



# **Prospects of Safe and Sustainable Vegetable Production in Tanzania**

**Srinivasan Ramasamy, Simon Boniface, Nickson Mlowe, Judith Assenga, Judith Hubert**  
**World Vegetable Center**





# Background

- About 40 million ha agricultural land, of which about 14 million ha arable land, 2 million ha permanent crops, and 24 million ha permanent meadows and pastures
- Tropical climate - close to the Equator, temperatures range between 20 and 35°C
- The average annual rainfall is about 1000 mm:
  - Bi-annual (long rains during March-May and short rains during October-December) in the north and north-west
  - Annual rainfall (single rainy season) from November to April in the southern regions



**Figure 1: Map of Tanzania**

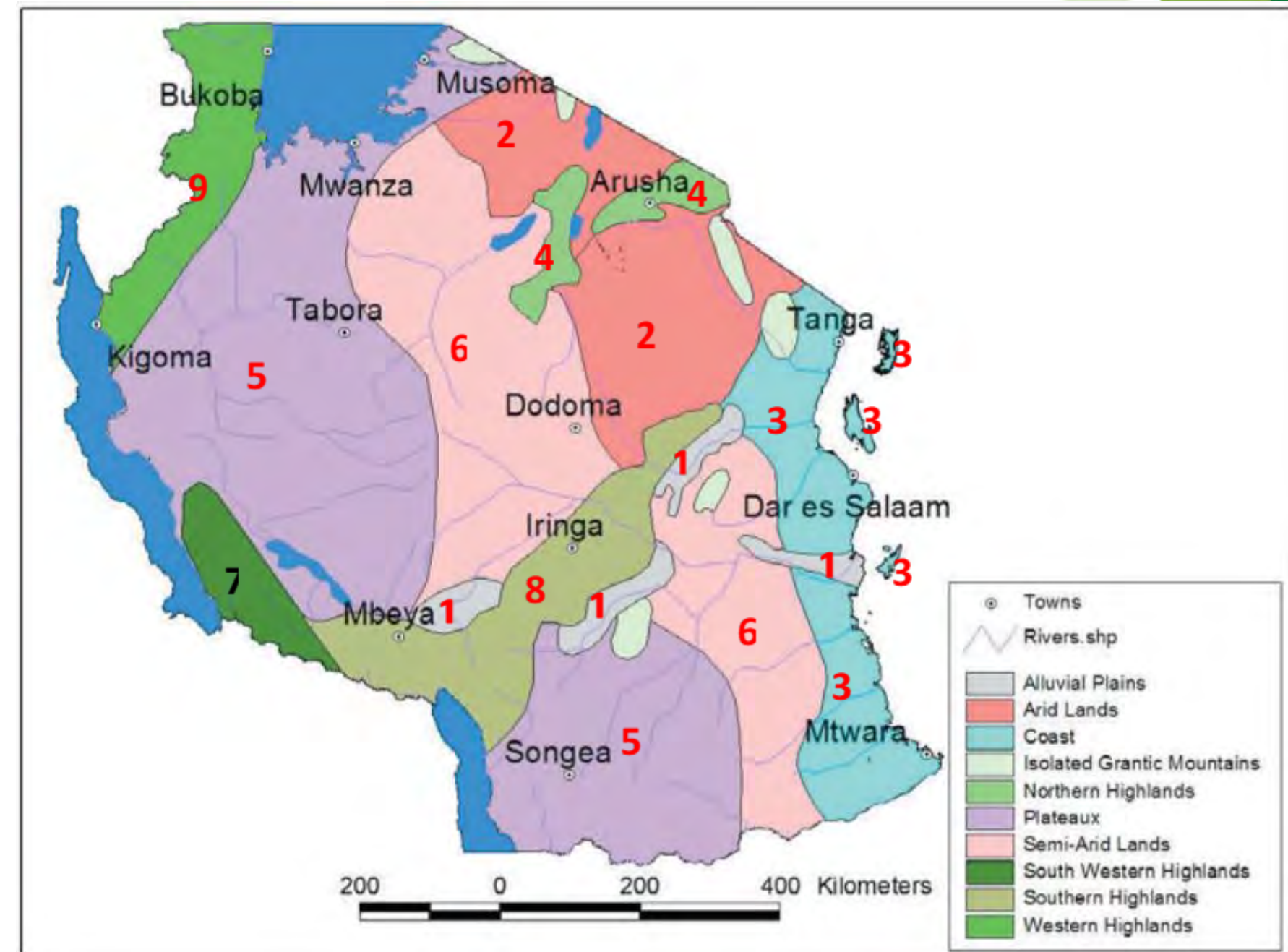
(Source: [https://commons.wikimedia.org/wiki/File:Tanzania\\_map-fr.svg](https://commons.wikimedia.org/wiki/File:Tanzania_map-fr.svg))



