



TOOLS4SEEDSYSTEMS:

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



JORGE ANDRADE-PIEDRA AND
TOOLS4SEEDSYSTEMS TEAM • MAY 23, 2023

Capacity needs assessment (CNA)
for roots, tubers and bananas
(RTB) seed interventions in DR
Congo and Cameroon



HYPOTHESES to explain potential disconnection between the agri-food system context and the agricultural response in humanitarian settings

RTB crop characteristics

- Crop production cycles for some RTB crops are too long to show impact within the typical length of humanitarian interventions.
- Time windows and timelines of (harvest – procurement/storage – distribution – planting) difficult to organize.

Awareness, knowledge & skills

- Inadequate awareness of potential for RTB programmes in humanitarian contexts and access to expertise.
- Inadequate technical and institutional capacity for RTB programme design and implementation.
- Needs assessments do not reflect an understanding of existing agri-food systems.

Procurement systems

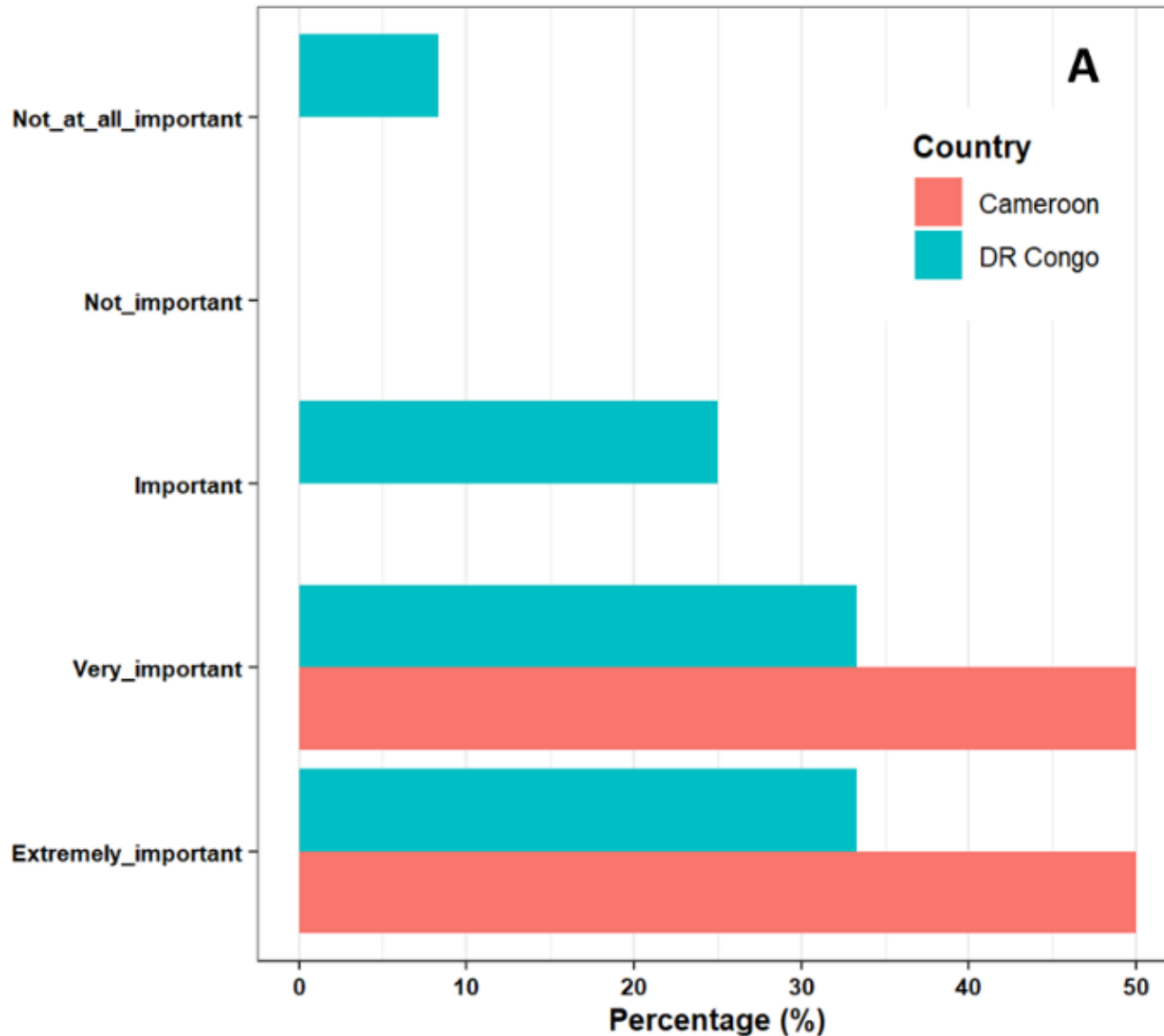
- Not organized to purchase perishable and bulky planting material.
- Use tender processes with registered seed companies that are not appropriate for sourcing from RTB seed producers.
- Few organized (formal/informal) sources of planting materials of RTB crops with adequate volumes available.

