

# Knowing and doing: Illustrations to support to collection missions to rescue vegetable landraces and wild relatives



World Vegetable Center

Maarten van Zonneveld

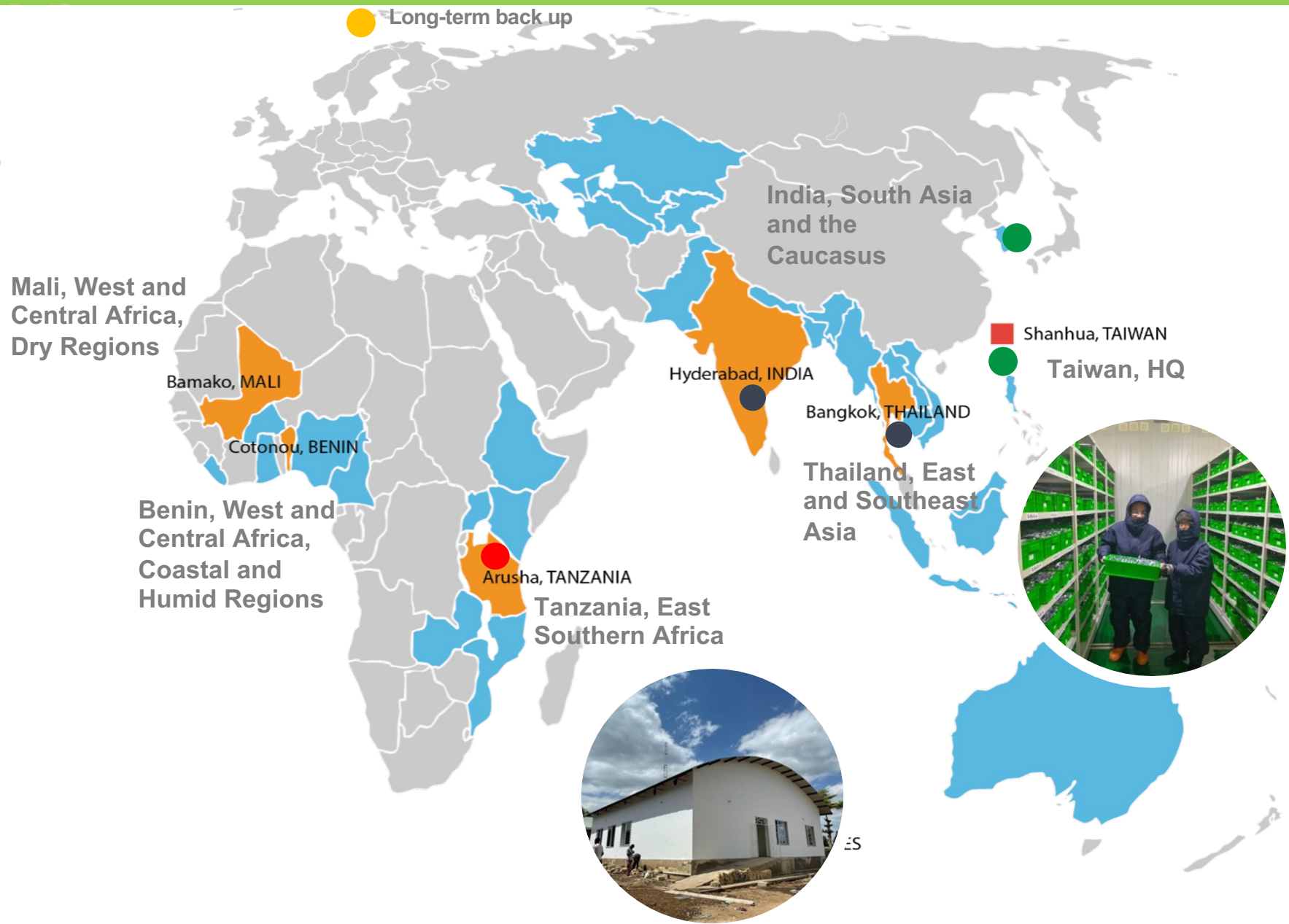
Genebank manager

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# Global presence



- Gen. Resources and Seed Unit
- Regional genebank
- Safety duplicates (> 50%)
- Long-term back up (> 45%)
- Seed repositories



