Grain Market: A Pull for Seed Businesses across Bean Corridors in Tanzania

Speakers: Dr. Eliud Birachi, Louise Sperling, Gaudencia Bakilile, Dr. Geoffrey Mkamilo, Dr. Jeff Ehlers, and Jean Claude Rubyogo

Introductory Remarks: Robert Bertram

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Opening Remarks

Robert Bertram

Chief Scientist, Bureau for Resilience
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Speakers

Dr. Eliud Birachi

Market Value Chains Specialist, PABRA

Louise Sperling

Coordinator, SeedSystems.org

Gaudencia Bakilile

General Manager, G2L Company Limited

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Speakers

Dr. Geoffrey Mkamilo

Director General, Tanzania Agriculture Research Institute (TARI)

Dr. Jeff Ehlers

Programme Officer, Bill & Melinda Gates Foundation

Jean Claude Rubyogo

Alliance Global Bean Programme Leader & Director, Pan-Africa Bean Research Alliance (PABRA)

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FEED THE FUTURE SUPPORTING SEED SYSTEMS FOR DEVELOPMENT (S34D)

December 17, 2021

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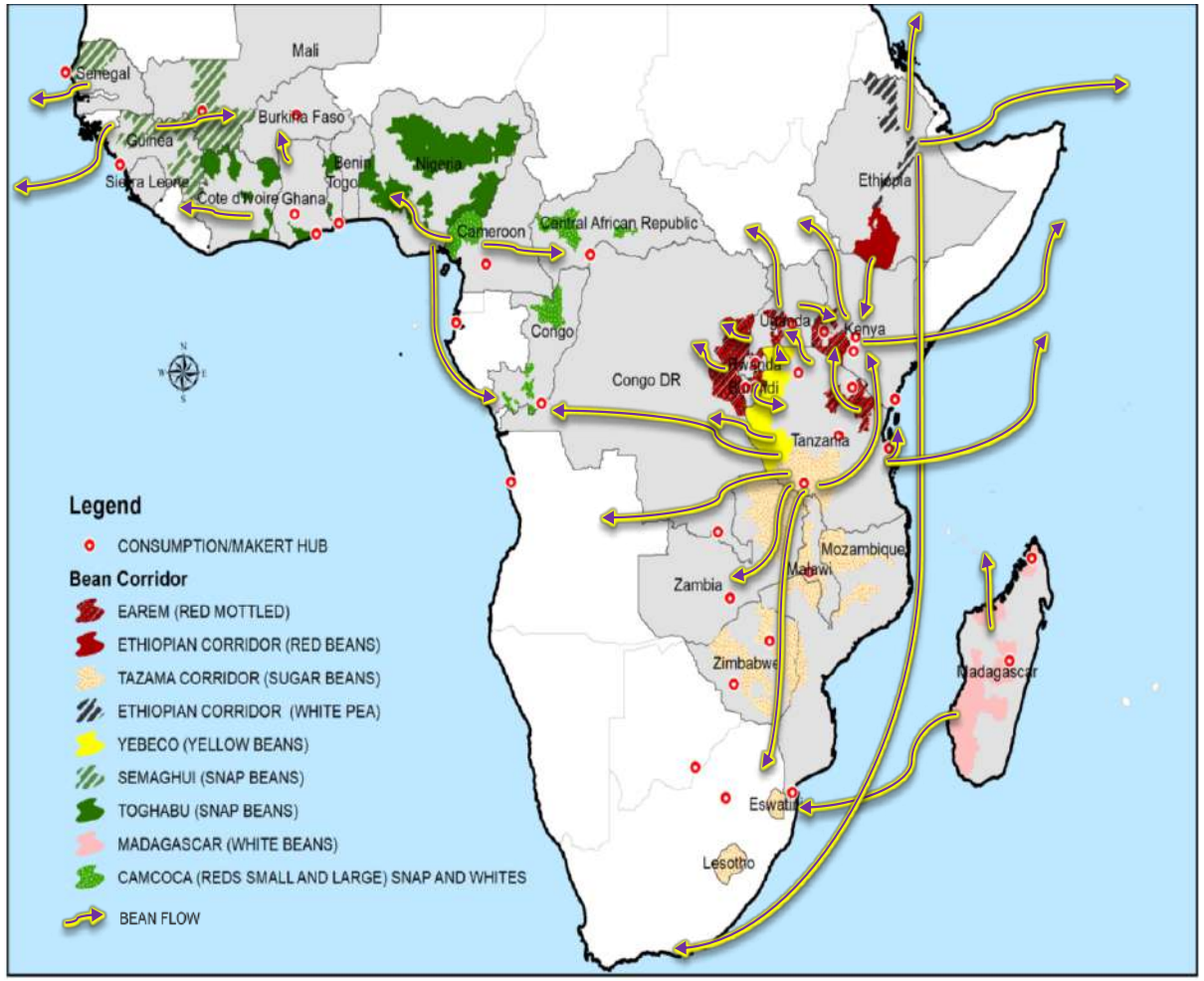
Presentation Overview

