Taiwan Asian Vegetable Initiative (TASVI)

Taiwan Ministry of Foreign Affairs

Sowing seeds, meeting needs

World Vegetable Center

1973-2023

TARI
Taiwan

MARDI
Malaysia

BPI
Philippines

IPB – UPLB
Philippines

TVRC
Thailand

DOA
Thailand

PRC
Viet Nam

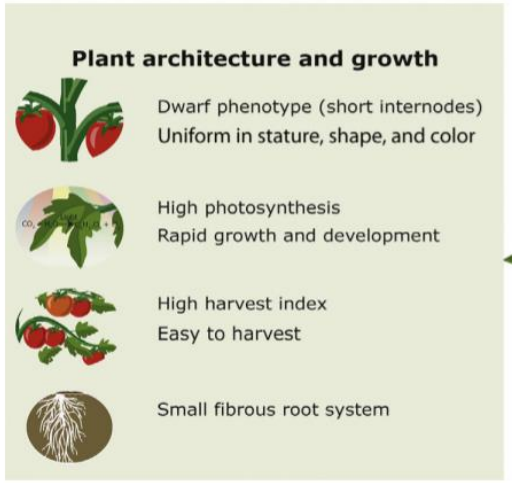
FAVRI
Viet Nam

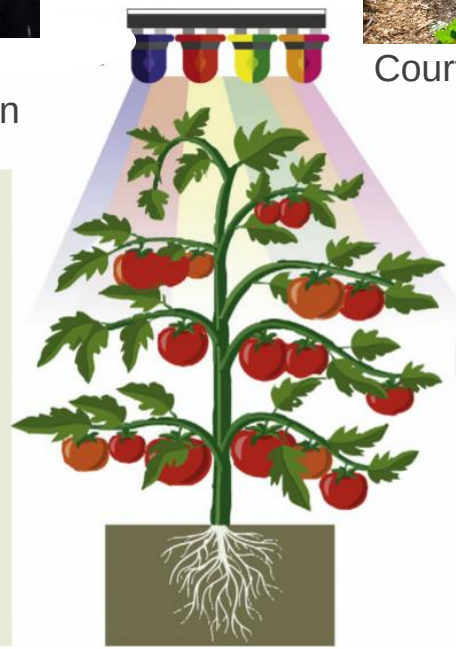
Growing call for nutritious vegetables to diversify diets and develop resilient food systems

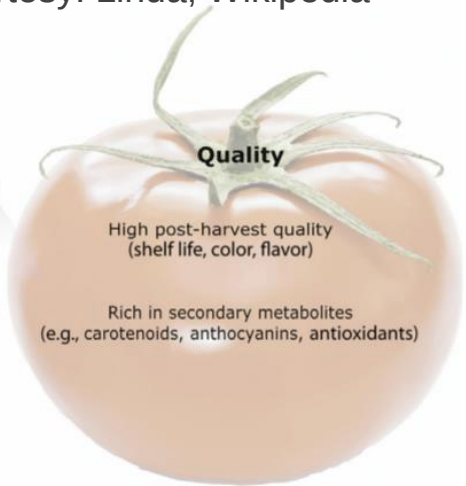
EAT - Healthy Planet diet (eatforum.org)