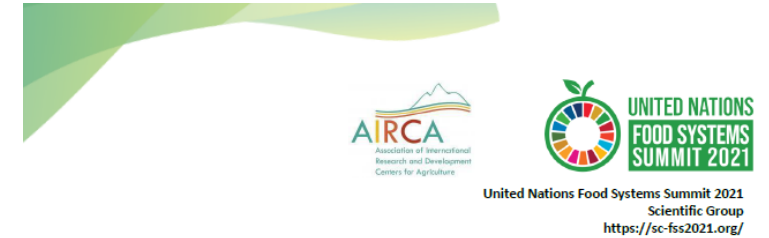
# Growing call for nutritious vegetables to diversify diets and farm systems



EAT - Healthy Planet diet (eatforum.org)



van Zonneveld et al. (2021)



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, Dhruvad Choudhury, Enoch G. Achigan-Dako, Luigi Guarino

### ABSTRACT

Fruit and vegetable species and varieties, their wild relatives, and pollinators and other associated organisms underpin diverse food production systems and contribute to worldwide health and nutrition. This biodiversity, however, is threatened, remains poorly conserved, and is largely undocumented. Its loss leads to a narrowing of new crop options, reduced variation for breeding, a yield gap due to pollinator decline, and it constrains long-term progress towards the 2030 Sustainable Development Goals and any

future goals set thereafter. It will require a global awareness campaign to safeguard and sustainably use fruit and vegetable biodiversity and a 10-year global rescue plan to reduce and reverse the decline in this biodiversity. A diverse team of experts should formulate this global rescue plan and define clear goals. Success will depend on a global partnership of custodians and users of fruit and vegetable biodiversity, and requires an investment of at least 250 million USD over 10 years.

# Open repositories help identify diversity and conservation status of traditional vegetables and its wild relatives



PROJECT | CLOSED

## Digitizing national vegetable databases to improve food and nutritional security in Eastern Africa

1 November 2017 - 31 December 2018 € 13,507

ABOUT NEWS & EVENTS DATASETS

80 CITATIONS



Genesys Accession data > Directory > Resources > My List 2 Login

Accession browser

About 71,072 accessions Text: TWN001 Excluding Historical

OVERVIEW ACCESSIONS MAP IMAGES SUBSETTING TOOL Table view DOWNLOAD MCPD DOWNLOAD ZIP

1. VI056200 • *Trichosanthes cucumerina* L. • TA001 • Bangladesh + Add to My list  
TWN001 • World Vegetable Center, Taiwan • DOI: [10.18730/13172M](https://doi.org/10.18730/13172M)

2. VI050474 • *Ipomoea aquatica* Forssk. • TOT6152 • Thailand + Add to My list  
TWN001 • World Vegetable Center, Taiwan • DOI: [10.18730/12VVRE](https://doi.org/10.18730/12VVRE)

