



## TOOLS4SEEDSYSTEMS:

WORKING TOWARDS RESILIENCE THROUGH ROOT,  
TUBER AND BANANA CROPS IN HUMANITARIAN SETTINGS



**‘Building Back Better’ through Improved RTB  
seed systems under Humanitarian Contexts**

**KWAME OGERO AND THE TOOLS4SEEDSYSTEMS TEAM • DECEMBER 7, 2023**



# Why RTBs in humanitarian settings?

- Flexible planting times, low maintenance, **piecemeal & multiple harvests**, **broad adaptability**, and **climate smart options**
- Ability of several RTBs to provide **combinations of food**: root/tuber, seed, and leaves; cassava roots and leaves can be eaten and **still retain all the seed**
- **Micro-nutrient rich varieties** available; high **caloric content** important for emergencies; produce more edible dry matter per unit of time, area, and water compared to cereals; banana/plantain: **various cultivar types** exist including cooking, dessert, processing types, and lowland plantains
- Can salvage edible **underground** parts **immediately after aboveground disasters** like locusts & birds, hail, hurricanes. Sweetpotato **re-sprouts** quickly to provide planting material



Banana  
Plantain



Cassava



Potato



Sweetpotato



## Complexity of RTB seed

- Vegetatively propagated
- **Diseases and pests** accumulate as seed is recycled
- Slow multiplication rate
- **Bulky and perishable**



Photo: Healthy vs diseased sweetpotato plants. CIP



Photo: Transporting sweetpotato vines in Ethiopia. B.Temesgen, CIP



Photo: Banana corms being loaded. Bioversity

## Humanitarian settings are.....

- Complex, chronic, protracted, with **multi-faceted drivers**
- Dealing with insecurity, uncertainty, short response time
- Potential of **risk of spreading plant diseases** through unknown sources and quality of seed – i.e., “doing harm”
- **Opportunities** for agricultural interventions to maintain and improve **diverse agri-food systems, leverage & strengthen existing capacities**, reach the **most vulnerable** with improved varieties carrying preferred traits.
  - Local procurement

## Improving RTB seed systems under humanitarian contexts

- Responding to the 4 areas of need:
  1. Knowledge and skills in Rapid Multiplication Techniques
  2. Seed Regulations and Policies
  3. Rapid, low-cost diagnostics for seed borne diseases
  4. Improved availability and access to information about RTB crop varieties



