

# Client-driven farming systems options for Africa

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## Outline

- 1. Why bother about this topic?**
- 2. Drivers of agricultural production in Africa**
- 3. Farming systems options for Africa context**
- 4. Concluding remarks**
- 5. Acknowledgement**

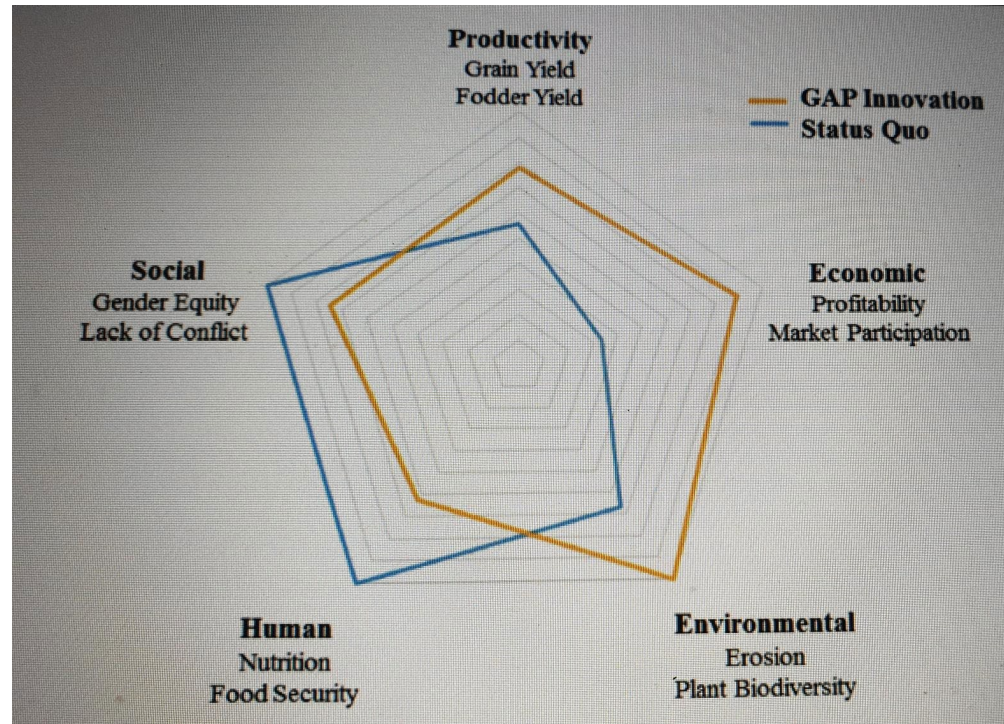
## 1. Why bother about this topic?

- Needs of households/farmers and other end users must be considered
- Specificities of the farming locations (soil, climate, topography, etc.) must be taken into consideration
- Nutrition, food security, climate change, gender & youth, income generation, natural resources conservation consideration
- Enhanced ownership and adoption by households and end users
- Higher impact of farming systems innovations on livelihoods
- Sustainability of farming system

## 2. Drivers of agricultural production in Africa

- Land & water
- Labour
- Capital
- Enterprise (crops, fruit trees, trees, horticulture, livestock, aquaculture, apiculture, etc.)

# Why farming systems (innovations) should be client driven?



Source: Charles Wortmann et al. 2020. Improvement of smallholder farming systems in Africa. *Agronomy Journal*. DOI. 10.1002. Fig. 2: Hypothetical multi-disciplinary comparison of a good agronomic practice (GAP) innovation and the status quo using the SIToolKit (Grabowski et al., 2018; Stewart et al., 2018) across select indicators in the productivity, economic, environmental, human, and social domains. As in this hypothetical illustration, negative trade-offs associated with a GAP may make it unacceptable

### 3. Farming systems options for Africa context

- A large number of farming systems have been documented in Africa explained by the existence of different agroclimatic conditions
- FAO publication with Africa map showing farming system categories

Work done by FAO (FAO farming Systems: Sub-Saharan Africa)

