



**BIODIVERSITY
FOR FOOD AND
NUTRITION**



Biodiversity for Food and Nutrition Initiative



SRI LANKA

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Forty-six identified agro-ecological regions in the dry, intermediate and wet zones of Sri Lanka scattered over the island create a multitude of ecosystems that house a diverse array of plant species. Nature reserves, botanical gardens and 1.3 million home gardens help to conserve this diversity, while 5300 cereal accessions, 2500 vegetable accessions and 400 fruit accessions are kept in seed and field gene banks across the country in order to safeguard plant genetic diversity.

Sri Lanka is also home to an estimated 60 forgotten and underutilized plant species, in particular several vitamin-rich fruit species. Sri Lankan farmers have been able to maintain this

rich diversity in crops and gardens for thousands of years, but urbanization and generational changes in food preferences and occupations have led to changes in food production and consumption habits resulting in a population that carries the double burden of disease with 20% undernourished and 30% overweight or obese.

Land clearing and a lack of attention and care has led to at least 5 wild rice species becoming in danger of extinction, while several fruit species are kept alive only by inclusion in exposed home gardens in rural areas. Moreover, these wild rice species are known to exhibit important traits such as pest and disease resistance and saline and

drought tolerance, which are extremely desirable characteristics for adapting to climate change and extreme weather patterns.

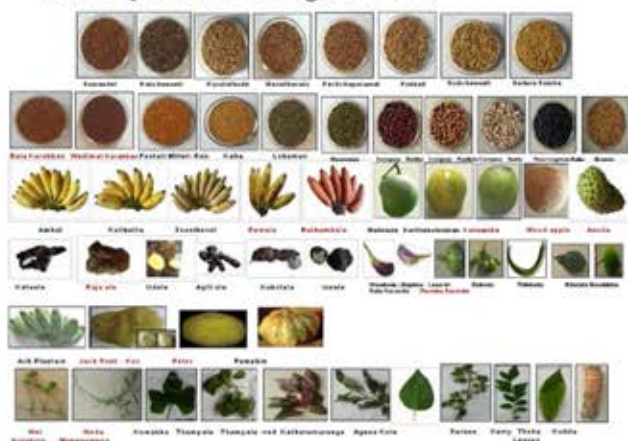
Discovering similar potential in the wild and traditional varieties of other edible plant species could be vital for establishing food security in the future, while gathering greater technical, political and financial support and incentives for farmers to conserve plant genetic diversity is needed to raise awareness of the importance of highly nutritious traditional plant species.



PROJECT HIGHLIGHTS

Providing Evidence

Currently, information on the nutritional composition of traditional Sri Lankan foods is limited, and any data that does exist is fast becoming outdated due to advancements in the accuracy and precision of testing methods. 28 traditional edible plant species including traditional rice, cereals, pulses, root & tubers, vegetables, leafy vegetables and fruits have been prioritized for food compositional analysis based on their high nutritional value, cultural importance, and associated traditional knowledge e.g. medicinal properties. Nutritional composition tables generated will be included in a national nutrition database as a collaborative effort of the University of Peradeniya, Wayamba University of Sri Lanka and Department of Agriculture.



The BFN information portal constitutes a food composition database, associated traditional knowledge, nutrition facts & recipes on local priority agricultural spices.

Data collected by two Master students from the University of Ghent on household diet diversity scores (HDDS) determined using 24-hour diet recalls in Gampola and Udukumbura pilot sites revealed 50% of the households interviewed had economic access to a variety of food groups, and that traditional vegetables, legumes and fruits were included in diets, but preferences varied by region.

Fruits and fish were the least consumed food groups, and recommendations were made for promoting these foods in future public health interventions.