Courtesy: “YesHealth” Agri-Biotechnology Co. Ltd, Taiwan

Courtesy: Linda, Wikipedia





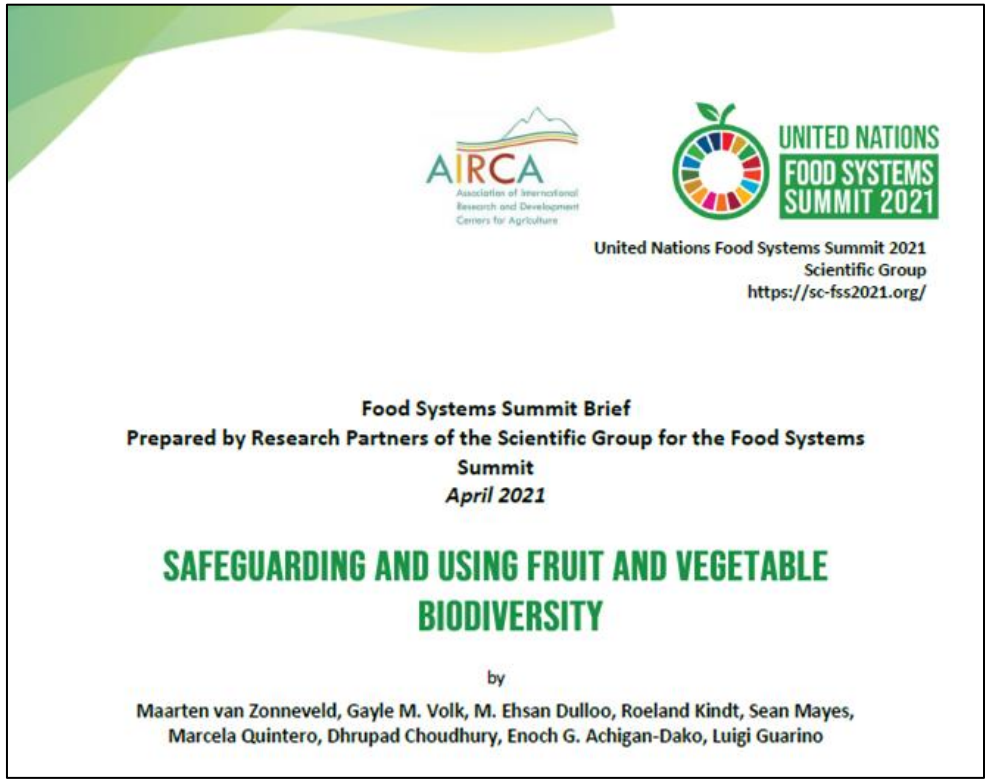


SharathKumar et al., 2020, Trends in Plant Science

Traditional vegetables and crop wild relatives of vegetables are threatened and poorly conserved

- Abundance of 76% of the wild fruits and vegetables declines (Schunko et al. 2022)
- 25% of the about 1,100 recognized vegetables is still not conserved *ex situ* (Meldrum et al. 2018)
- 65% of eggplant wild relatives are poorly or not conserved *ex situ* (Syfert et al. 2016)
- 25% of mung bean wild relatives are poorly conserved *ex situ* (van Zonneveld et al. 2019)

Food Systems Summit Brief on safeguarding and using fruit and vegetable biodiversity


United Nations Food Systems Summit 2021
Scientific Group
https://sc-fss2021.org/

Food Systems Summit Brief
Prepared by Research Partners of the Scientific Group for the Food Systems Summit
April 2021