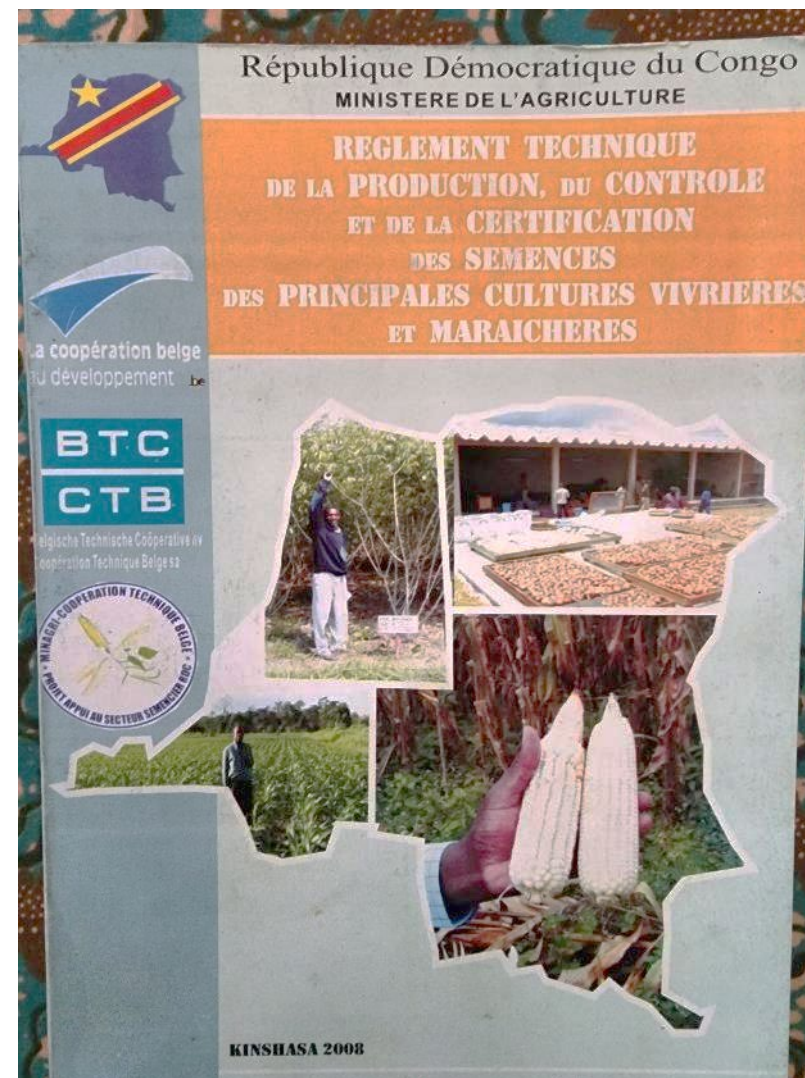
## a) Rapid multiplication techniques



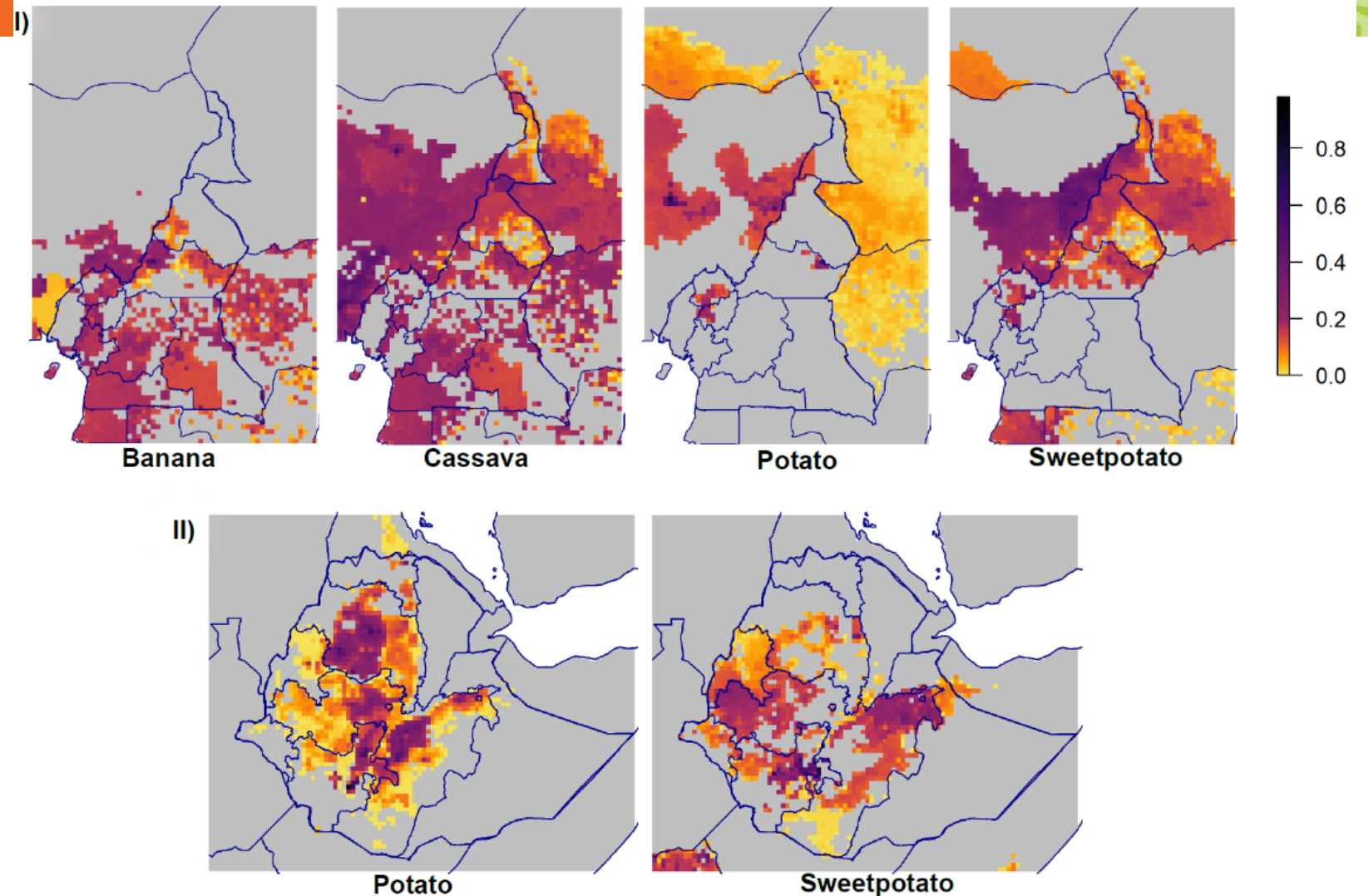


## b) Seed Regulations and Policies

- Engagements with NPPOs
- Improve & adapt to humanitarian contexts



Using **crop landscape connectivity** to identify **locations likely to play important roles in the spread of pests and pathogens** based on host availability and general dispersal models.

