



Fruit and Vegetables
for Sustainable
Healthy Diets

F&V Biodiversity: Making Use of Underutilized Fruits and vegetables for better diets and nutrition in Sri Lanka

Danny Hunter (Alliance of Bioversity International and CIAT), **Renuka Silva** (University of Wayamba), **Gamini Pushpakumara** (University of Peradeniya), **Diddugodage Chamila Jeewani** (Plant Genetic Resources Centre), **Roland Schafleitner** (World Vegetable Centre)

Sri Lanka is a global hotspot of unique, novel fruit and vegetable biodiversity

- Fruit genetic resources and their diversity
- Vegetable genetic resources and their diversity
- Root and tuber crop diversity
- Collections, conservation, seed systems' issues
- Gap analysis, prioritizing F&V, target regions for future collection and conservation under FRESH
- Opportunities to monitor biodiversity and rescue threatened F&V diversity using CCA

- Barriers and constraint facing promotion of underutilized F&V
- Enabling policy environment and opportunities for future cross cutting actions

Working Paper #08



Fruit and Vegetables
for Sustainable
Healthy Diets

Diversity of underutilized vegetables and fruit in Sri Lanka: prioritization for collection, conservation, genetic improvement, and promotion

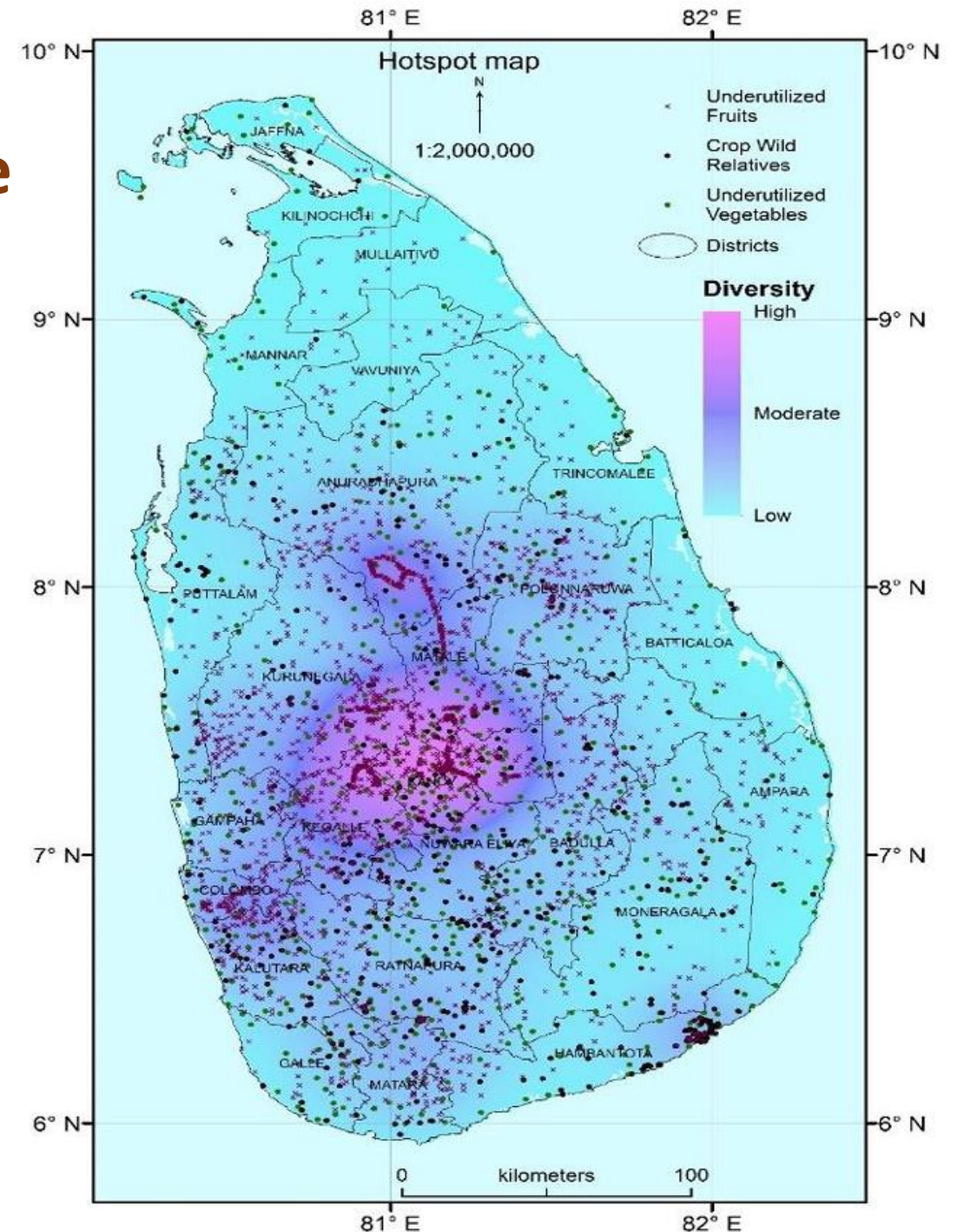
Pushpakumara, G., Silva, R., Borelli, T., Hunter, D., Ariyaratne, M., Eeswara, J., Fonseka, R., Fonseka, H., Karunaratne, A., Dissanayake, S., Lowe, A., Rankoth, L., Dissanayake, K., Ranawaka, L., Kumarihami, P., Liyanage, N., Sugathadasa, S., Abhayagunasekara, C., Godamulla, D., Samarasinghe, G., Nanayakkara, S. and Liyanage, A.