1. Introduction, Objectives, Rationale, Study Design
2. Results from the yellow grain market survey
3. Lessons learned and implications for strengthening grain trade systems



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Yellow Bean Grain Market Pull

Part I: Introduction, Objectives, Rationale, Study Design

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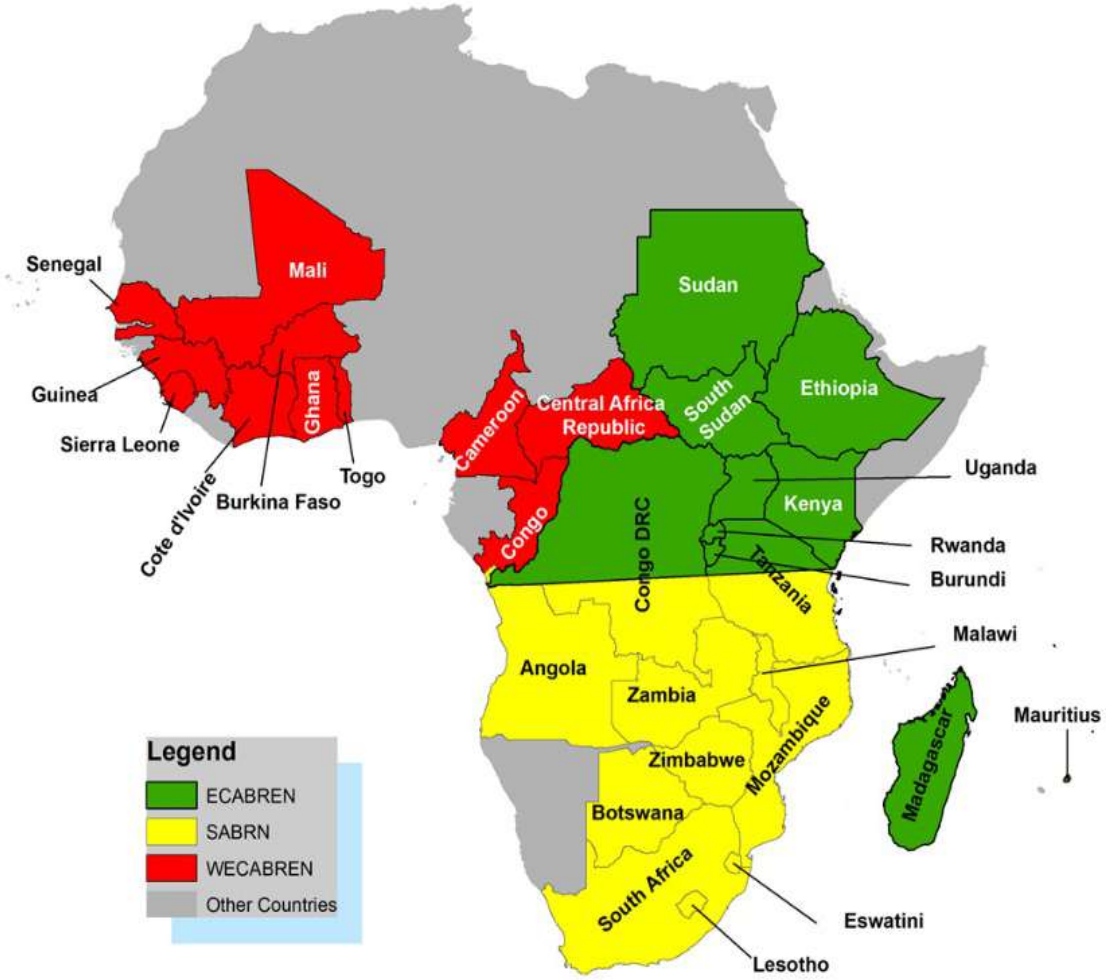
The PABRA Network