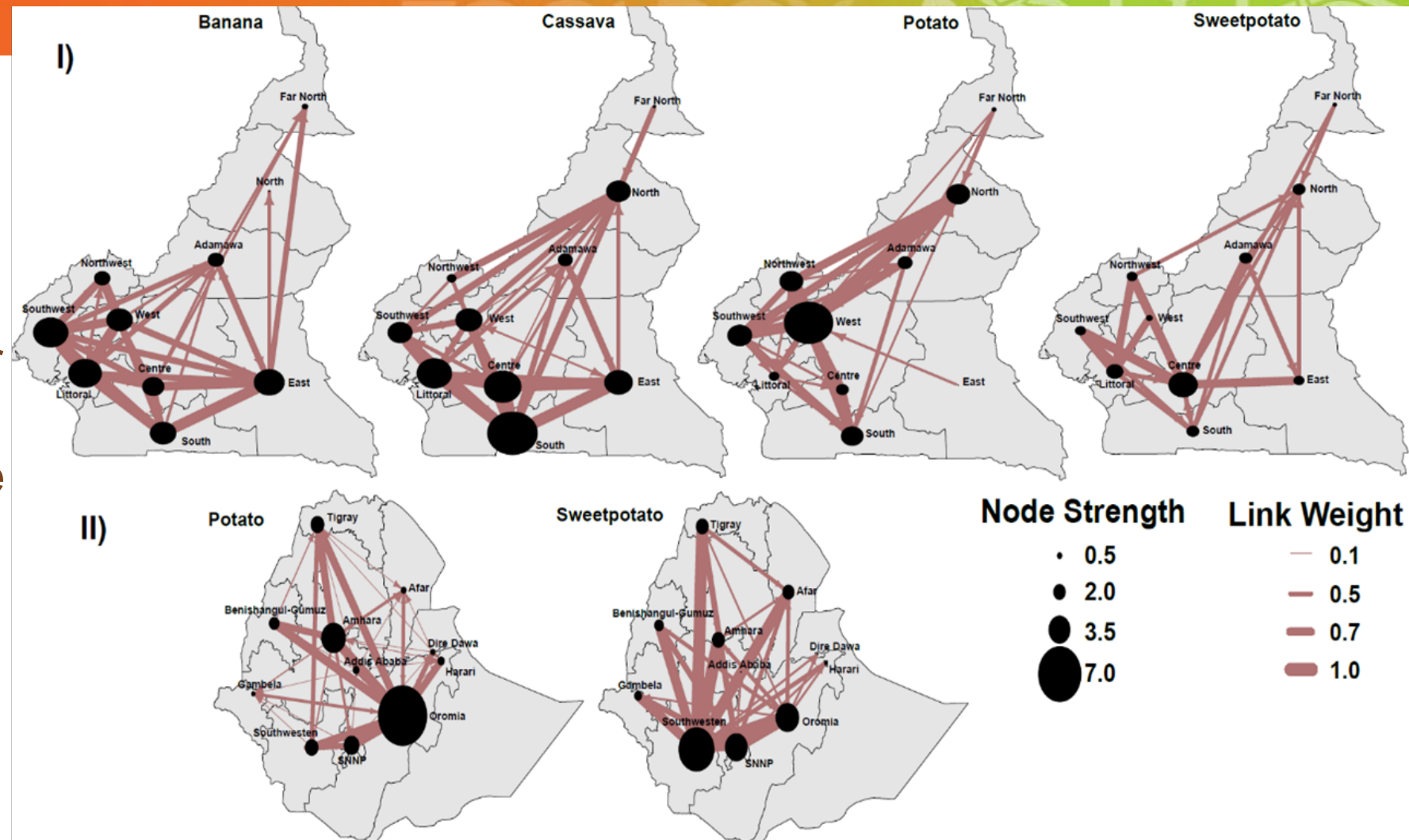


Mouafo-Tchinda et al., in review

**Figure 2.** Maps of cropland connectivity risk indices for I) banana, cassava, potato, and sweetpotato in Cameroon and II) potato and sweetpotato in Ethiopia. The cropland connectivity risk index is based on networks of potential spread across a landscape of crop hosts; locations with higher cropland connectivity are likely to be more important for pathogen and pest establishment and spread, based on host availability.