Further investigation by these students into the agro biodiversity in Sri Lankan diets and associated health outcomes in all 3 pilot sites showed over 10% of children were found to be underweight, while almost 30% of adults were overweight or obese. The risk of inadequate nutrient intakes was high for Vitamins A, B12, C and E as well as riboflavin and folate, which were taken as the percentage of intakes that fell below the Estimated Average Requirement (EAR)

Research teams from Wayamba, Peradeniya and Ruhuna University gathered complimentary data about Potentially Important Regional (PIR) foods that are both high in these micronutrients and were locally preferred across all 3 pilot sites. These included gotukola (*Centella asiatica*), pumpkin (*Cucurbita maxima* & *Cucurbita moschata*) and eggplant (*Solanum melongena*). Regional differences in PIR food preference were reported, with ridge gourd, mango and papaya popular in the Gampola site, but not in the Udukumbura and Sinharaja sites.

Data from an additional baseline survey carried out in Gampola by Wayamba University in 2014 reported the highest perceived biodiversity loss over the past 20 years has occurred for banana, coconut, lime and orange species, as judged by home garden owners and farmers. In terms of market opportunities, 92% of households reported selling excess produce to traders, with only 1% selling to other households. Local markets were the most common selling location (48%), followed by sale at the farm gate (29%), and least of all at regional markets (19%)

Creating Policy Environment & Markets



Effective policy mainstreaming tools, recommendations and policy brief encompassing biodiversity, food and health been reviewed and drafted by policy consultants' supported by BFN, in addition revisions in the NBSAP 2016-2022 completed with integration of BFN concerns and goals, reinforcing policies to suit the in-situ concerns of securing national food security through sustainable use of agro biodiversity.

BFN Sri Lanka has facilitated the opening of food outlets selling diverse traditional local foods. "HelaBojun; True Sri Lankan Taste" market outlets are also being run by women farmers trained in nutrition, healthy recipe production, food safety and business skills by the Women Farmers Extension Program of the Department of Agriculture, a national BFN partner. These outlets play a vital role in successfully marketing diverse local foods, empowering women, and reviving interest in traditional food culture.

Trainings have been carried out in regard to increasing local fruit and vegetable consumption through HelaBojun sales centers with in-cooperation of local food dishes elevated to restaurant quality cuisine to better appeal a wider consumer range. Efforts have been carried out to determine the nutrition composition of mixed dishes of the traditional food items at the Hela Bojun centers. These efforts are aimed at the public to create awareness and inculcate trends amongst Sri Lankans on the concepts of calorie-based intake of food.

A new marketing outlet has been opened with facilitation from the BFN project for sale of nutritious, local healthy food majority representing the food items prepared using local tuber and root crops in partner with Community Development Center, Aranayaka

In line with Sri Lanka's new governmental commitment to support sustainable agriculture and the marketing of traditional agro biodiversity, these market outlets aim to:

- Generate agriculture-based employment and improve private enterprise
- Provide sustainable and stable family income to increase well being
- Create awareness and interest among new generations about the value of traditional foods and recipes which are gradually disappearing
- Minimize the influence of fast food culture to reduce health problems
- Use locally-grown rice, coconut, finger millet, cassava, sweet potato, green gram, black gram, jackfruit, vegetables, leafy vegetables and a range of local fruits to reduce foreign imports while creating a demand for local produce.
- Promote healthy food without flavoring enhancers, artificial coloring, preservatives

Raising Awareness

The 9th “HelaBojun” market outlet was opened by the Department of Agriculture in collaboration with Ministry of Mahaweli Development and Environment and the Ministry of Agriculture during the International Day for Biological Diversity. The market was opened under the patronage of Hon. President Mr. Maithripala Sirisena and other government officials, and BFN Sri Lanka delivered presentations on the importance of biodiversity for improving nutrition and the progress the BFN project has made so far. The 9 market outlets are successfully selling traditional food biodiversity and reviving interest in Sri Lanka’s Traditional food culture.

A Two-day food festival entitled “Healthy Nation through Traditional Food”, was organized by the Ministry of Mahaweli Development and Environment. Many attended the event, confirming the considerable public interest in traditional foods and food culture.