- The Alliance of Bioversity International and CIAT (Alliance) is a member of the CGIAR Consortium and has common bean as one of the major focal commodities
- In Africa, the Bean Programme is member of the Pan Africa Bean Research Alliance and bean research work is carried under PABRA



YB Study Objectives and Approach

1. Understand the importance of the Yellow Bean corridor (Tanzania, the region)
2. Understand capacity of traders and seed networks
3. Show position of released varieties in the market
4. Assess demand for yellow bean seed and grain
5. Identify opportunities for enhancing sectoral efficiency through policy and practice that work across national boundaries.
6. Guide public and private investments in the yellow bean seed demand grain and supply

Beans in Tanzania: Rationale/importance

- **1.2 million tons per year (2018)**, contributing to nutrition (and food security protein, minerals, calories)
- Number **one** bean producer in Africa and **seventh** globally
- **More than 40% traded** and 25% of the traded amount is exported to more than 8 countries in the region

Major bean market types and their importance in Tanzania

Types	Production area (ha) 2018	% total beans area
1. Large red mottled for domestic and export market	365,344	35
2. Medium round yellow beans for domestic and export market	**340,000**	**32**
3. Sugar bean mainly export but increasing local market	221,876	22
4. Others: Purple (*Kablanketi*), small white, etc	121,961	11
Total	1,049,181	100

- **YB : Second, but with rapid growth due to its increasing market demand and SHFs response!**

Why this yellow bean study?

Yellow bean is most traded bean type but with limited information on its production and trade

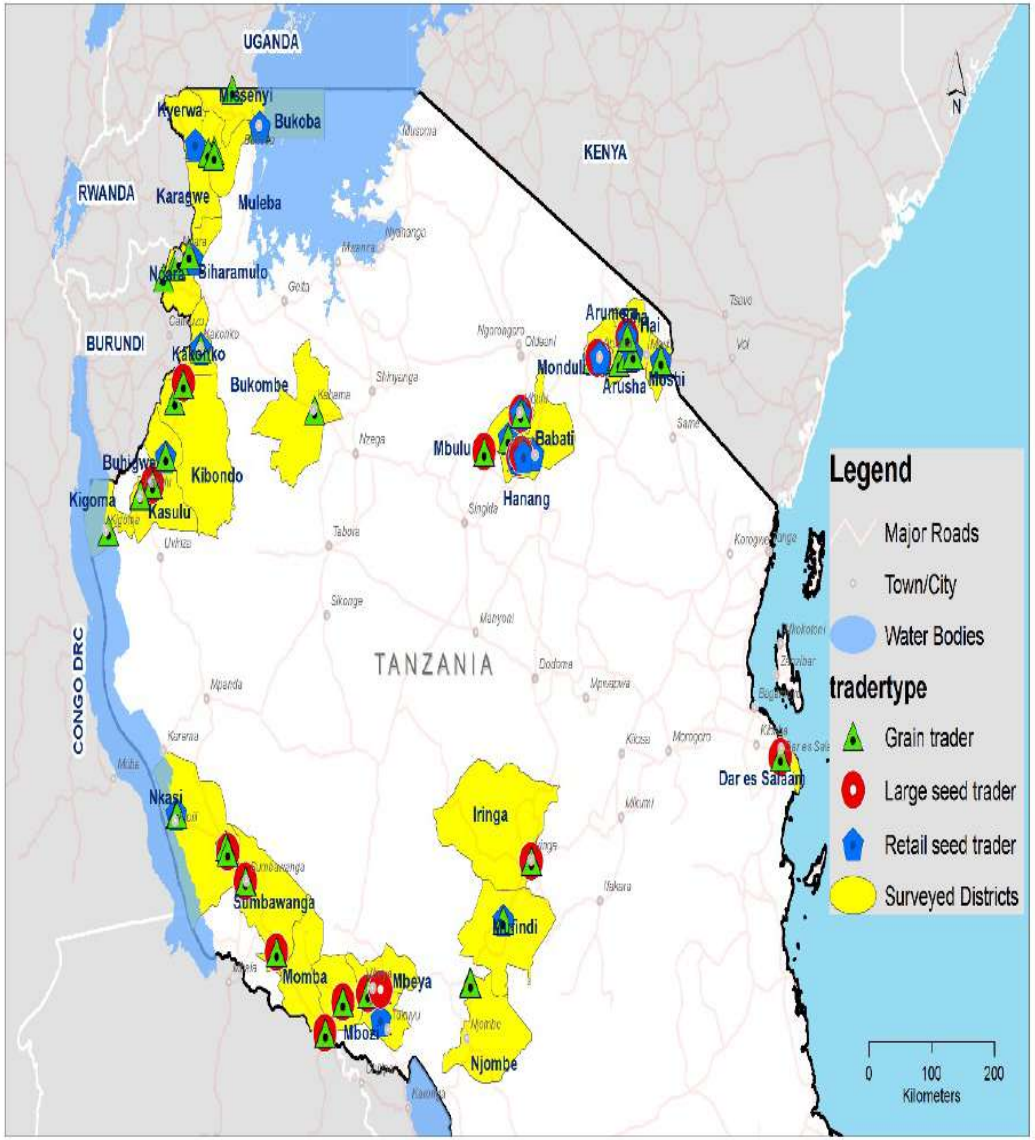
Potential implications on seed supplies system and other possible investments remain unclear.