University of Peradeniya/Wayamba University of Sri Lanka

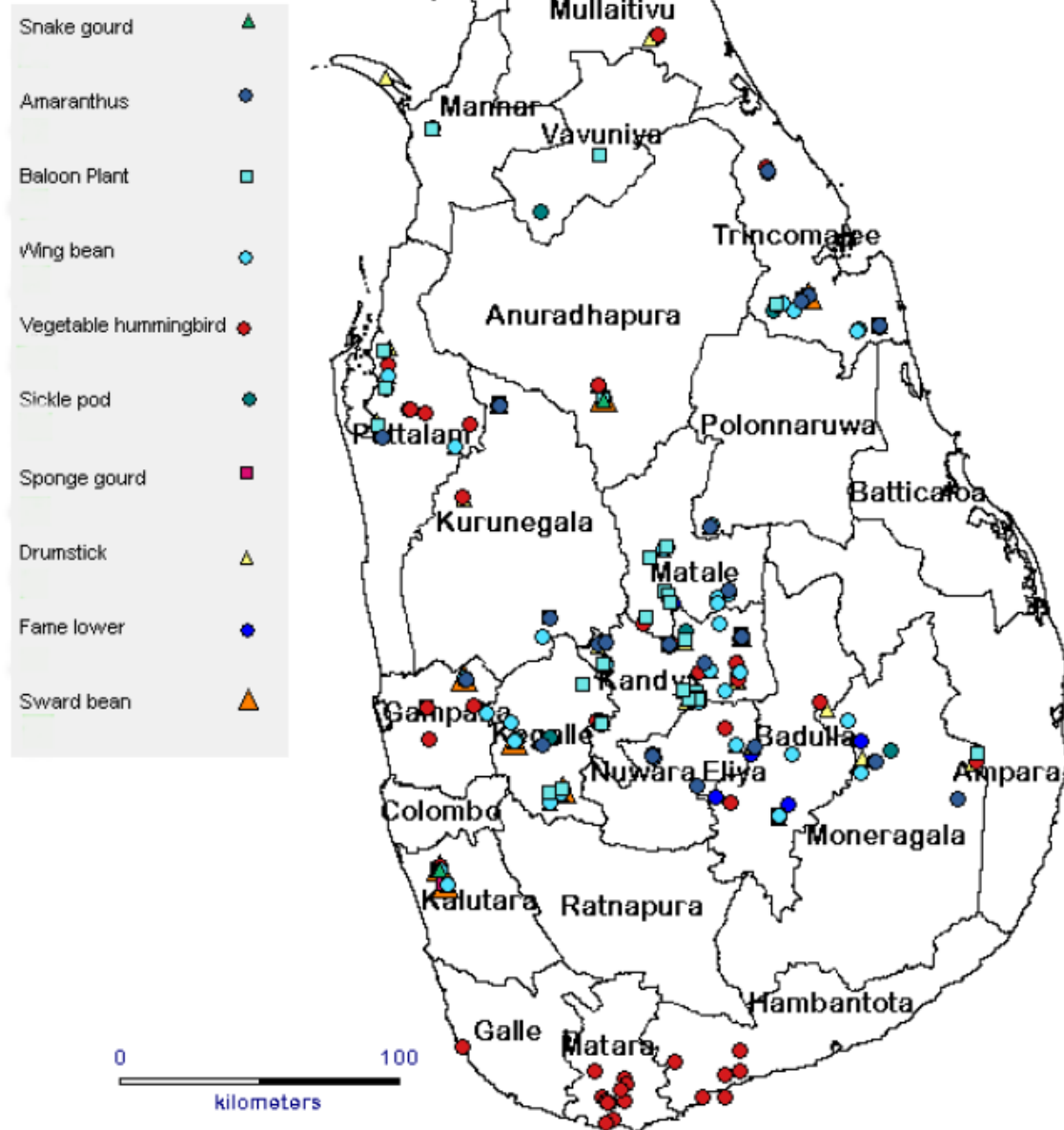
July, 2023

Sri Lanka's hotspots for neglected and underutilized fruit and vegetable diversity

- Fruit genetic resources & their diversity
(230 species belonging to 57 families)
- Indigenous and leafy vegetables genetic resources & their diversity
(105 species belonging to 47 families)
- Root and tuber genetic resources & their diversity
(19 species belonging to 5 families)



Locations of PGRC exploration missions and germplasm collection sites for 10 priority leafy vegetables



	Common name	Local name	No. of seed samples collected	No. of vegetative propagated samples collected
1	Amaranthus	Thampala	39	2
2	Balloon plant	Penela	69	1
3	Fame flower	Gas Nivithi	19	18
4	Moringa/Drumstick	Murunga	6	62
5	Sickle pod	Tora kola	34	4
6	Snake gourd.	Pathola	4	0
7	Sponge gourd	Niyan Watakolu	27	0
8	Sword Bean	Awara	18	0
9	Vegetable hummingbird	Kathurumurunga	82	19
10	Winged bean	Dambala	98	0
Total			396	106



Constraints to consumption of traditional fruits and vegetables

- Quantitative data on consumption of traditional and indigenous F&V is scarce
- Survey of 100 HH in Maharagama Divisional Secretariat Division, 0.4% consumed underutilized fruits daily, 3.6% frequently, 24% periodically, 28% rarely and 44% never.

Fruits (Rangani, 2017)

1. Limited market availability
2. Less commercial cultivation
3. High price
4. Perceived low nutrient level
5. Less tastiness
6. Low market demand
7. Seasonality
8. Limited awareness

Vegetables (Chamara *et al.*, 2021)

1. Inadequate knowledge on preparation methods for underutilized vegetables
2. Lack of knowledge on their potential to contribute to sustainable food production and food security
3. Inadequate understanding of their unique and rich medicinal and nutritional properties
4. Inadequate research and extension services to promote their cultivation
5. Inadequate availability of quality seed and planting materials
6. Poor recognition in horticultural promotion programmes
7. Lack of information on value-addition and new recipes to meet modern culinary practices
8. Limited land availability for cultivation in farmlands commercially, and other spaces in reservoir bunds, channels, and roadsides



Working Paper #07



Fruit and Vegetables
for Sustainable
Healthy Diets

Consumption and dietary intake of fruits and vegetables in Sri Lanka

With a focus on traditional and indigenous fruits and vegetables

Silva, R., Sitisekera, H., Ranathunga, T., Perera T., Hunter, D., Borelli, T.

July 2023

Over 15 years working on climate smart, nutritious fruits & vegetables in Sri Lanka

- Providing Evidence
- Influencing Policy/Markets
- Raising Awareness



Biodiversity for Food and Nutrition

SRI LANKA

Home / Countries / Sri Lanka

HOME CROP

traditional knowledge and sustainable wellbeing.

PROVIDE E

Fifty-two cultivar composition and

Food and Agriculture Organization of the United Nations

COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE

Voluntary Guidelines for Mainstreaming Biodiversity into Policies, Programmes and National and Regional Plans of Action on Nutrition

Contacts

ABOUT THE PROJECT

Traditional Knowledge on Pest Control

Local Knowledge on Pest Control

Local Knowledge on Pest Control

Raising awareness and understanding about climate smart, nutritious traditional fruits and vegetables