BFN enacts on promotion to increase utilization of agro-biodiversity for human nutrition for nutrient rich, under-utilized, traditional crop varieties including local root & tuber crops. This program is being successfully carried out by BFN partners at the Community Development Centre (NGO) addressing conservation of fast disappearing, highly nutritious, local root and tuber crops -“*Wel ala*”. Addressing dissemination of knowledge by conducting trainings on cultivation, promotion and introduction of local root & tuber crops into home gardens. The project also caters on emphasizing associated traditional knowledge & medicinal properties; along with popularizing local recipes for production of novel food products utilizing local root and tuber crops; including *kiri ala* chips, *mukkru*, *wal ala dodol*, toffee& *damdina ala* porridge.



In December 2014, experts from a variety of disciplines came together at the International Symposium on Biodiversity, Food and Nutrition, organized by Wayamba University in collaboration with BFN Sri Lanka, the Ministry of Mahaweli Development and Environment and the Department of Agriculture. Presentations were delivered by BFN country partners to showcase best practices, and experts were able to widen their knowledge base by discussing the linkages between agriculture, biodiversity, nutrition, food consumption and food security.



Addressing the wastage of vast numbers of under-utilized fruits in Sri-Lanka, production of under-utilized fruit RTS “ready to serve drink” and commercialization has been spear headed by the BFN project with the partners at the National Food Promotion Board. Highlighting the aim of using the under exploited potential of the fruit to contribute to food security, nutrition, health, income generation and environmental services. RTS of three under-utilized fruits have been produced including; Elaeocarpus serratus - *veralu*, Anona muricata - *anoda* & local Mangifera indica species. Marketing, commercialization and training for entrepreneurs are underway.



The school home garden establishment program was initiated with the aim of establishment of home school gardens exhibiting agro-biodiversity, sustainable use and promotion of home gardening; for enhanced human nutrition and inculcating good practices amongst the younger generation; who will be the enactor of a better food secure community. Training program for home garden establishment was carried out by the Department of Agriculture for schoolchildren and tutors addressing the concepts & methods on home gardening. School garden establishment at the *Gampola, Giribawa School* has been initiated, with promotion of practices on organic manure production, composting and bee keeping.



Programs for establishment of model gardens depicting priority agro-biodiversity species, with high nutrition value and added attributes, including medical value in partner with the National food promotion board is underway. Popularizing use of nutritious herbal food and beverages through empowerment and self-employment programs for women to in partner with the Department of Ayurveda is successfully been implemented with training programmes and production of novel food products with added herbal and medicinal value.



FUTURE ACTIONS

The Department of Agriculture, (Fruit Research & Development Center and Plant Genetic Recourse Center) will undertake a festival for under-utilized fruits to exhibit the fruit biodiversity in the country to promote utilization of under-utilized fruits and popularize in an active and attractive manner to a wider society.

As a biodiversity rich country Sri Lanka has made individual efforts on various aspects to make efficient use of it. But the general public lacks awareness on the sustainable use of biodiversity for healthy food. Multiple media approach to promote conservation & utilization of local agro biodiversity for improving human nutrition & wellbeing will be spear headed by Information & Communication Center, Department of Agriculture for production and broadcasting of TV advertisement, radio advertisement and other publication media.

Other major activities will include improvement of food and livelihood security through establishment of home gardens; School Feeding Programmes, Promotion and re-introduction of traditional crops species including local root & tuber crops and Herbal Food and Beverage Fair.





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For more information
Danny Hunter
d.hunter@cgiar.org
Tel: (39) 06 61181228
Fax: (39) 06 61979661
www.b4fn.org

Bioversity International
Via dei Tre Denari 472/a,
00057 Maccarese (Fiumicino),
Rome - Italy
Tel: (39) 06 61181
Fax: (39) 06 6118402
www.bioversityinternational.org

BFN Project Management Unit
P O Box 59,
Plant Genetic Resources Centre,
Gannoruwa, Peradeniya,
Sri Lanka.
Tel: +94-812058380
Fax: +94-812058380
www.bfnrilanka.org



**Convention on
Biological Diversity**

**The BFN Project contributes to the implementation of the
Convention on Biological Diversity's (CBD) Cross-Cutting Initiative
on Biodiversity for Food and Nutrition**