# Agro-ecological zones

- Seven agro-ecological zones, all are suitable for horticulture:

1. Alluvial
2. Arid
3. Coastal
4. Isolated Grantic Mountains
5. Northern highlands
6. Plateau
7. Semi-arid
- 8 and 9 - Southern and Western Highlands





# Horticulture

- ❖ The horticulture sub-sector has an annual average growth of 11%, two times the annual overall growth of agriculture.
- ❖ This sub-sector employs more than 4 million individuals, mainly women and youth.
- ❖ It generates about 38% of total foreign income from agriculture.





# Challenges in Horticulture sub-sector

- ❖ Low productivity
- ❖ Shrinking resources
- ❖ Climate change
- ❖ Low-input and -technology production
- ❖ Low levels of domestic consumption and processing
- ❖ Food safety concerns due to pesticide residues and microbial contaminations
- ❖ Unpredictable markets
- ❖ Land degradation





# Challenges in Horticulture sub-sector

- ❖ Inadequate Improved Varieties and Quality Seed
- ❖ Soil erosion
- ❖ Shortage of water
- ❖ Diseases and pests
- ❖ Limited and unsafe use of pesticides
- ❖ Limited Access to Extension Services
- ❖ Shifting cultivation to bring additional land under cultivation to feed the ever-increasing population





# Increasing Horticultural production & productivity

## ❖ National Agricultural Policy (NAP) 2013

- Adoption of sustainable agricultural practices & technologies
- Research and Development
- Market access and value chain
- Capacity building
- Gender inclusivity

## ❖ The National Horticulture Development Strategy and Action Plan 2012-2021 and 2021-2031

- Aimed to increase horticultural production and productivity to satisfy the domestic consumption and export demands. It has 8 strategic objectives, 33 interventions, and 115 action points





# FRESH WP3: Safe and Sustainable Production Systems

- ❖ Analyze production system constraints and develop, test, and scale options for sustainable **diversification** and **intensification**