SAFEGUARDING AND USING FRUIT AND VEGETABLE BIODIVERSITY

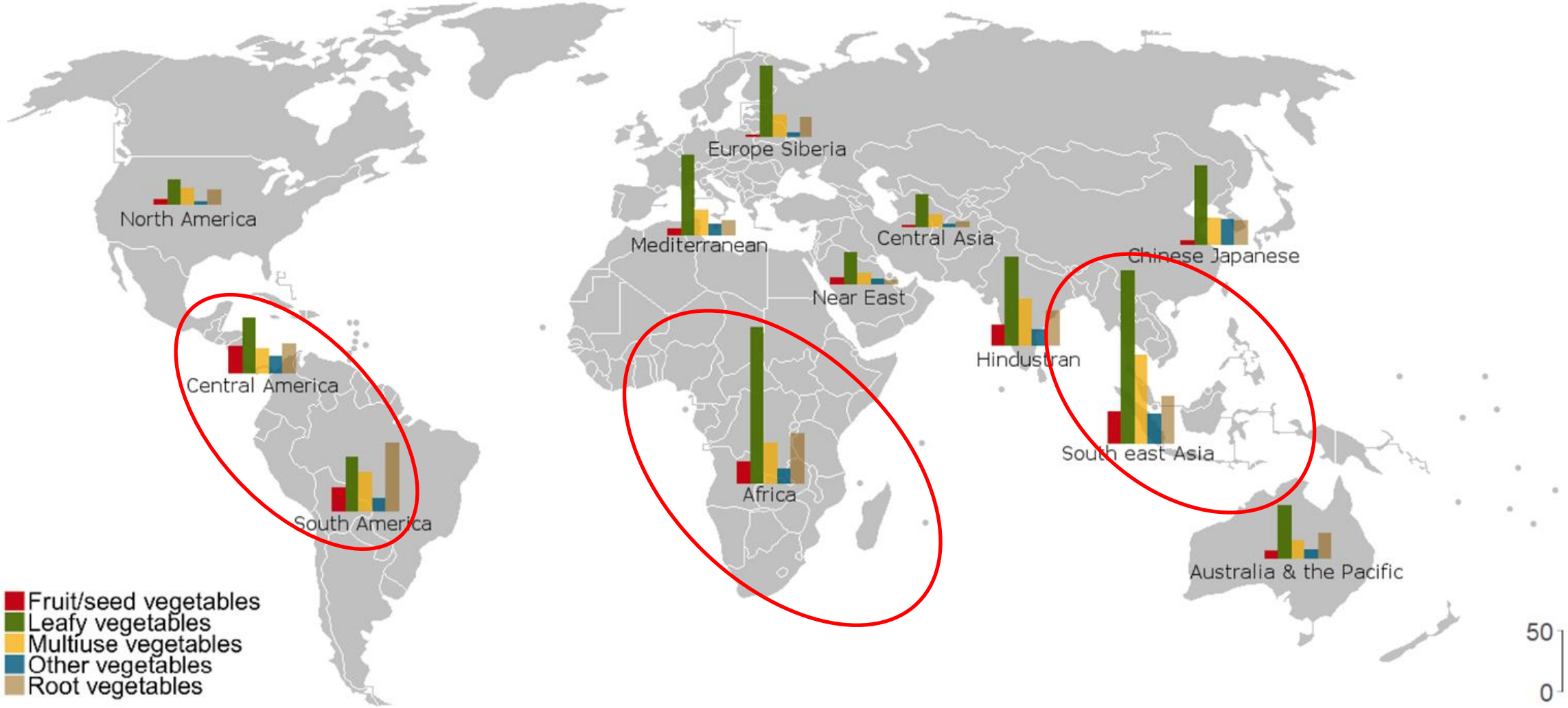
by

Maarten van Zonneveld, Gayle M. Volk, M. Ehsan Dulloo, Roeland Kindt, Sean Mayes, Marcela Quintero, Dhrupad Choudhury, Enoch G. Achigan-Dako, Luigi Guarino

https://hdl.handle.net/20.500.11811/9141

- Loss of fruit and vegetable biodiversity leads to less crop options and variation for breeding
- Limit progress in achieving the 2030 Sustainable Development Goals 1 and 2 on No Poverty and Zero Hunger
- Large Investment needed in a Global Rescue Plan