Hela Bojun, 'True Taste of Sri Lanka', women-led food outlets

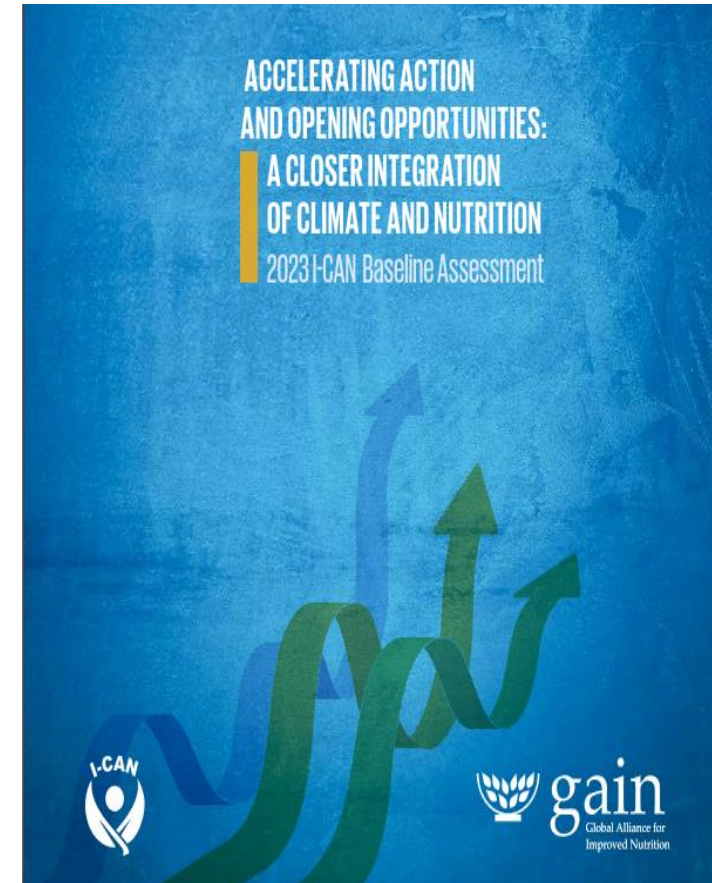


Connecting the dots: creating demand for climate smart, nutrient-rich fruits and vegetables