# FRESH WP3: Safe and Sustainable Production Systems

## ❖ Locations

- Arusha Region
- Kilimanjaro Region

## ❖ Partners:

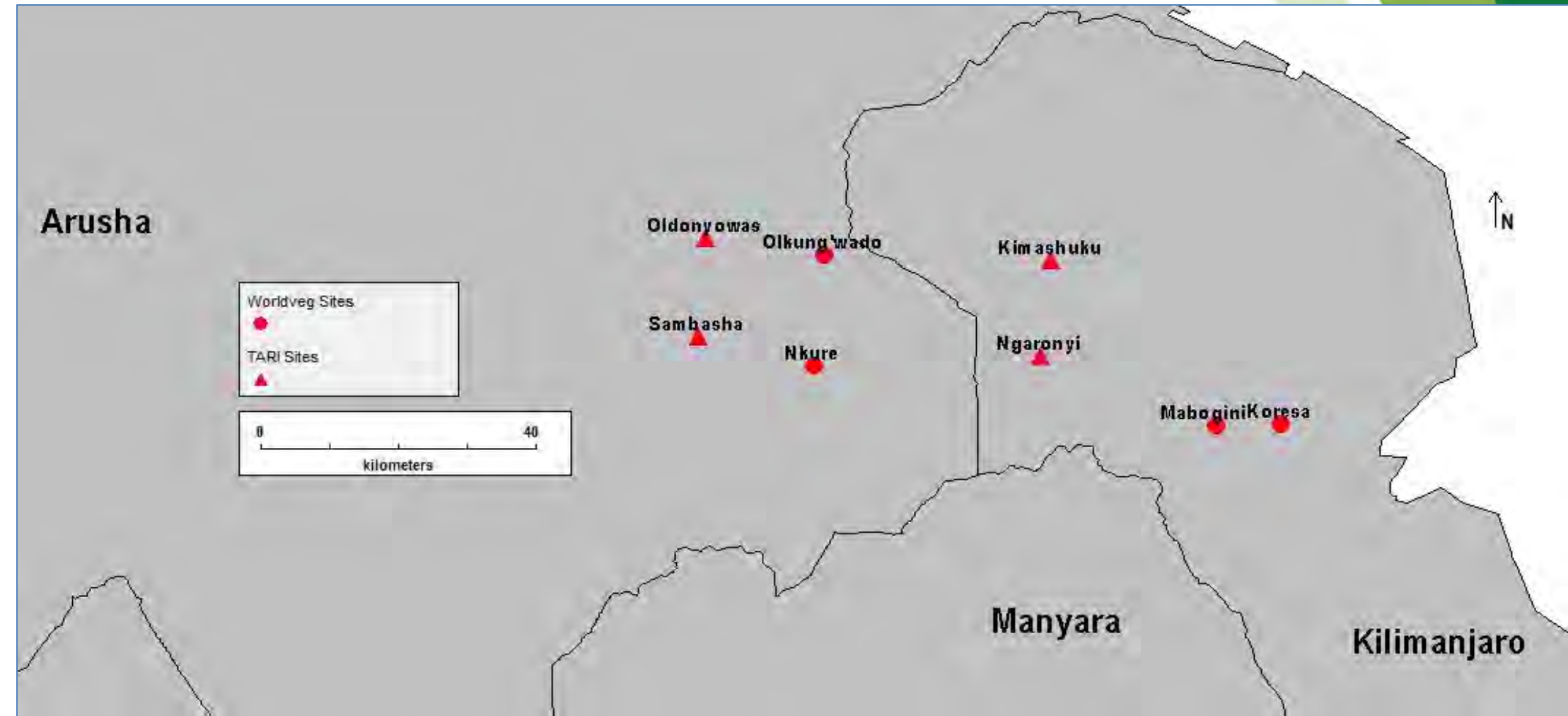
Tanzania Agricultural Research Institute (TARI)

National Irrigation Commission (NIRC) of Tanzania

Local government machinery in the area

Seed companies – East-West Seed, Rijk Zwaan

International Water Management Institute (IWMI)





# FRESH WP3: Safe and Sustainable Production Systems

## ❖ Diagnosis of major diseases causing pathogens

- *Ralstonia solanacearum* (bacterial wilt)
- *Xanthomonas sp* (bacterial leaf spot)
- *Fusarium oxysporum*, *Fusarium equiseti*, *Fusarium solani* (Fusarium wilt)
- *Pseudoperonospora cubensis* (bacterial soft rot in tomato)
- Cucumber mosaic virus and Turnip mosaic virus in Pumpkin and Ethiopian mustard





# Piloting and scaling good agricultural practices (GAPs) through participatory approaches

## ❖ Components of the GAP

- Use of **improved varieties** (seeds)
- **Healthy seedling** production
- Integrated pest and disease management (**IPDM**)
- Rational use of pesticides in IPDM
- **Conservation agriculture** – minimum tillage – Relay cropping system
- **Drip irrigation** system installation, use, and maintenance