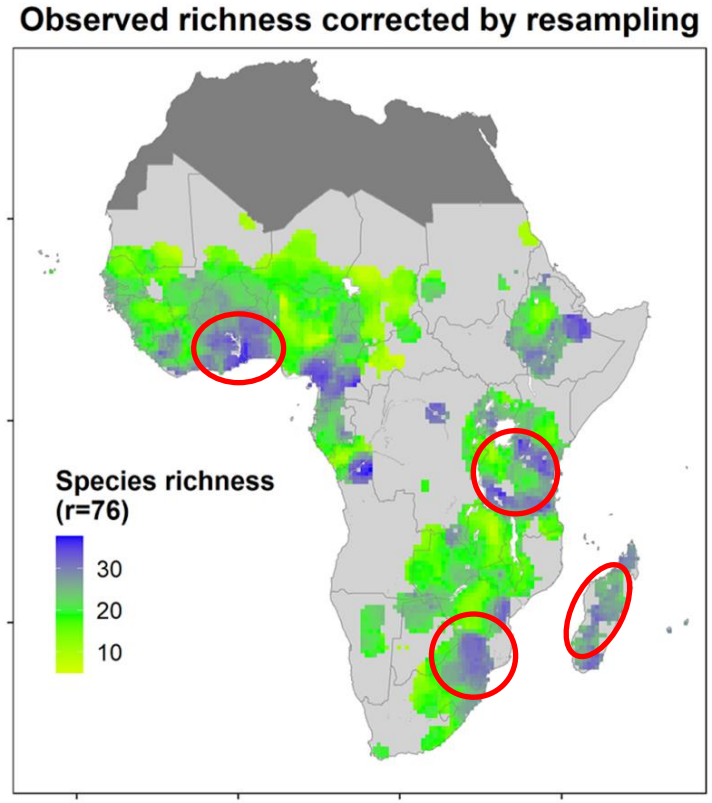
Global vegetable biodiversity hotspots



Meldrum et al. (2018)

Taiwan Africa Vegetable Initiative (TAVI)

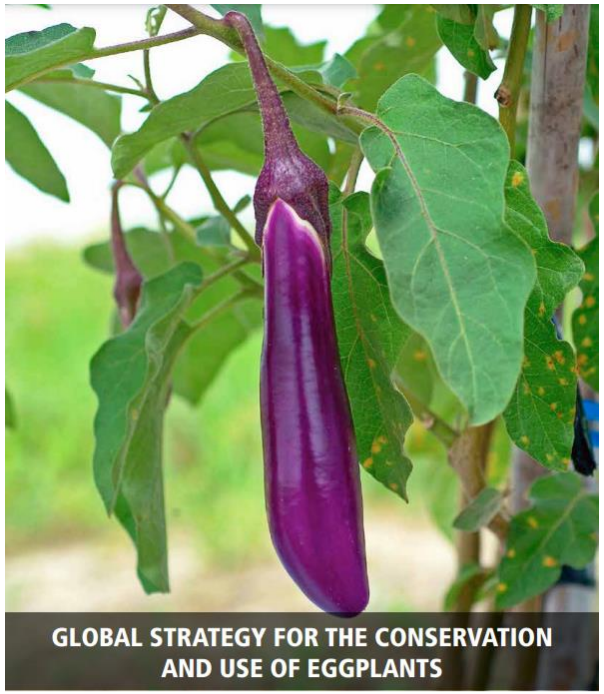
- Upgrade the genebanks of Eswatini and at the WorldVeg regional office in Tanzania
- Rescue African vegetable biodiversity through germplasm collection of over 10,000 landraces and crop wild relatives in four hotspots
- Incorporate vegetables in school and home meals in Eswatini and other countries