Study Background

- **Sample**:
  - A survey of more than 340 traders (grain and informal seed)
  - 12 regions in Tanzania (wholesalers, exporters, aggregators, and retailers)
  - Production, distribution and consumption hubs; Survey conducted in July/August 2019

Partnership:

- Co-led by Tanzania Agricultural Research Institute (TARI) and PABRA (Alliance of Bioversity International and CIAT)
- Implemented under the Supporting Seed Systems for Development activity (S34D) funded by the Feed the Future Initiative through RFS and by USAID through BHA.



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Yellow Bean Grain Market Pull

Part II: Results from the yellow grain market survey

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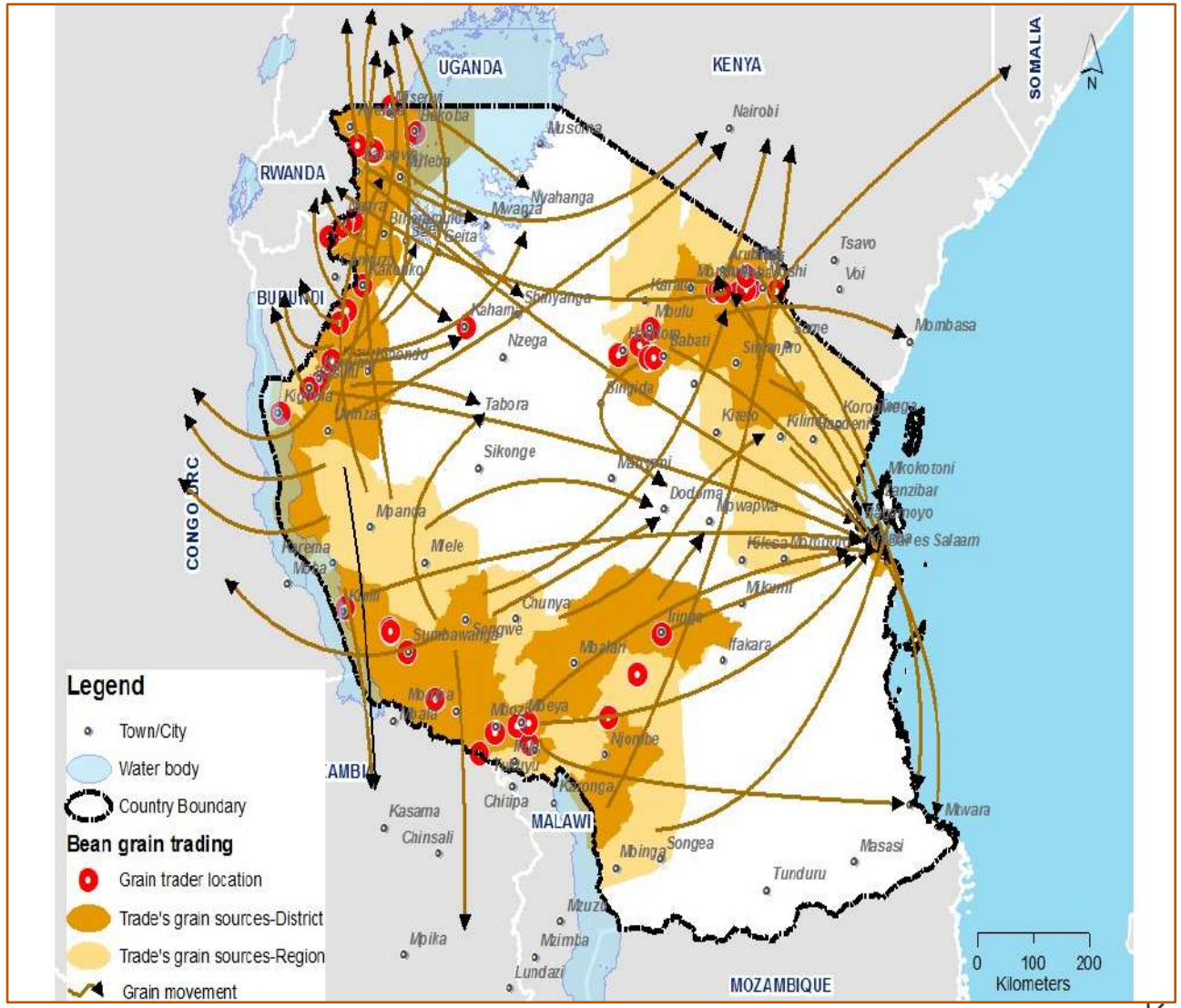
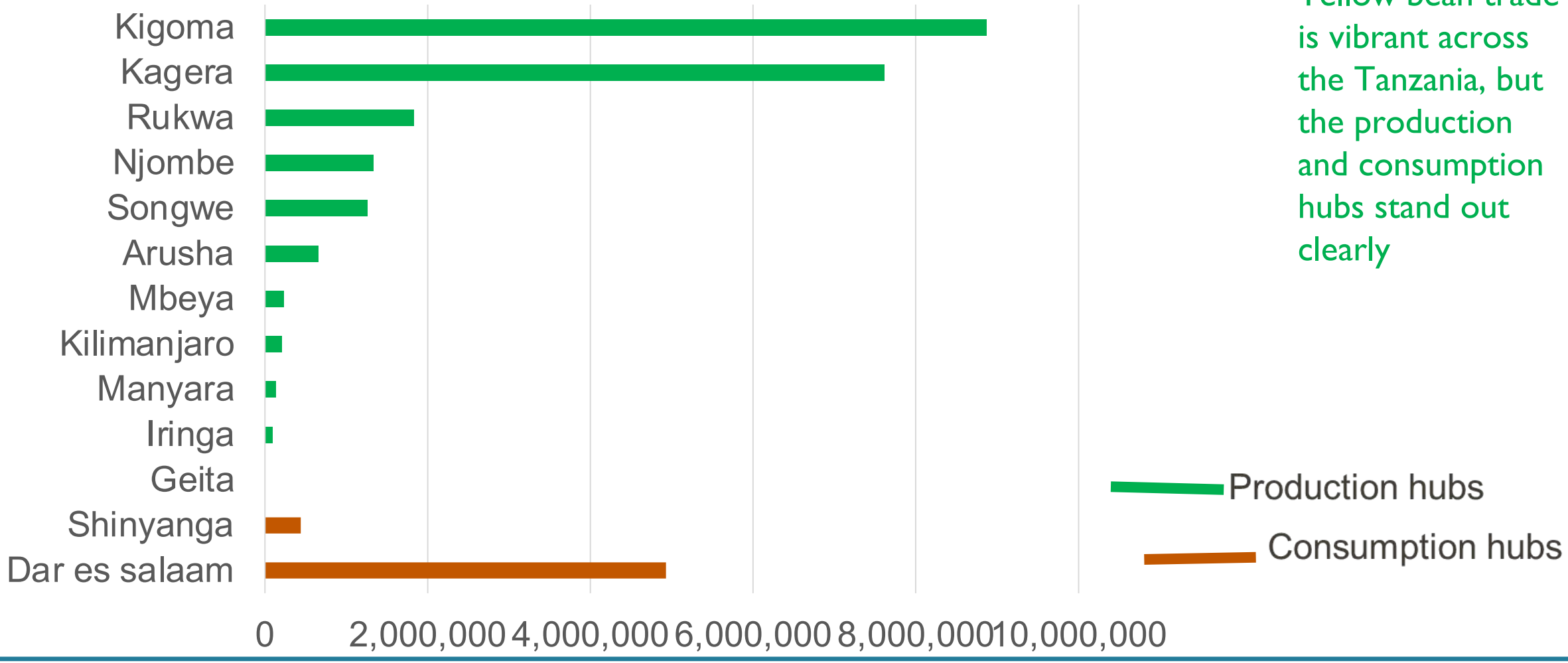
How yellow bean flows nationally and regionally