# Piloting and scaling good agricultural practices (GAPs) through participatory approaches

## ❖ Components of the GAP

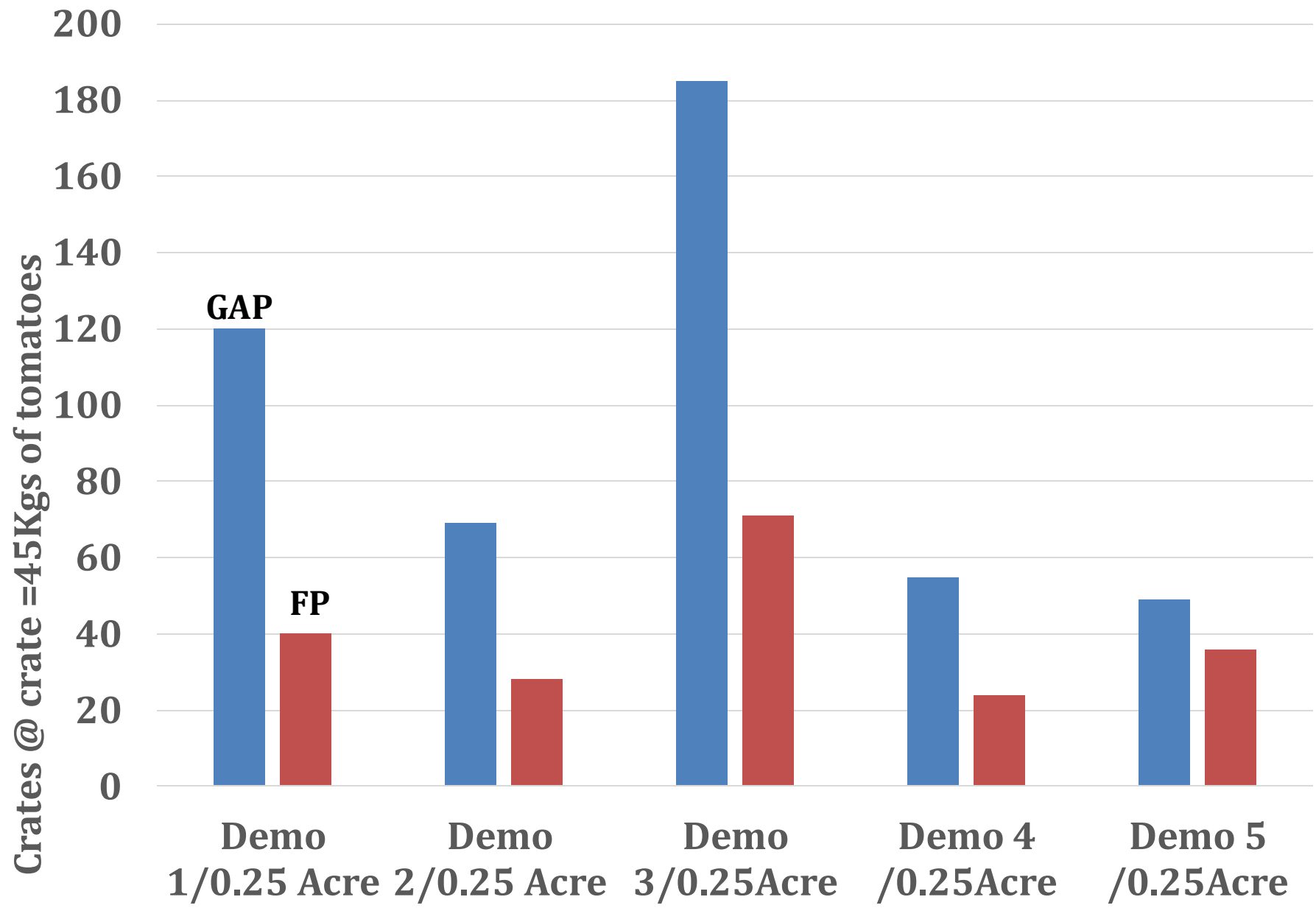
- Proper **fertilizer** application and compost-making
- Weed control/soil moisture conservation by using **mulches**
- **Soil health** and **improve water use efficiency** in collaboration with the International Water Management (IWMI) and the National Irrigation Commission (NIRC) of Tanzania, including the installation of soil water moisture detectors (chameleon sensors)