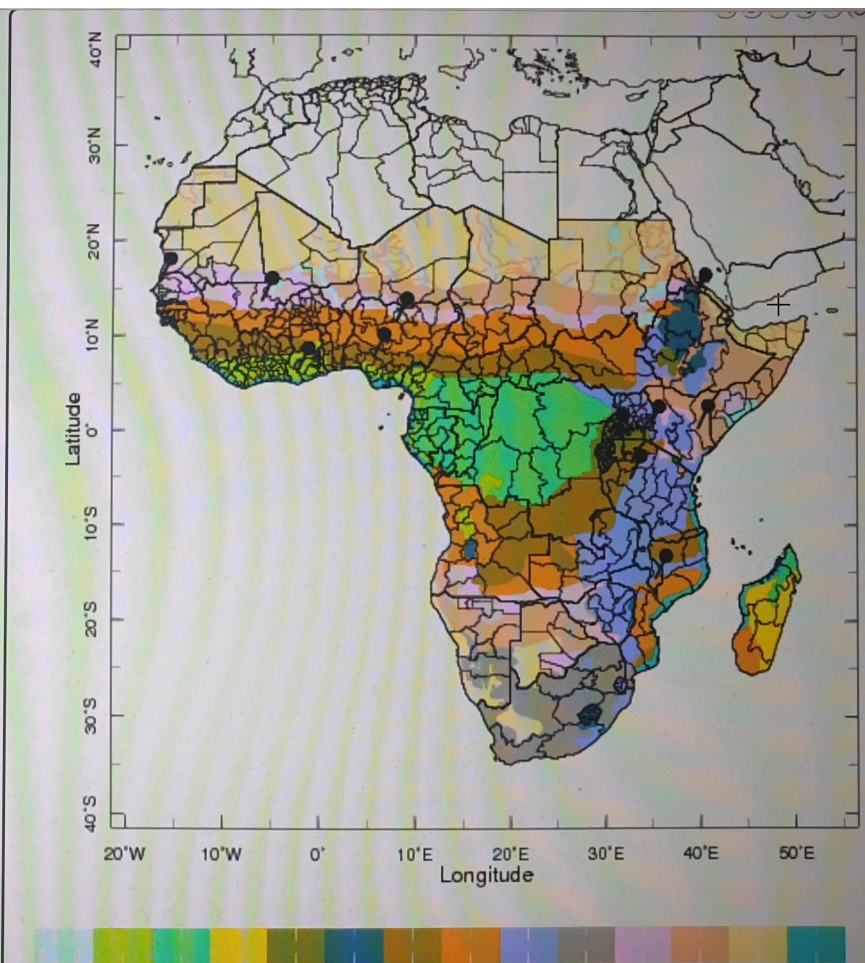
Work published in a book edited by John Dixon *et al.* 2021

(Source: Farming Systems and Food Security in Africa Priorities for Science and Policy Under Global Change)

### FAO Farming Systems: Sub-Saharan Africa

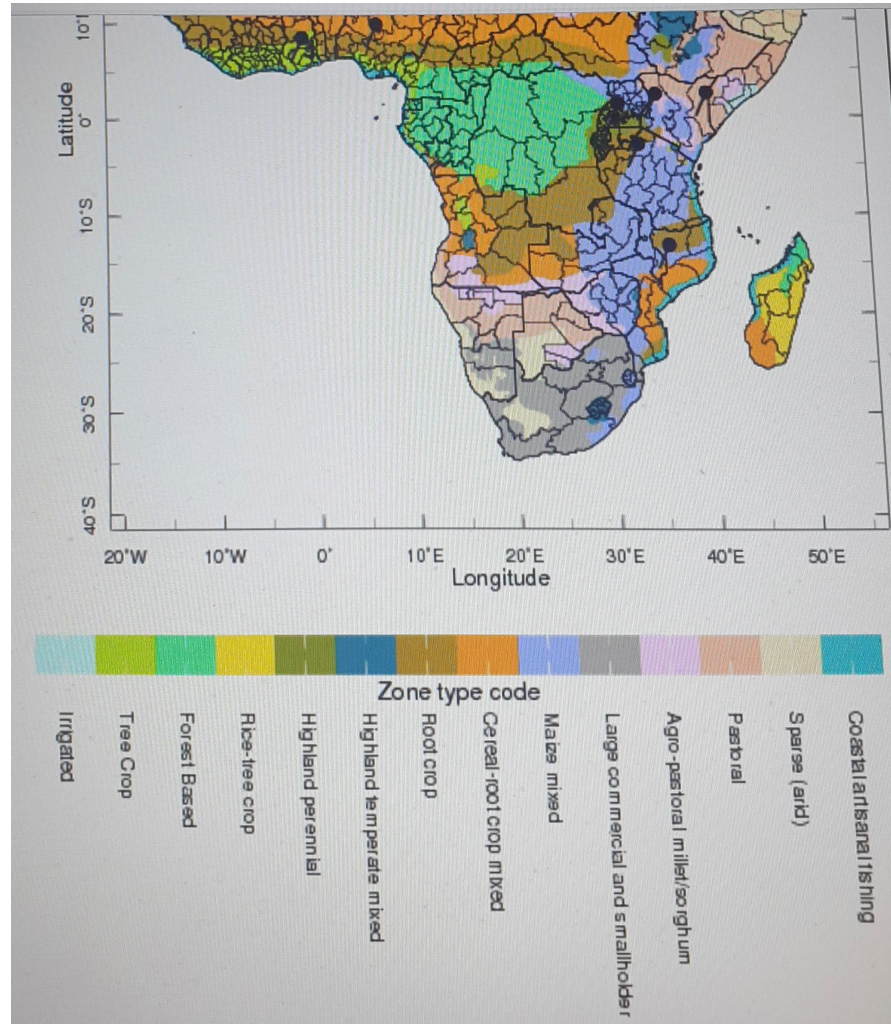
As quoted from the FAO Farming Systems website: "A farming system is defined as a population of individual farm systems that have broadly similar resource bases, enterprise patterns, household activities and constraints, and for which similar development strategies and interventions would be appropriate. Depending on the scale of the analysis, a farming system can encompass a few dozen or many millions of households."