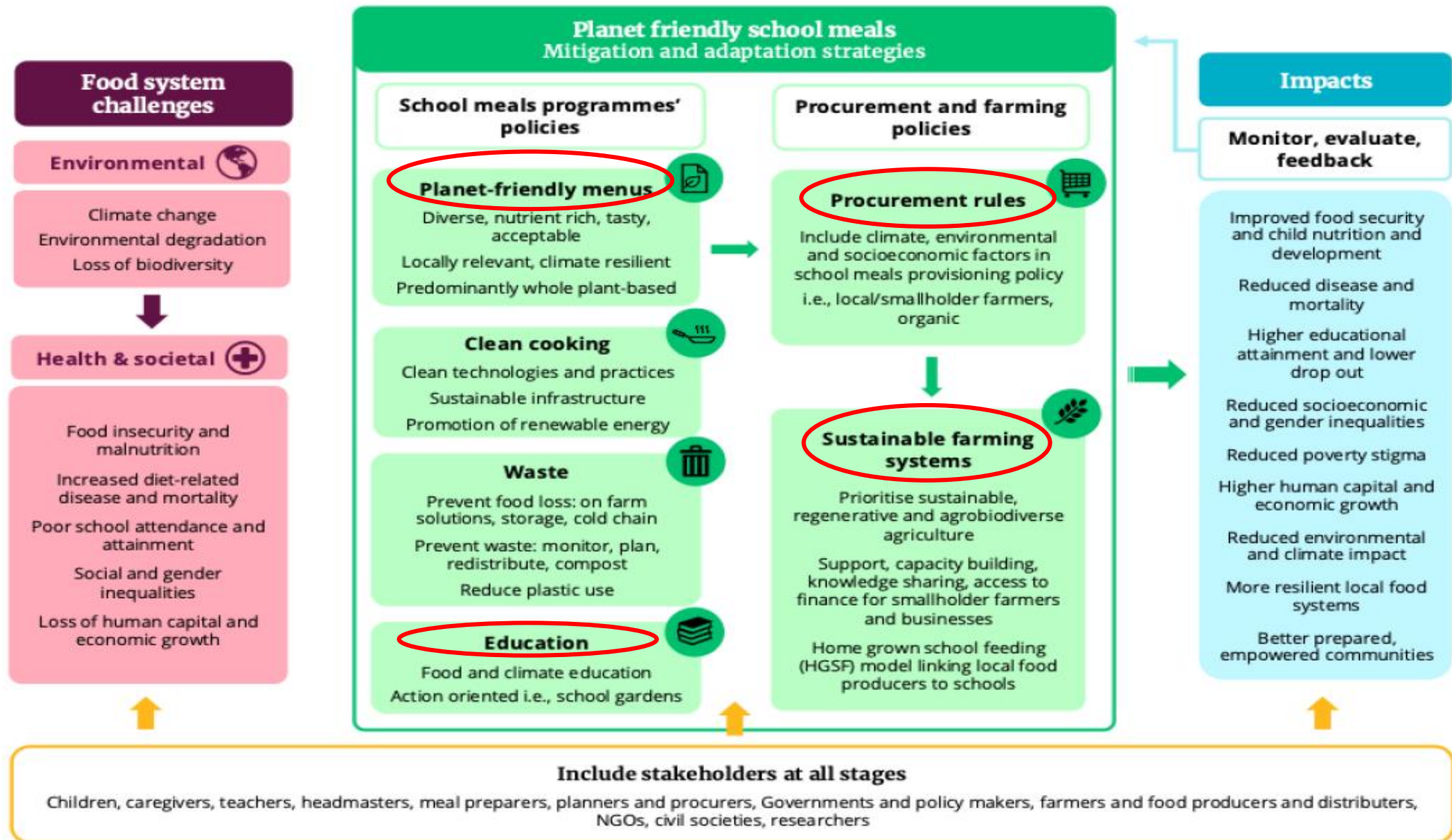


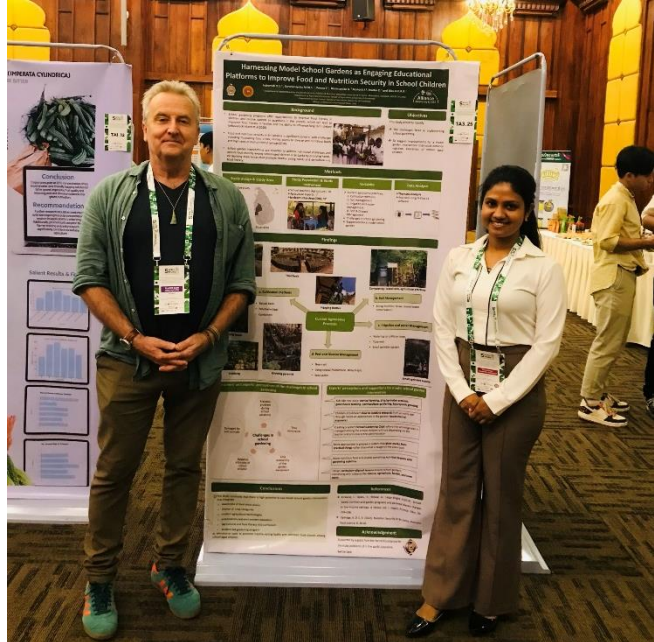
Fruit and Vegetables
for Sustainable
Healthy Diets

- Focus on mainstreaming climate smart, nutrient-rich fruits and vegetables into schools
- Greater cross-country sharing and learning around climate smart, nutrient-rich fruits and vegetables and their promotion
- Strengthen policy alignment and coherence where opportunities present:
 - Agriculture and nutrition policies, plans, strategies
 - Climate and nutrition: GAIN I-CAN Baseline Assessment 2023 (COP29)
 - Biodiversity and nutrition: GAIN I-CAN Evaluation NBSAPs 2024 (COP16)
 - Climate, Biodiversity and Nutrition nexus: Where can BDN contribute?



Schools as platforms for transformative change





GAIN I-CAN Baseline Assessment 2023

Indicator	Number of Documents Analysed	Level 1	Level 2	Level 3	Level 4
Pillar 3: Policy and Strategy					
3.1 Number of countries which are promoting climate-smart nutritious foods such as neglected underutilised species (NUS) and fortified/biofortified crops and staple foods	Insufficient data for accurate assessment. Panel B discusses why this is important, what the current capacities are, and what a database for this might look like.				
3.2 Number of country food-based dietary guidelines that include climate considerations	70 FBDGs	38 FBDGs (54%)	18 FBDGs (26%)	6 FBDGs (9%)	8 FBDGs (11%)
3.3 Number of countries that factor climate into food procurement decisions for food in public settings (e.g., school meals and school feeding, health and care facilities), as well as safety nets and emergency programmes ¹⁰	93 countries	77 countries (83%)	9 countries (10%)	4 countries (4%)	3 countries (3%)
3.4 Number of healthy diet campaigns that also refer to sustainability, especially for children	Insufficient data for accurate assessment. Panel C discusses why this is important, what the current capacities are, and what a database for this might look like.				
3.5 Number of countries with food control systems adapted to increased food safety risks associated with climate change	Insufficient data for accurate assessment. Panels D and E discuss why this is important, what the current capacities are, and what a database for this might look like.				