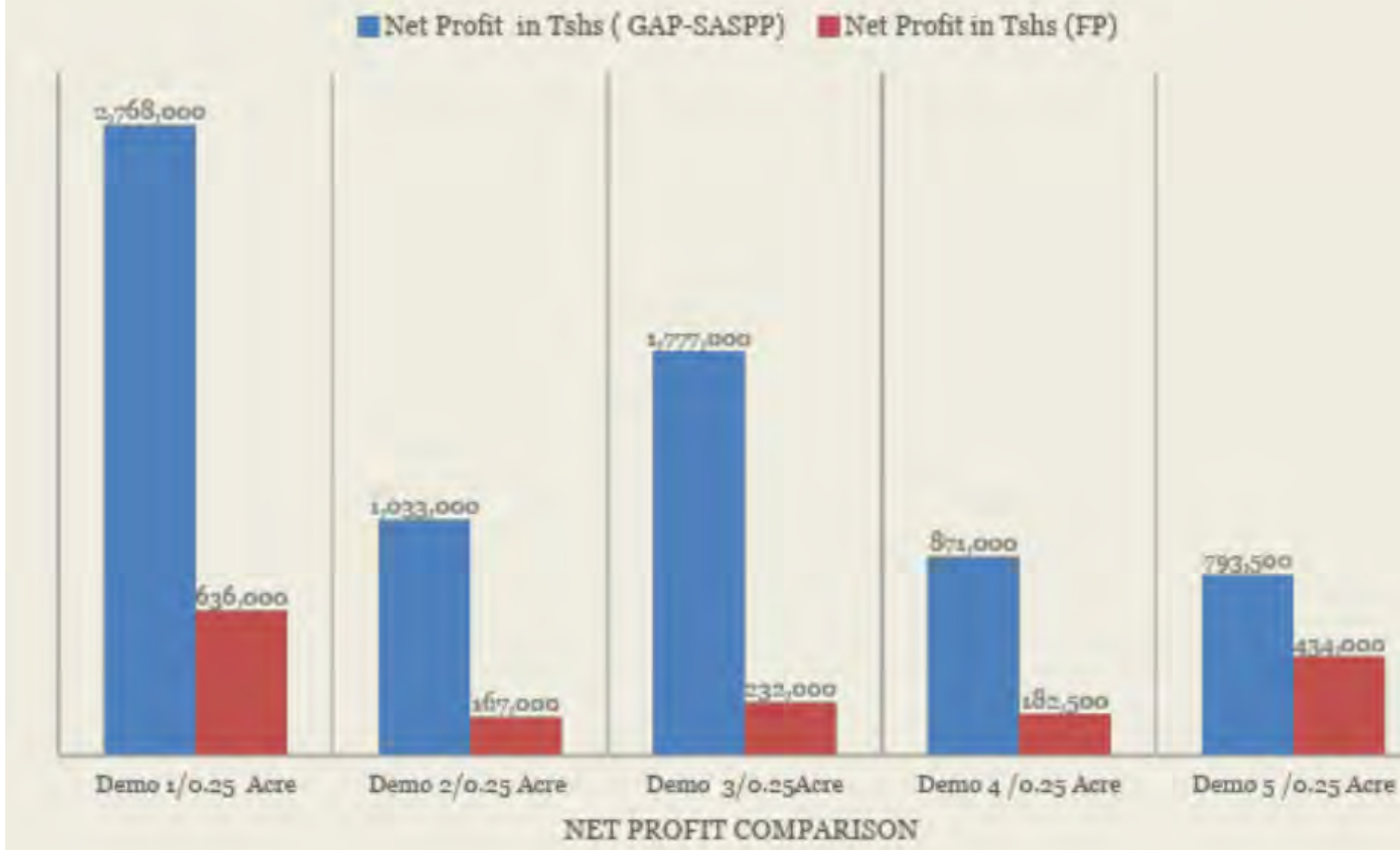


# Piloting and scaling tomato GAP

Tomatoes Marketable Yield