- 340 grain traders handled <u>more than 40,000 MT</u> value at **US$ 27.6 million annually**

- <u>Across borders to 8 countries:</u> to DRC, Uganda, Rwanda, Burundi, Zambia, Malawi and Kenya and others. Exports estimated at 17,322 tons valued at USD 11.8 M (about 15% of the traders



Yellow bean trade in key hubs, US$



- Yellow bean trade is vibrant across the Tanzania, but the production and consumption hubs stand out clearly

Trade Value and Prices of Yellow Bean Sold July 2018 - July 2019

Traded varieties	Traders (N)	Value (USD)	Retail Prices (US$)/Kg
Selian 13	153	4,737,843	**0.81**
Uyole 16	48	10,921,894	**0.75**
Njano gololi (Masindi yellow)	44	3,316,540	**0.65**
Njano Uyole/ Uyole 98	16	676,500	**0.66**
MOORE 88002	23	1,668,493	**0.72**
Non-clustered	64	2,654,553	**0.70**
DNA not taken	95	3,631,070	**0.77**
Total	**443**	**27,606,896**	

Gendered analysis of yellow bean trade

- **Women dominate yellow bean retail trade; men** dominate export and aggregation businesses
- **Mean value of bean sales for *women* was worth US$ 65,992 per trader while the *men* had US$ 113,422, almost 2 times more than women/year**
- Women sold closer home within the district - they mainly sourced grain close to their localities, men source and sell in distant regions/markets

Type of Trader	Women	Men
Retailer	**56.4**	31.6
Collector/aggregator/broker	13.5	21.1
Wholesaler	26.4	**40.1**
Producer-trader	3.1	6.1
Exporter/others	0.6	1.2

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Yellow Bean Grain Market Pull

Part III: Lessons learned and implications for strengthening grain trade systems

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Lessons on YB Grain Trade

- **High demand, rapid growth in less than ten years and rising (taste, palatability, flatulence, cooking)**
- **Differentiated grain market; preference for single varieties** within the yellow beans
- Market pull (by consumers and producers) for yellow varieties is strong, but traders faced **inadequate supply** to meet demands
- Grain market lays a foundation (pull) for more private (formal, informal) investors in seed supply and resilience, harnessed by the bean corridor
- These present opportunities for investment in both grain and seed supplies: **But major constraints exist:**
    1. Unreliable supply of grain;
    2. Inadequate seed and poor linkages to research
    3. Poor quality of beans;
    4. Unpredictable market levies, poor storage and limited credit availability

Implications: Strengthening investments in the corridor for growth

- The yellow bean corridor can translate the grain volumes to business and investment opportunities to upgrade seed supplies by enterprises for growth and gender inclusion
- But there is need to invest in:
  - Sufficient provision of variety information to potential users;
  - Increase the technical capacities of value chain actors to handle the beans seed;
  - Increase collaborations and linkages in the value chain and;
  - Provide sufficient policy support for within and cross border trade.

- Yellow bean corridor success is not just about grain movement… BUT
  - It is also about informal seed movement and;
  - Supporting informal seed availability, access and quality enhancement in Tanzanian corridors and beyond

S34D Consortium Partners

Agri experience
Making every season count

Alliance
Bioversity International
CIAT
International Center for Tropical Agriculture
Since 1967 Science to cultivate change

CRS
CATHOLIC RELIEF SERVICES

OPPORTUNITY
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PABRA
Pan - Africa Bean Research Alliance
Better Beans for Africa

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The informal seed sector spreading innovation in the yellow bean chain in Tanzania