METHODOLOGY

1. Mini-workshop (Cameroon, Oct 2022)
2. Online surveys:
 - In-country support: DR Congo and Cameroon
 - Virtual support: Ethiopia, Bangladesh, Madagascar, Haiti, Mozambique
3. Interviews with international and national organizations and field visits (Nov 2022)
4. Expert knowledge elicitation (EKE) on RTB disease and pest risk (Nov 2022)
5. Post-visit discussions to define training institutions, main crops, varieties, etc. (Jan – April 2023)



How important are RTB crops



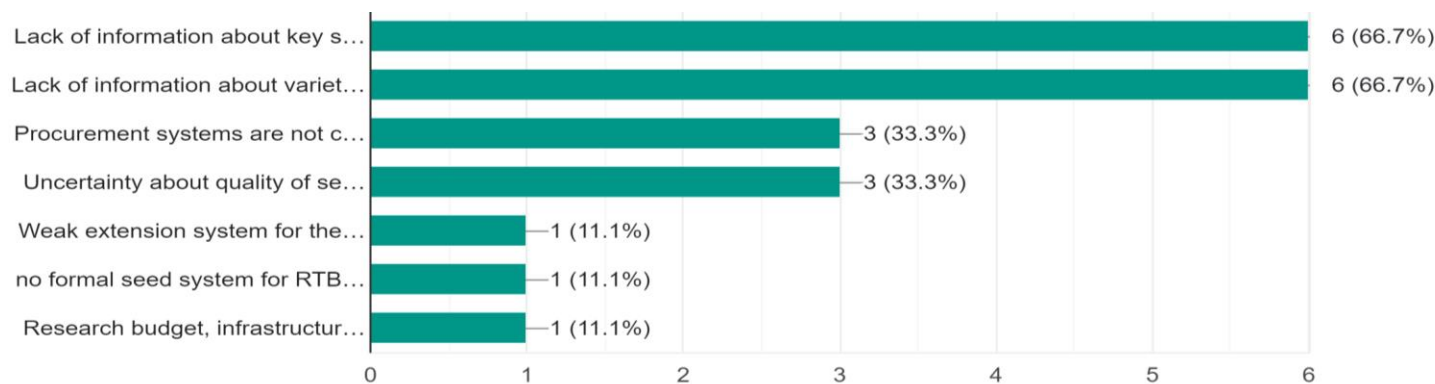
Source: CNA on-line survey, November-December 2022.