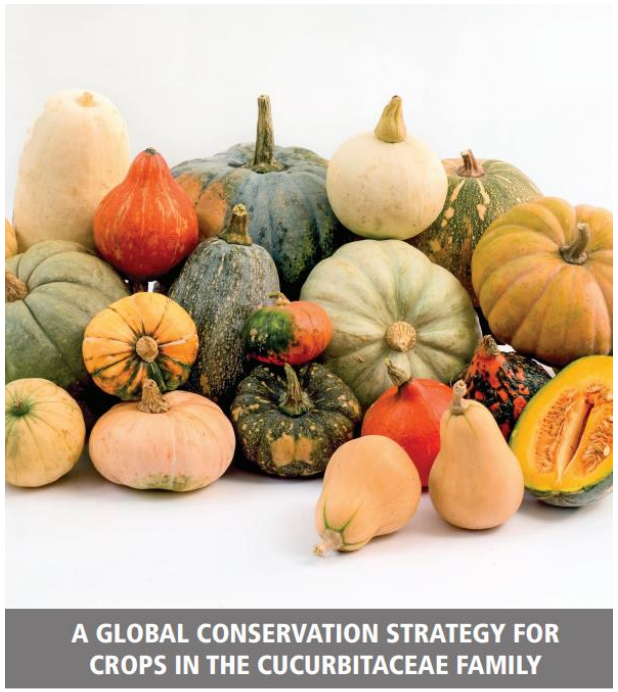


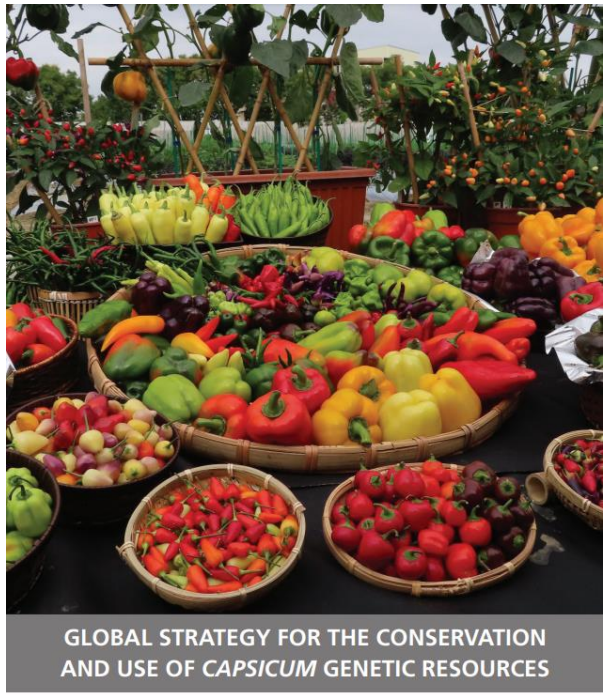
van Zonneveld et al. (2021)

Duration: 3 years -> January 2021 to December 2023

Global conservation strategies







Global presence

Long-term back up

Shanhua, TAIWAN

Taiwan, HQ

Bamako, MALI

Cotonou, BENIN

Hyderabad, INDIA

Bangkok, THAILAND

Arusha, TANZANIA

Genebank in Taiwan

Genebank in Tanzania

Long-term back up (46%)