**Expert knowledge elicitation in Cameroon & Ethiopia to understand:**  
**a) Occurrence of major diseases and pests**  
**b) Informal seed trade**



**Figure 4.** Informal seed trade networks between regions in I) Cameroon, and II) Ethiopia as reported in expert knowledge elicitation. Node size is proportional to node strength, or the sum of link weights. Link weights are the proportion of experts that agreed on the occurrence of informal trade between the linked regions.

## c) Rapid, low-cost diagnostics for seed borne diseases

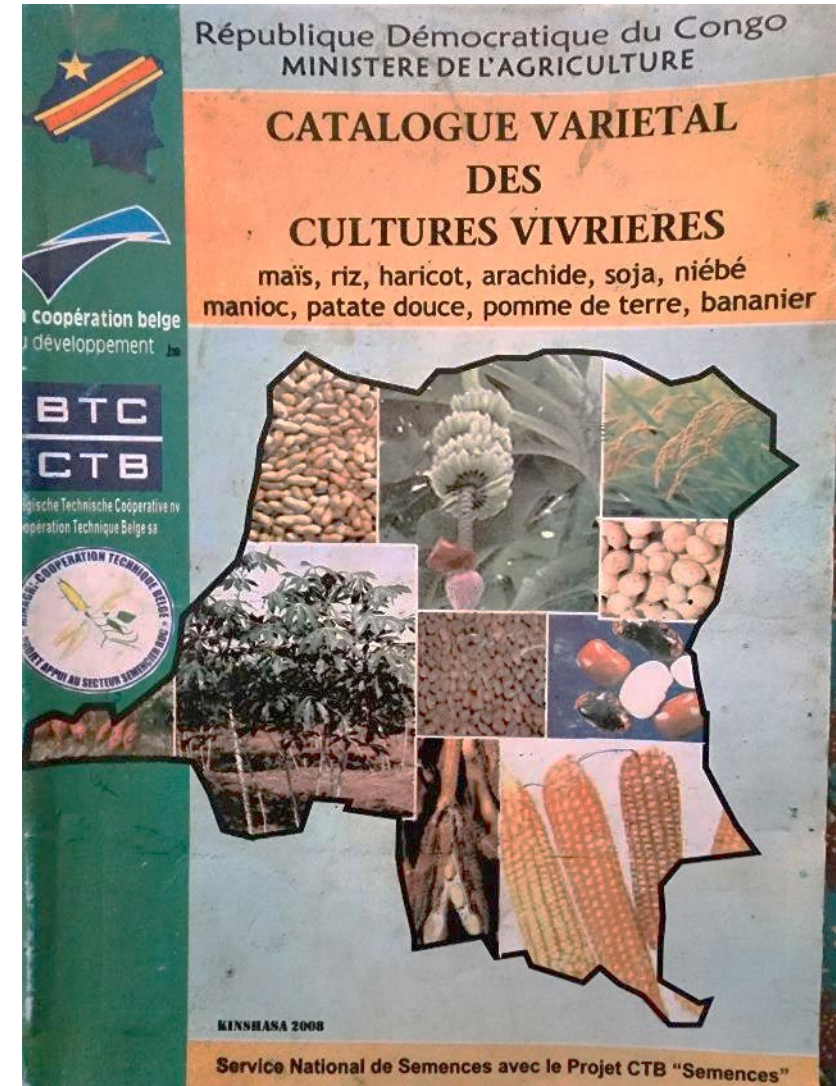
- Risk of pests & diseases moving with seed
  - ‘Start clean, stay clean’
- Capacity building on pest & disease management
- Light-touch protocols for quality assurance
- Pest & disease risk assessment tools (R2M)





## d) Improved availability and access to information about RTB crop varieties

- Digitize and make variety catalogues accessible online
- Support release and official registration of market-preferred varieties
- Participatory variety selection



## What are your experiences in the 4 areas?

- Questions for breakout sessions:
  1. What are the key experiences and learnings that you have heard today?
  2. What learning and suggestions do you have to ensure success in the future ?
- *Relate with your experiences on the 4 main areas*





Thank you