Percentage of respondents reporting different challenges in DRC and Cameroon

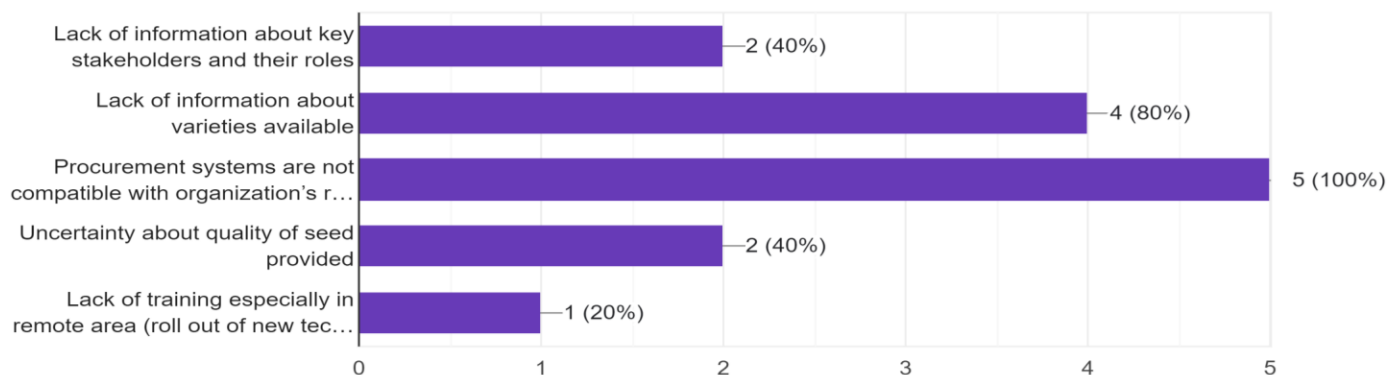
Challenges	% responses (n= 17)
1. Diseases (and finding areas with low disease pressure)	29%
2. Availability of (clean) planting material	18%
3. Transportation (of cassava)	12%
4. Seed Fair modality: i) means that farmers purchase small quantities of many crops; (ii) only improved varieties with high productivity and disease resistance	12%
5. Land issues	6%
6. Other: no funding (i), no monitoring (i), not undertaken (i), slow adoption of new varieties (i)	23%

Source: CNA on-line survey,
November-December 2022.

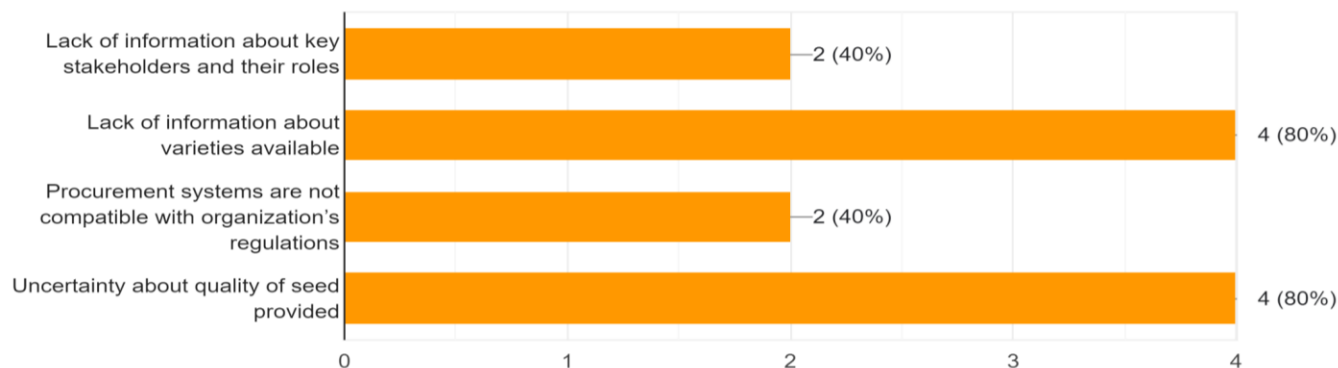
Key challenges: formal seed systems for RTB crops