World Vegetable Center

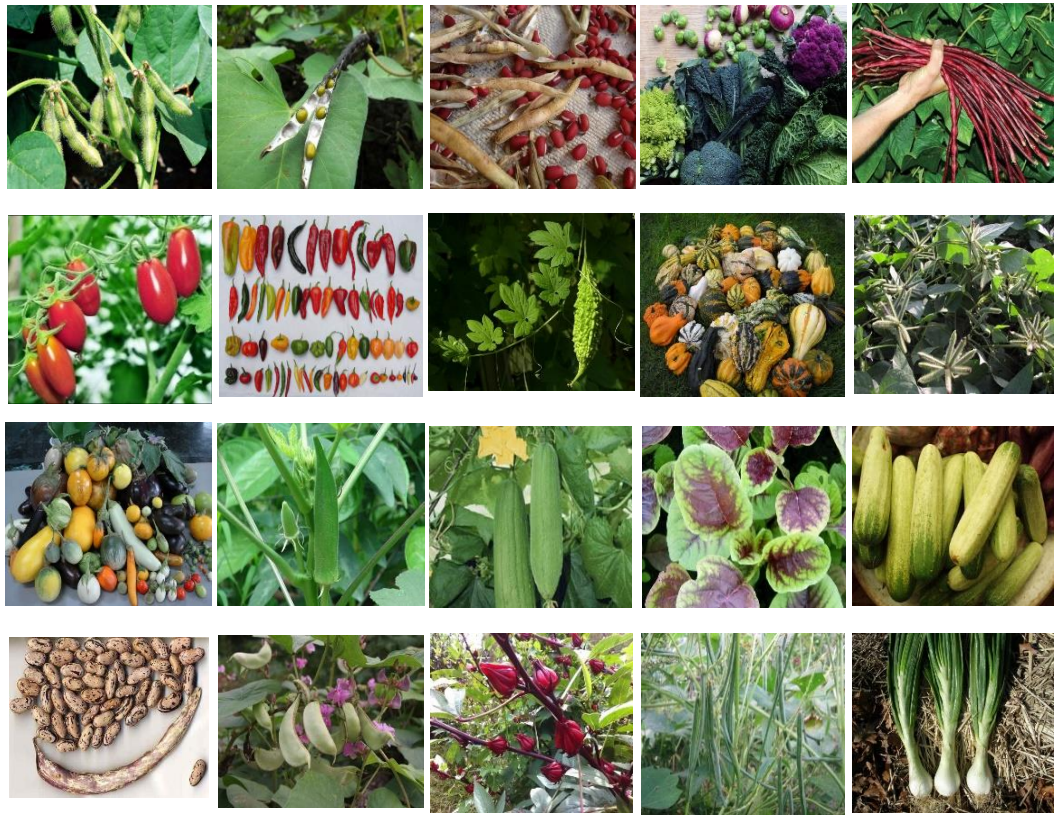
Rescue and conservation of genetic resources in Southeast Asia

Dr Liwayway Engle

- Initiated in the ‘90s by visionary woman scientist
- Many of these collected unique varieties still need to be regenerated
- Possible collection gaps for further plant exploration efforts

Country	Total no. of accessions
Cambodia	667
Indonesia	1,591
Lao PDR	768
Malaysia	1,170
Myanmar	40
Philippines	2,475
Singapore	1
Thailand	4,209
Vietnam	1,084
Total	12,005

Engle and Faustino (2007) Acta Hort



Goals and objectives

Overall goal

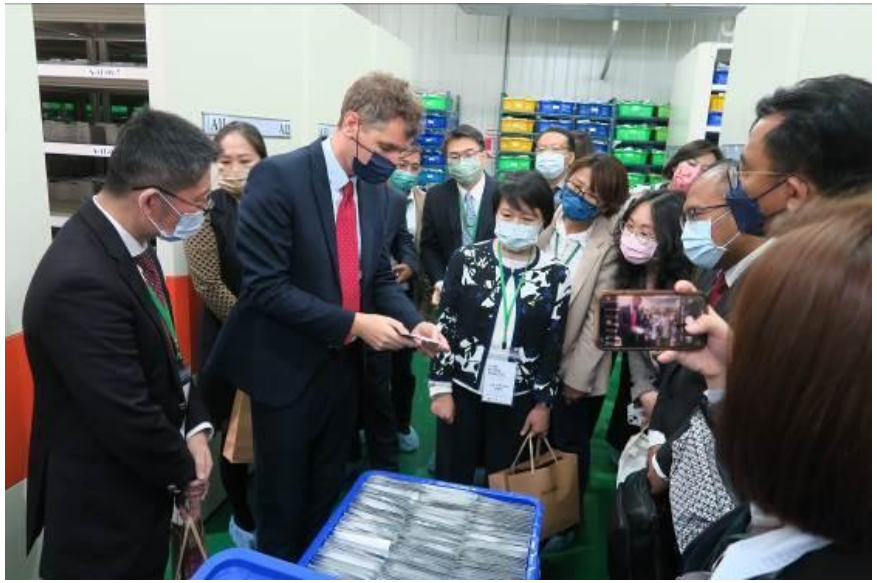
- Strengthen international collaboration to salvage, store, and share vegetable biodiversity in Asia