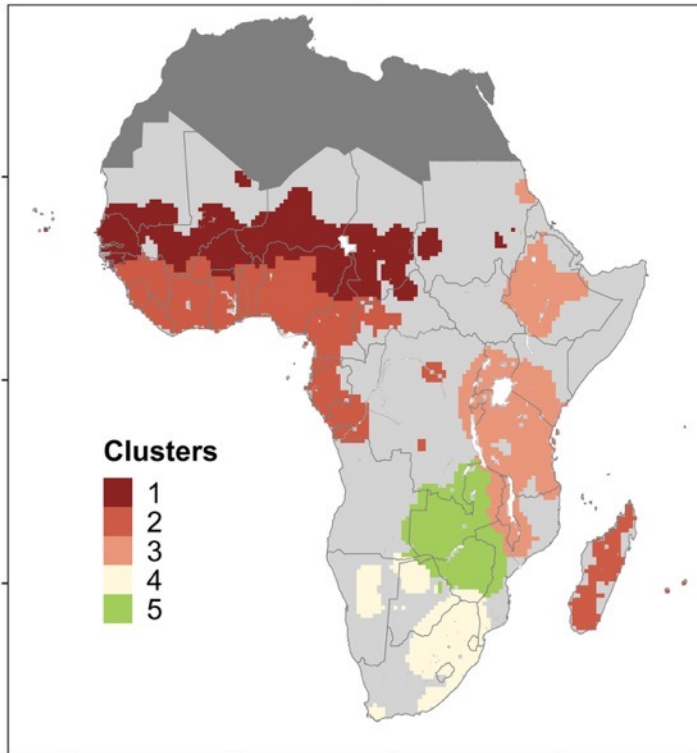
# Conservation status of traditional vegetables and its wild relatives

- 25% of the about 1,100 recognized vegetables is still not conserved *ex situ* (Meldrum et al. 2018)
- 62% of 126 selected African vegetables is poorly conserved *ex situ* (van Zonneveld et al. 2021)
- 65% of eggplant wild relatives in Africa are poorly or not conserved *ex situ* (Syfert et al. 2016)
- 25% of the wild relatives of *Vigna* in Africa and Asia are poorly conserved *ex situ* (van Zonneveld et al. 2019)