Ethiopia



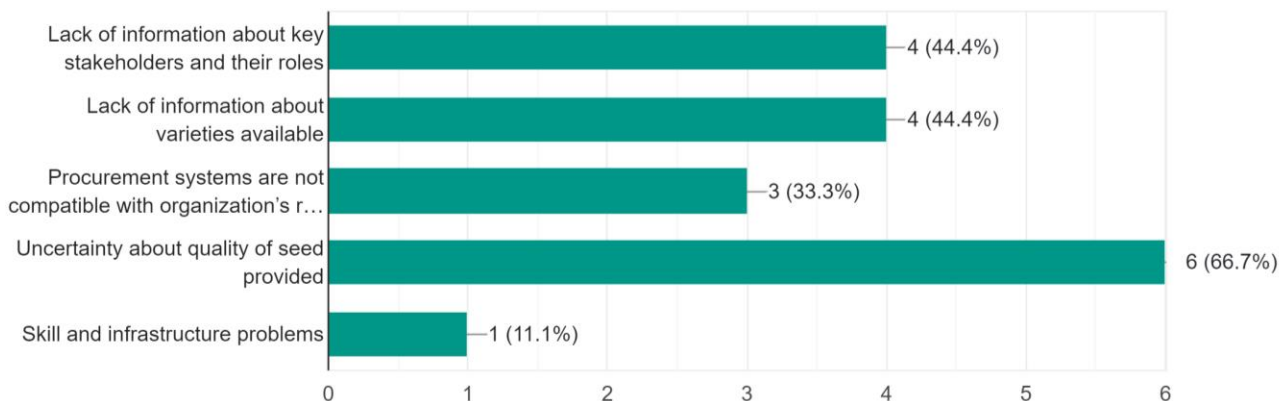
Madagascar



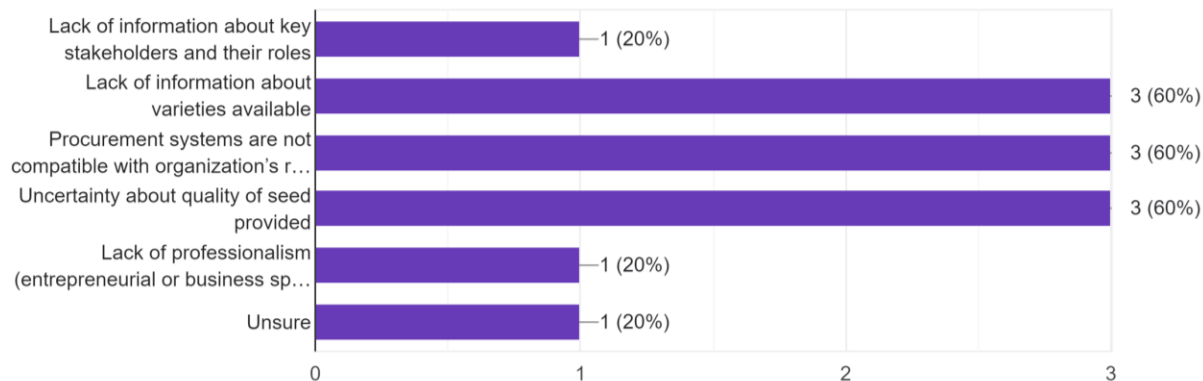
Bangladesh

Source:
CNA on-
line survey,
May 2023

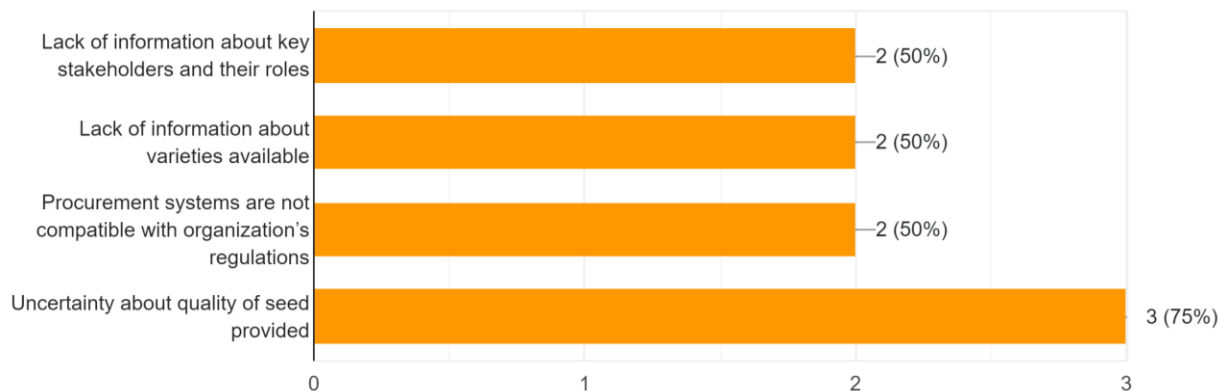
Key challenges: farmer managed seed systems for RTB crops