Objectives

- Create awareness about Taiwan’s important contributions to salvage, store, and share vegetable biodiversity
- Establish a collaborative platform among genebanks in South-East Asia, Taiwan, and WorldVeg to salvage, store, and share vegetable biodiversity
- Strengthen capacity and knowledge sharing among these genebanks
- Repatriate varieties to ASEAN countries

Launch in Taiwan

Field day on December 6, 2022 at HQ to launch TASVI in Taiwan



- > 25 participants in the official launch including the Secretary-General of MOFA, Director of International Affairs of COA, and Representatives of Trade and Economic offices from Southeast Asian countries
- Demonstration field established for the launch to exhibit accessions for repatriation

Partners

Country	Institutions
Philippines	Institute of Plant Breeding, University of the Philippines and Bureau of Plant Industry
Thailand	Department of Agriculture: Horticulture Research Institute, and National Genebank; Tropical Vegetable Research Center (TVRC), Kasetsart University
Viet Nam	Vietnam Academy of Agricultural Sciences (VAAS): Plant Resource Center (PRC) and Fruit and Vegetable Research Institute (FAVRI)
Malaysia	Malaysian Agricultural Research and Development Institute (MARDI): Breeding Programme, and Horticulture Research Centre
Taiwan	Taiwan Agriculture Research Institute, National Plant Genetic Resources Center

Time table 2023

Activity	Q1	Q2	Q3	Q4
MoUs with partner institutions	Draft MoUs prepared for review		MoUs signed	
Collaborative activities			Agreements for collaborative activities	
Training and knowledge sharing workshop		Invitation sent to invitees	Genebank survey	Workshop organized in Taiwan
Identify accessions for repatriation	List of tentative accessions	Seed viability tests carried out in WorldVeg	DNA samples prepared at WorldVeg of selected accessions	Dataset with passport data of accessions from WorldVeg and participating genebanks

Tentative time table 2024

Activity	Q1	Q2	Q3	Q4
Seed homecoming ceremonies			Seed homecoming events organized in two countries	Seed homecoming events organized in two remaining countries
Closing event				Closing event organized in Thailand
Genomic analysis		Genomic analysis developed		
Repatriation	At least 3,000 accessions selected for shipment	Phytosanitary certificates obtained to export seed	All accessions repatriated	

Visit to Thailand

- February 27 - March 1, 2023
- Visit to TVRC, KU and DOA

Visit to Viet Nam

- March 20-22, 2023
- Visit to Plant Resources Center and FAVRI

Upcoming events in 2023

Planned travels and events	Country	WorldVeg staff involved	Date
Training and co-selection of accessions for repatriation	Viet Nam	Andrew Chan and Somchit Pruangwitayakun	8-12 May
Visit MARDI	Malaysia	Yann-rong Lin	End May
Visit UPLB and BPI	Philippines	Yann-rong Lin	End May
Presentation of TASVI at the AARNET meeting	Brunei	Delphine Larrousse, Maarten van Zonneveld, Yann-rong Lin	29-31 May
Training and co-selection of accessions for repatriation	Philippines	Andrew Chan and Somchit Pruangwitayakun	Early June
Training and co-selection of accessions for repatriation	Malaysia	Andrew Chan and Somchit Pruangwitayakun	Early June
International training event	Taiwan	Maarten van Zonneveld	2-9 November

Next actions

- Work plan for collaborative activities in each country
  - Selection of accessions for repatriation
  - Review of phytosanitary regulations
  - Connection custodians to users
  - Regenerate germplasm
  - Characterize germplasm
  - Share passport and characterization data with users
- Regular progress meetings
- Genebank survey

Way forward

- First steps towards regional collaboration between genebanks and connecting custodians and users
- Start implementation of global rescue plan in Southeast Asia
- Enabling capacity to conserve and understand vegetable biodiversity
- Setting up collaborative research activities at regional level
- Increase visibility and awareness of traditional vegetables and local varieties in each country

Thank you!

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