Comparison between different practices



tomatoes NET PROFIT COMPARISON BETWEEN PRACTICES





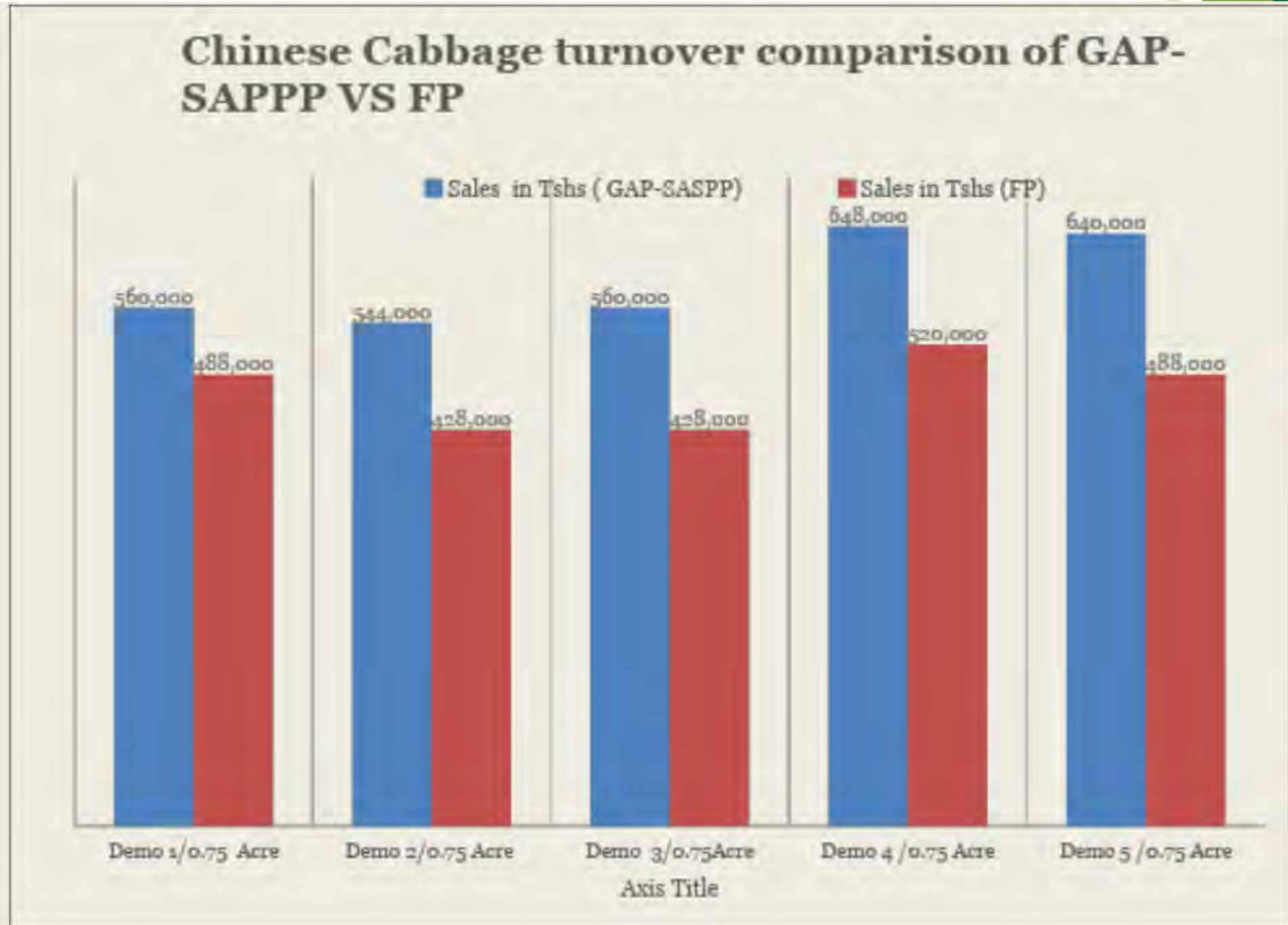
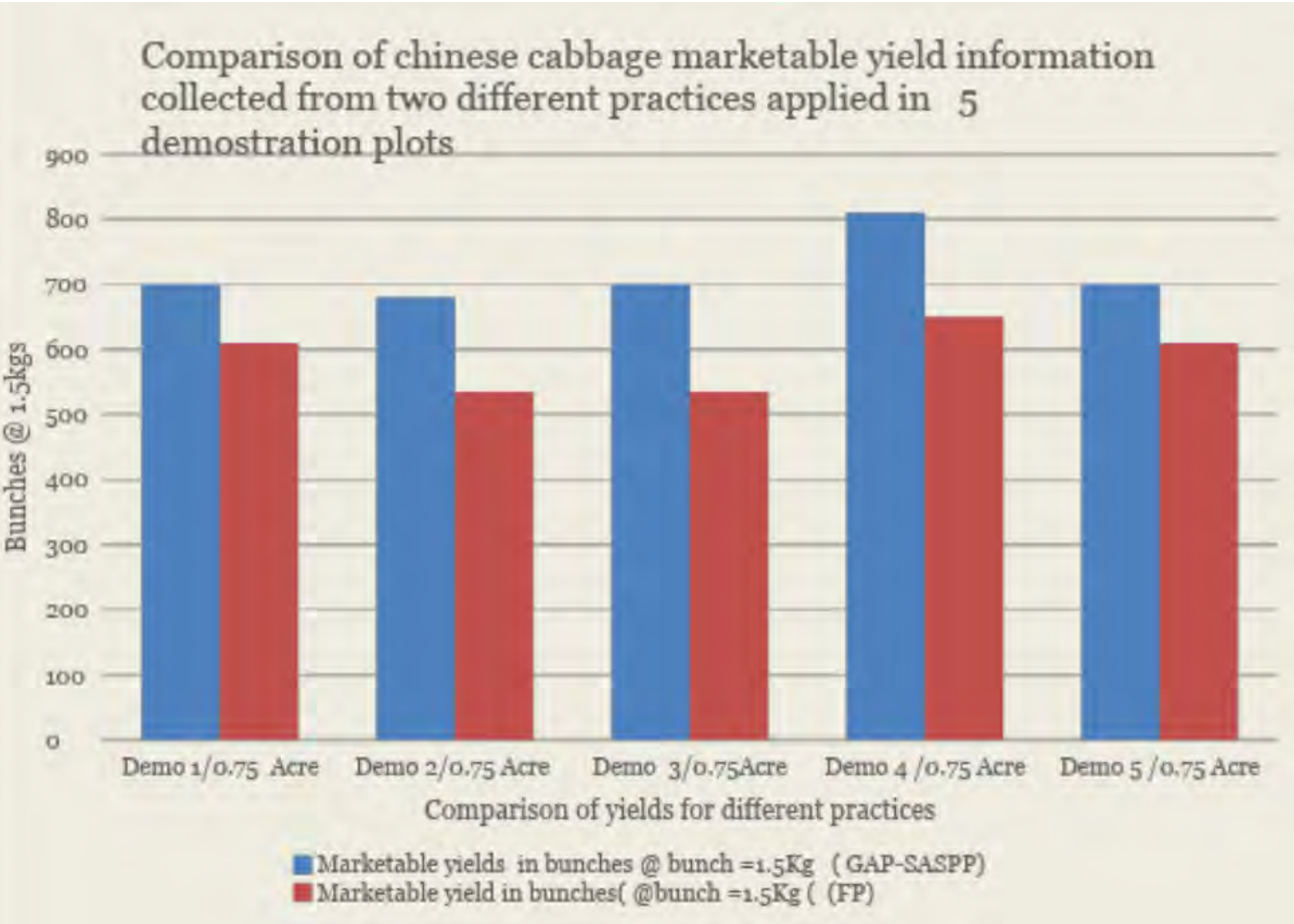
# Piloting and scaling tomato GAP