This map displays FAO farming system categories for Sub-Saharan Africa. The black pushpins on the map indicate the locations of the Millennium Villages. Clicking on the map will produce bar graphs of the monthly climatology of precipitation, mean temperature, NDVI, and FAO reference evapotranspiration for the selected location.



Source: FAO website

## FAO farming systems categories



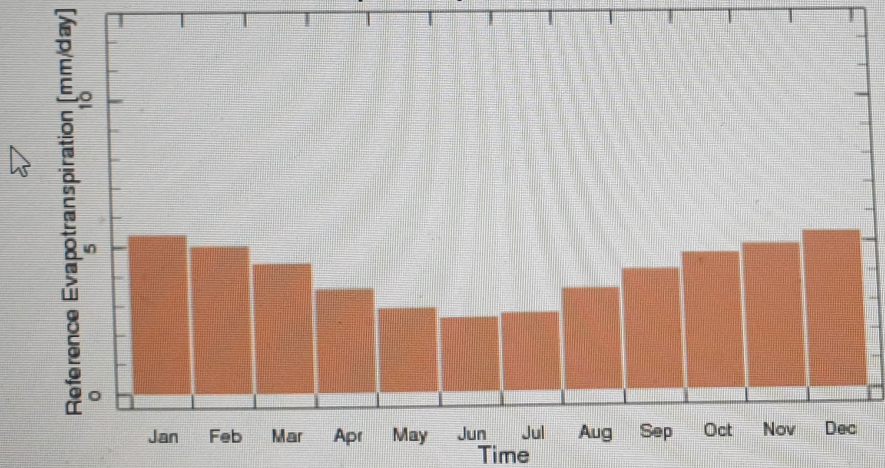
Source: FAO publication



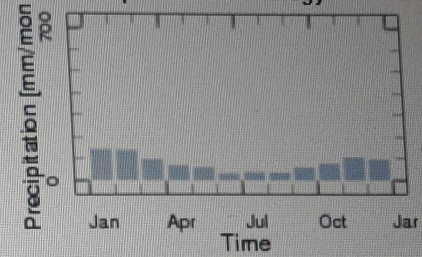


Climatology for **UBOMBO (KWAZULU, Kwazulu/Natal, South Africa)**

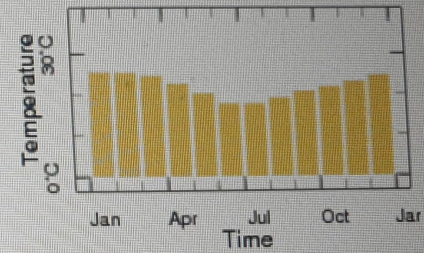
Reference Evapotranspiration Climatology



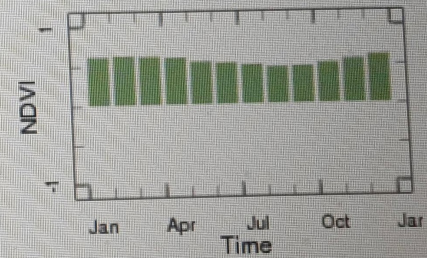
Precipitation Climatology



Temperature Climatology



NDVI Climatology



Source: FAO website



## Main categories of farming systems

- Crops (cereal-based, **Root and tuber crops based**, legumes, monocropping, mixed cropping, intercropping)
- Tree crops
- Crops + trees
- Horticulture/vegetable
- Crop(s) + livestock
- Livestock
- Fish-based
- Apiculture
- Forest-based
- Small scale (subsistence)
- Large scale (commercial)

# Root and tuber crops in farming systems

- High resilience to climate change (e.g. drought tolerant, early maturing)
- Nutritious: Example: only 125 g of Orange fleshed sweetpotato to meet daily Vitamin A need of under 5 child
- Adapt in diverse agroecologies

From 2012 to 2022, The CGIAR Research Program on Roots, Tubers and Bananas (RTB) worked as a multi-organizational effort (CIP, IITA, The Alliance and CIRAD, and many other partners) to address common challenges through research for development