Ethiopia



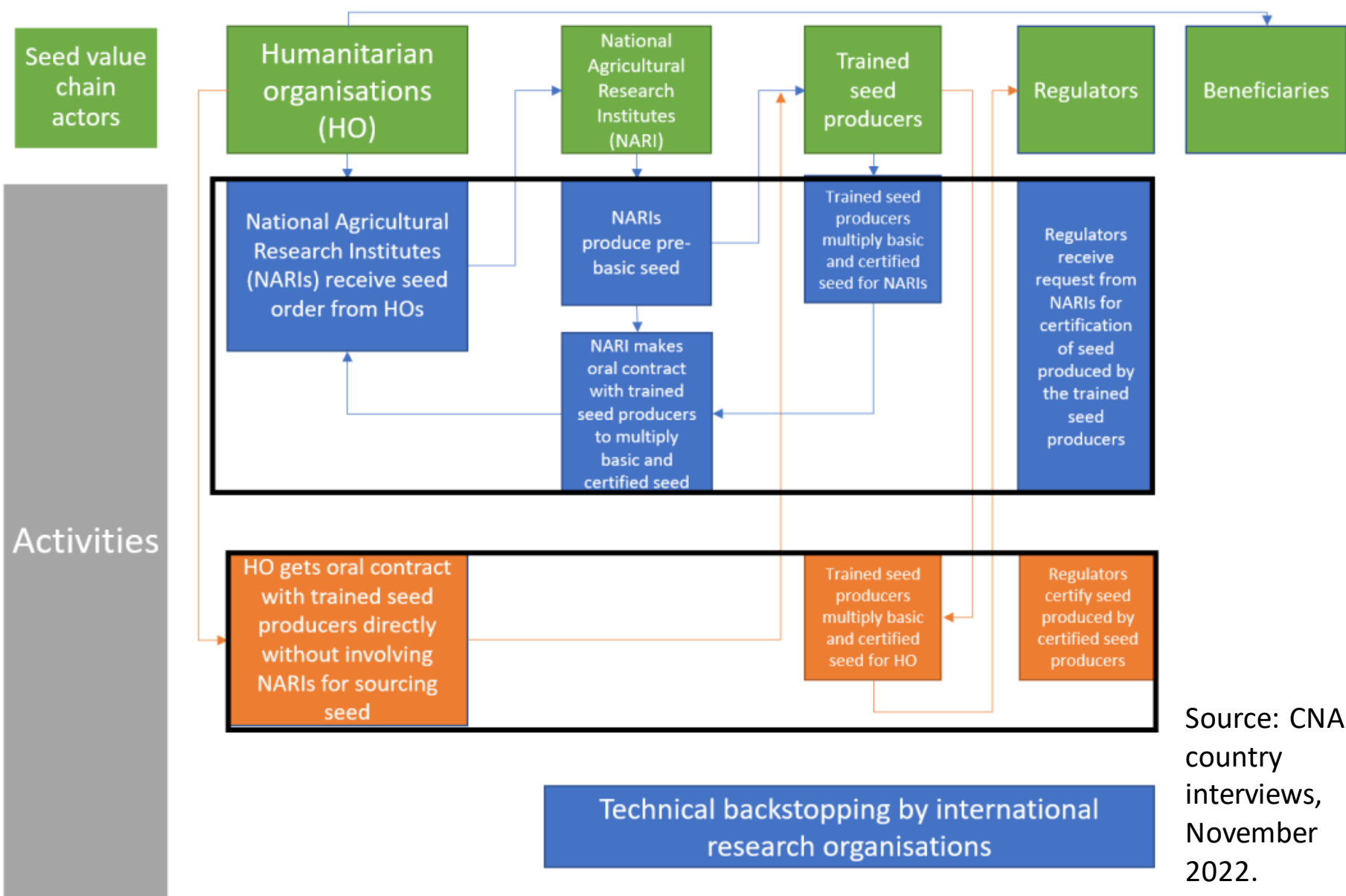
Madagascar



Bangladesh

Source:
CNA on-
line survey,
May 2023

RTB seed distribution channels in Cameroon and DRC



Source: CNA in-country interviews, November 2022.