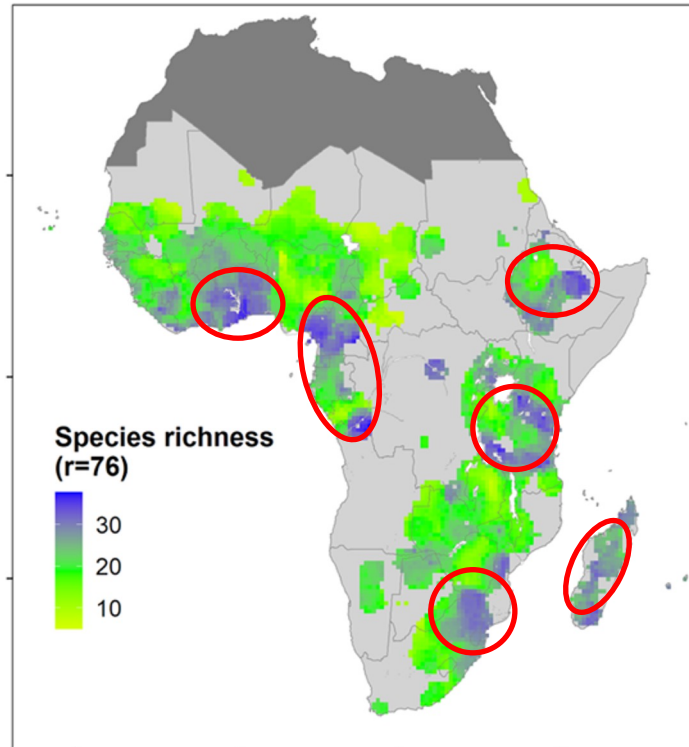


# Target areas for germplasm collecting

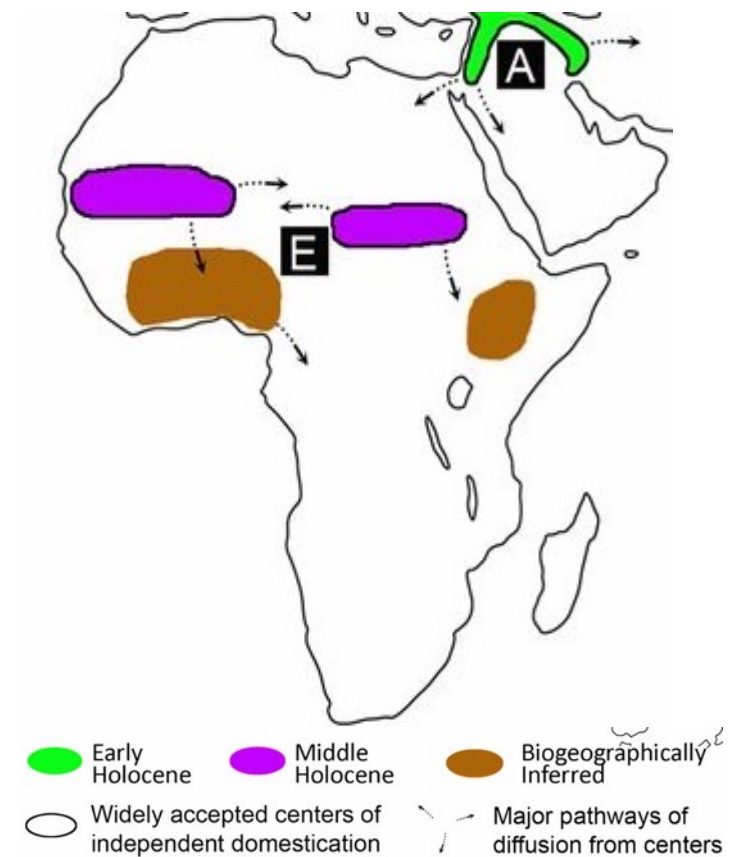
Vegetable composition structure  
Kulczynski



Observed richness corrected by resampling



Centers of domestication



van Zonneveld, M., Kindt, R., Solberg, S. Ø., N'Danikou, S., & Dawson, I. K. (2021). Diversity and conservation of traditional African vegetables: Priorities for action. *Diversity and Distributions*, 27(2), 216-232.

Larsson et al. (2014)

# Data from GBIF

- More than 993 sources

**Text S1.** Data sources used to obtain presence records from the Global Biodiversity Information Facility (GBIF)

à Etchike D (2016). [Herbier Ecole de Faune. Version 2.1. Ecole de Faune de Garoua](https://doi.org/10.15468/jbqjzg). Occurrence dataset <https://doi.org/10.15468/jbqjzg> accessed via GBIF.org on 2020-02-15. Accessed from R via [rgbif](https://github.com/ropensci/rgbif) (<https://github.com/ropensci/rgbif>) on 2020-02-15

Abramova L A, Volkova P A (2018). A grid-based database on vascular plant distribution in Udomlya District of Tyer Oblast, Russia. Version 1.1. Lomonosov Moscow State University. Occurrence dataset <https://doi.org/10.15468/zj4oby> accessed via GBIF.org on 2020-02-15. Accessed from R via [rgbif](https://github.com/ropensci/rgbif) (<https://github.com/ropensci/rgbif>) on 2020-02-15

Adhikari B S (2019). WII Herbarium Dataset. Version 13.4. Wildlife Institute of India. Occurrence dataset <https://doi.org/10.15468/dhouv6> accessed via GBIF.org on 2020-02-15. Accessed from R via [rgbif](https://github.com/ropensci/rgbif) (<https://github.com/ropensci/rgbif>) on 2020-02-15

ADJIBODE O V (2020). [Inventaire des espèces végétales dans la forêt naturelle et les jachères de la Lama](https://doi.org/10.15468/cky4xs). Laboratory of Forest Sciences (University of Abomey-Calavi). Occurrence dataset <https://doi.org/10.15468/cky4xs> accessed via GBIF.org on 2020-02-15. Accessed from R via [rgbif](https://github.com/ropensci/rgbif) (<https://github.com/ropensci/rgbif>) on 2020-02-15



# From Knowing to Doing - Taiwan Africa Vegetable Initiative

- Modernization of genebanks in Tanzania and Eswatini
- Support of genebanks in Benin and Madagascar
- Capacity building of staff of national genebanks in sub-Saharan Africa
- >9,000 seed samples of African vegetables and its wild relatives collected so far in vegetable hotspots



<https://youtu.be/MDg1PGvH3jA>



# Thank you!



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