## Crops



Banana  
Plantain



Cassava



Potato



Sweetpotato



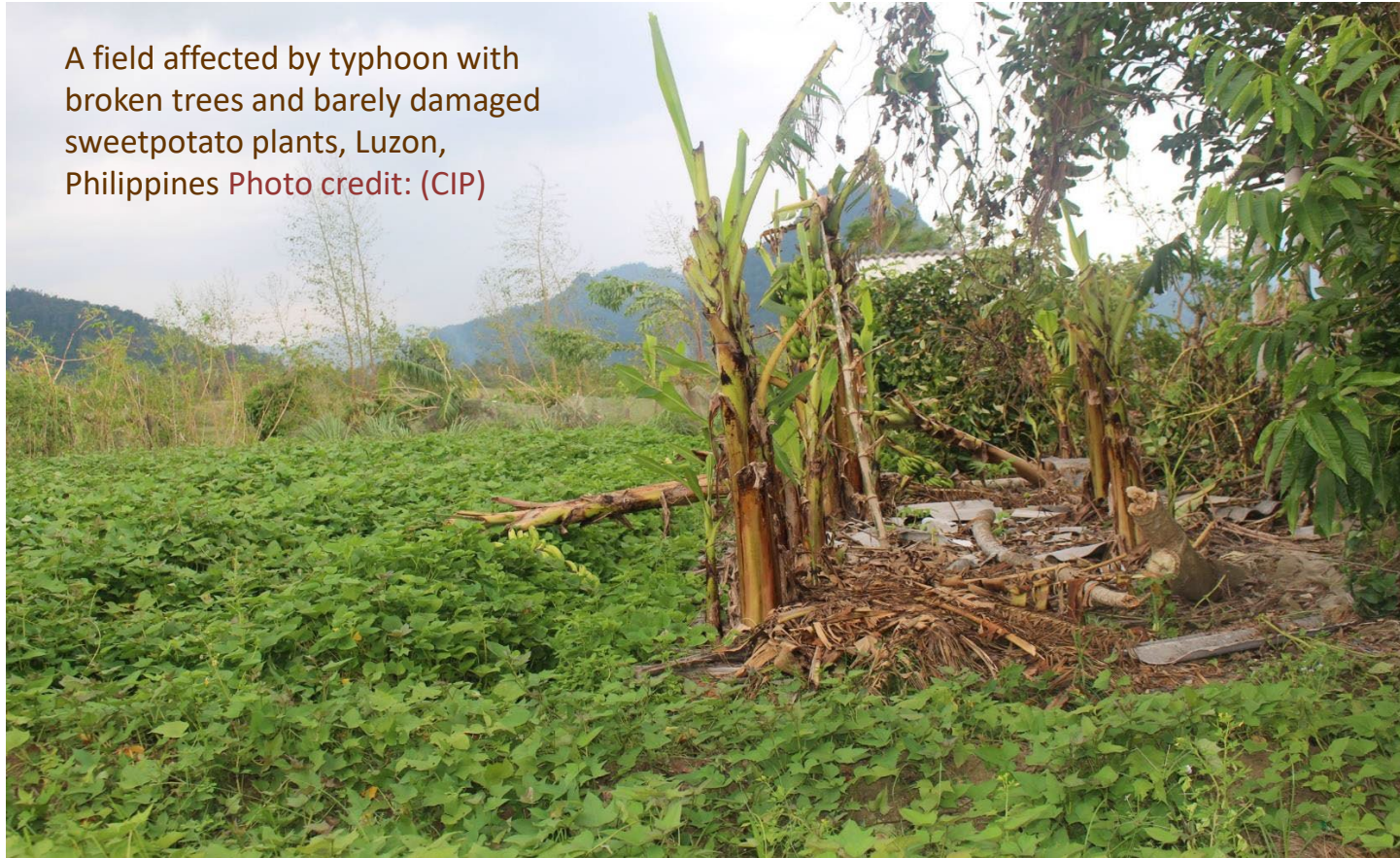
Yam



Other R&T

## Climate change credentials: Surviving extreme weather events

A field affected by typhoon with broken trees and barely damaged sweetpotato plants, Luzon, Philippines Photo credit: (CIP)





## 4. Conclusions

1. Farming system research and innovations processes should be driven by the needs of farmers and other end users, in order to enhance technologies adoption, impact and sustainability
2. Farmers contexts and the characteristics of the farming locations must be taken into consideration the development of farming systems innovations
3. Farming systems should be sensitive to Nutrition, Food security, Income generation, Climate change, Gender & Youth, and preservation of natural resources

## 5. Acknowledgement

**FARA**

**CIP&CGIAR**

**Organising committee of the 8<sup>th</sup> Africa Agribusiness & Science week**

**Thank You**