- ❖ Profit realized by application of GAPs compared to farmers' practice (FP) in tomato production in a 0.25-acre plot (2022/23) – Ngarenanyuki, Arusha
  - ❖ FP: TShs. 273, 000.00
  - ❖ GAP: TShs. 1,033,000.00
  - ❖ Difference: TShs. 760,000.00
- ❖ The cost of pesticides in GAPs was reduced by 20% compared to Farmers' Practice.
- ❖ The cost of chemical fertilizer was reduced by 30% compared to Farmers' Practice.





# Piloting and scaling Chinese cabbage GAP





# Capacity and Knowledge Sharing

- Farmers' training, Training of Trainers, and Field Days
- Project activities mentioned in the **press interviews**
- **Involving media**, e.g., Savy FM Radio – covers both regions – has aired FRESH activities
- **6 New villages** identified for 2024
- **Additional target crops** (Cucumber, Butternuts, onion, cabbage, African nightshade, amaranths, watermelon, and spinach)
- **4 new nurseries** were established after training on Nursery GAPs
- **10 new demo plots** were identified after conducting focus group discussions in new villages



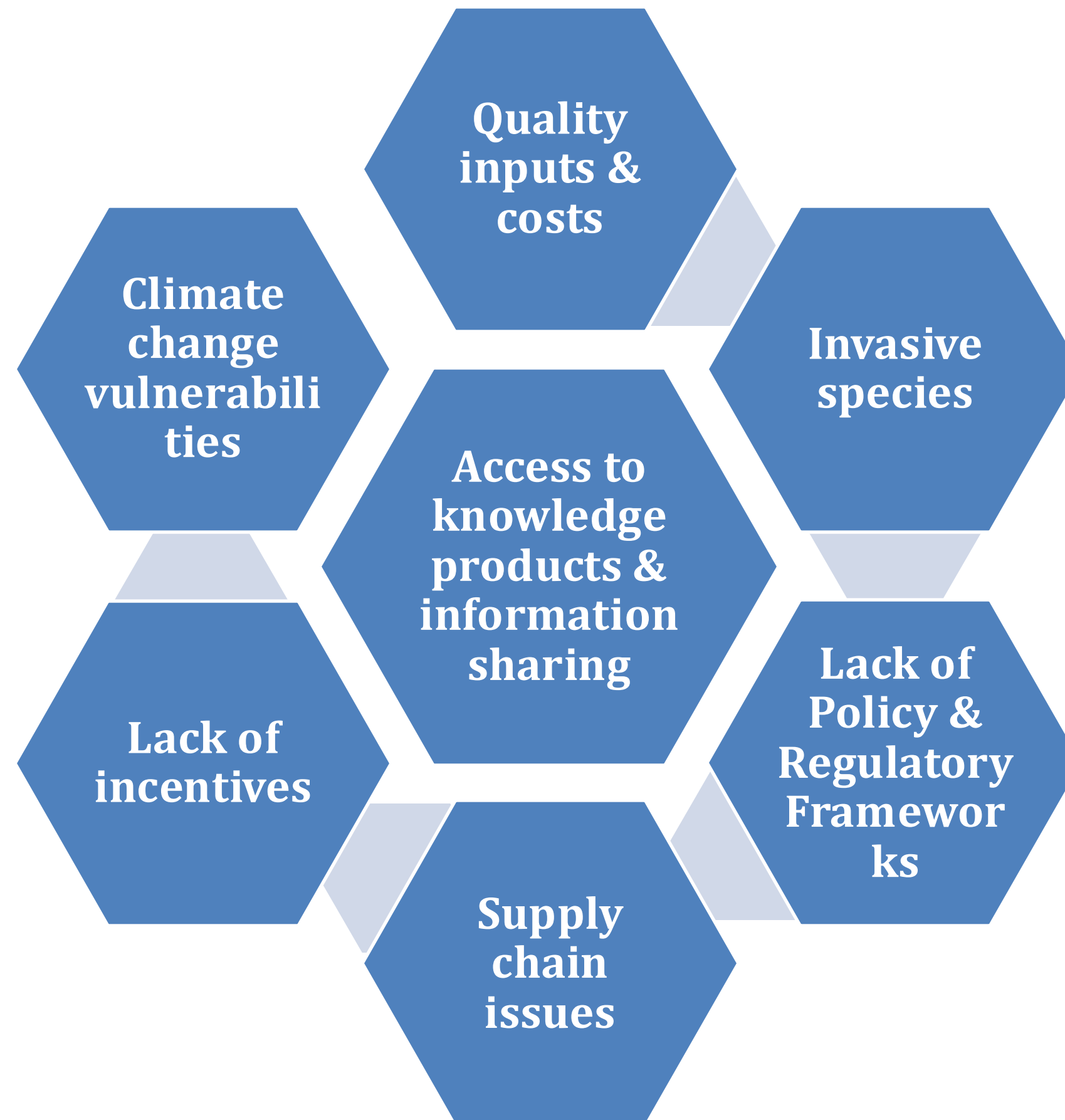


# Beneficiaries reached in both Arusha and Kilimanjaro Regions

Number of beneficiaries reached in both Arusha and Kilimanjaro Regions				
Description	Number of People			
	Male	Female	Total	Of the Total, Youth <25yrs.
Direct beneficiaries	97	83	180	43
Farmer training	353	431	784	120
ToTs (Extension Officers and Lead Farmers)	220	160	380	35
Field days( year 2 and 3) by WorldVeg	484	260	744	150
Field days (year 2 and 3 ) by TARI	-	-	463	-
Nane-Nane (Farmers’ Day, 8 <sup>th</sup> August) - 2023	576	424	1,000	100
TOTAL	1,730	1,358	3,551	448



# Challenges for the adoption of safe and sustainable vegetable production practices







# Thank You



Email

[srini.ramasamy@worldveg.org](mailto:srini.ramasamy@worldveg.org)



Website

[www.avrdc.org](http://www.avrdc.org)

*We would like to thank all funders who support this research through their contributions to the CGIAR Trust Fund: [www.cgiar.org/funders](http://www.cgiar.org/funders).*





*We would like to thank all funders who support this research through their contributions to the CGIAR Trust Fund:*

[www.cgiar.org/funders](http://www.cgiar.org/funders).