BIODIVERSITY AND NUTRITION SYNERGIES:

EVALUATING NATIONAL BIODIVERSITY STRATEGIES AND ACTIONS PLANS FOR INTEGRATION



BEST PRACTICE

BEST PRACTICE (LEVEL 4 NBSAP) CASE STUDY: BRAZIL

NBSAP Publication Year: 2016

NBSAP Implementation Year: 2016 - 2020

Brazil is a megadiverse country, with estimates indicating it is home to 20% of the planet's biodiversity. Brazilian biomes include the Amazon, Cerrado, Atlantic Forest, Caatinga, Pantanal, and Pampas. In 2023, the value added of Brazil's agriculture, forestry and fishing economy was 135,667 million USD (6.2% of the country's GDP, which is higher than the global average of 4.1% of GDP).²¹



Key Themes

"Since 2006, the Brazilian government has advanced its policies and actions concerning food and nutrition. It has shifted from solely addressing hunger and malnutrition to considering preventive measures to combat obesity and other diet-related diseases. This shift is reflected in its NBSAP."

Nutrition Key Theme 1: Data collection on the nutritional value of biodiversity

- Brazil's NBSAP does not explicitly include nutrition as one of its five strategic objectives, but it does include the nutritional value of Brazilian biodiversity in the complementary indicators used to measure the achievement of these objectives. The NBSAP indicates that the nutritional value of Brazilian biodiversity is measured by the number of native species, with information on their nutritional value included in the Database on the Nutrition Composition of Biodiversity.

Nutrition Key Theme 2: Knowledge and promotion of nutrition

- Brazil includes nutrition in its Action Plan under Target 1, Action 4 and 47, which aims to raise awareness among Brazilian people about the values of biodiversity and steps they can take to conserve and use it sustainably. Action 4 involves the promotion of knowledge and sustainable use of biodiversity species, as well as the implementation of the Plants for the Future Initiative and Biodiversity for Food and Nutrition Project. Action 47 involves managing the valuation of food plants. The main objectives are to link local knowledge with scientific knowledge and promote good practices in handling food. The action provides an example of preparing flours and preserves to enhance nutritional value. It also includes distributing a recipe book and tailored booklets to the communities participating in the program.

Nutrition Key Theme 3: Genetic biodiversity

- Brazil's NBSAP emphasises the importance of conserving genetic resources and associated traditional knowledge. Target 13 aims to maintain genetic diversity of microorganisms, cultivated plants, and animals, including socio-economically and culturally valuable species by developing and implementing strategies to minimise the loss of genetic diversity by 2020. Action 2 under this target involves integrating biodiversity into food and nutritional safety policies. The NBSAP specifically highlights the Global Environmental Facility Project for the Conservation and Sustainable Use of Biodiversity for the Improvement of Human Nutrition and Well-being. This project aims to demonstrate the nutritional value of agrobiodiversity and its role in promoting healthy diets and strengthening livelihoods. The NBSAP highlights Brazil's objective of influencing policies, programmes, and markets that support the conservation and sustainable use of agrobiodiversity of nutritional value and distributing tools, knowledge, and best practices for the intensified use of biodiversity for food and nutrition.



Some final key messages



Fruit and Vegetables
for Sustainable
Healthy Diets

- **Formally recognize these prioritized indigenous vegetables and fruits** e.g. Brazil
- **Incorporate prioritized IVs (& fruits) when revising FBDGs**, not only nutrient-rich and diversifying diets but they also address environmental considerations and climate-resilience
- From this **other things can flow:**
 - More R&D budgetary support
 - Nutrition-sensitive programs
 - School-based programs
 - Social protection programs
 - Repurposing policies & subsidies



Thank you very much!



Fruit and Vegetables
for Sustainable
Healthy Diets