Main pests and diseases damaging crops in Cameroon

Crops	Pests*	Diseases/pathogens*
Banana-plantain	Nematode Banana weevil Banana aphid <i>Cosmopolites sordidus</i>	Yellow sigatoka Black sigatoka <i>Fusarium oxysporum</i> Anthracnose Banana Bunchy Top
Cassava	Cassava root scale Cassava mealybugs Cassava whitefly Cassava aphids Cassava green mite	Cassava mosaic disease African cassava mosaic Cassava brown streak virus Anthracnose (<i>Colletotrichum</i>) Cassava root rot
Potato	Whitefly Leaf miner Aphids Irish-spider mite Thrips Potato root or potato cyst nematodes Wireworms	Bacterial wilt (<i>Ralstonia solanacearum</i>) Potato leafroll virus Potato virus Y potato virus X Fusarium dry rot Common scab Late blight (<i>Phytophthora infestans</i>) Early blight (<i>Alternaria solani</i>)
Sweetpotato	Sweetpotato weevil White grub (<i>Phyllophaga</i>) Sweetpotato stem borer Sweetpotato aphids	Alternaria leaf spot Black rot (<i>Ceratocystis</i>) Bacterial wilt (<i>Ralstonia</i>) Fusarium root Sweetpotato virus disease

CONCLUSIONS: Hypotheses to explain potential disconnection between the agri-food system context and the agricultural response in humanitarian settings

RTB crop characteristics

- Concerns about **the availability and quality** of planting material: low multiplication rate for RTB seed, accumulation of seed-borne pests and diseases.

Awareness, knowledge & skills

- RTB crops considered as **extremely important**
- Adapted to the agro-ecological conditions, short-growth duration and harvest ranges between 4-12 months, double consumption of leaves & tubers

Procurement systems

- **Transportation of bulky planting material was considered a challenge.** Most respondents referred to seed sourcing from the formal sector, and there were few indications of the informal sector being a potential seed source.
- **Limited discussion on constraints and opportunities in local farmer-managed (or 'informal') seed systems**
- **Further work is needed to understand the existing seed systems for RTB crops**

Priority areas for capacity strengthening

1. Rapid Multiplication Technologies (RMTs) for RTB crops

- in-vitro, EGS, field production depending on country.
- RMT allows the production of large quantities of planting material within a short time.

2. Diagnostics for seed-borne diseases:

- continued training in the use of rapid, low-cost virus diagnostics like LAMP.

3. Seed Regulations

- Need to be adapted to be more applicable for humanitarian settings – QDS type.
- Starter material sourced from documented pathogen-tested sources and ideally have genetic resistance or tolerance to main diseases.

4. Increase availability of information about improved varieties

- Through demonstration plots and improve access to catalogues for RTB crops

Most appropriate modality for capacity strengthening is in-country capacity strengthening opportunities (with demonstrations) followed by learning networks, on-line webinars and e-learning modules.

In synthesis

- Recognition of the **important role that RTB crops** can play in responding to the needs of populations in humanitarian settings.
- Reasons for limited RTB crop interventions are **multi-faceted** and relate to crop characteristics, awareness, knowledge, and procurement systems.
- Key challenges are **availability** of RTB planting material and assuring and maintaining its **quality**.
- Limited understanding of how **farmer-managed seed systems** function in humanitarian settings, in particular gender roles and constraints.
- Training in **seed production technologies** and **quality assurance practices** are the priority areas for support.
- The diagnostic tools available through the RTB Toolbox are **not an immediate priority** for capacity strengthening
 - Selected tools can be used to better understand the potential interaction between the formal seed system and farmer-managed seed systems



Thank you

