional knowledge on uses
Spider plant (<i>Cleome gynandra</i>)	<ul style="list-style-type: none"> • Topping studies to lengthen leaf production • Adaptation studies in different ecological zones/seasons • Seed viability studies • Nutritional and phytochemical studies • Shelf life studies • Value chain analysis and market research • Traditional knowledge on uses
Undomesticated plants	
Horseradish tree/Drumstick tree <i>(Moringa spp)</i>	<ul style="list-style-type: none"> • Ethnobotanical and utilization surveys • Morphological and genetic characterization • Agronomic and adaptation studie • Nutrition and phytochemical studies
Vine spinach (<i>Basella alba</i>)	<ul style="list-style-type: none"> • Genetic characterization • Nutritional and phytochemical studies • Agronomic studies • Documentation of the traditional knowledge on production and utilization • Shelf life studies • Physiological studies on drought tolerance • Recipe development and evaluation
Baobab fruits and shoots <i>(Adansonia digitata)</i>	<ul style="list-style-type: none"> • Document traditional knowledge on conservation and utilization • Nutritional and phytochemical studies • Product development (fruit) • Morphological and genetic characterization

Additionally, some general research questions were identified:

- Neglected in research (characterization of different provenances in different ecologies)
- Develop agronomic information on the species
- Research possibilities for value addition in terms of various products for different market
- Nutrition information
- Collection of indigenous knowledge
- Studies on gender and cultural dimensions (in some communities there are male and female crops)
- Collection and conservation