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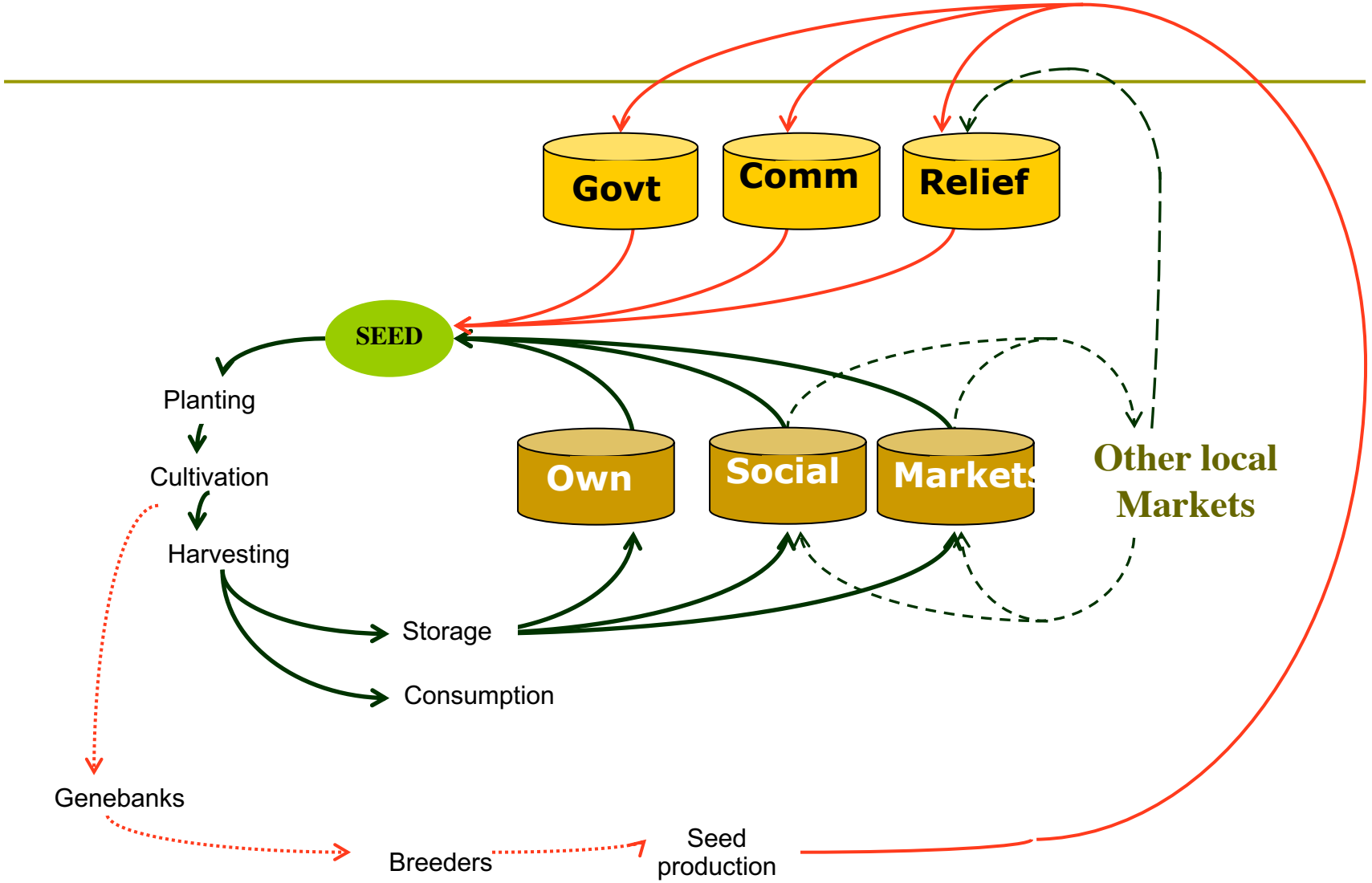
Sustainability 2021, *13*(16),8897;
https://doi.org/10.3390/su13168897

Channels through which farmers source seed



Modified from Almekinders + Louwaars 1999

Seed Markets

Informal/local seed markets

Many crops: cereals , legumes

Agro-dealers/ seed companies

Maize, vegetable seed

‘IMPROVED SEED’=

Seed quality	+	Performing varieties
* certified		*modern
* QDS		* improved
* farmers’		

Sample/Methods:

- Sites in 12 regions in Tanzania (wholesalers, exporters, aggregators, and retailers)
- Survey of more than 340 traders
  - Large grain traders
  - Large seed traders
  - Seed retailers

- GIS mapping of seed and grain flows
- DNA and fingerprinting analysis

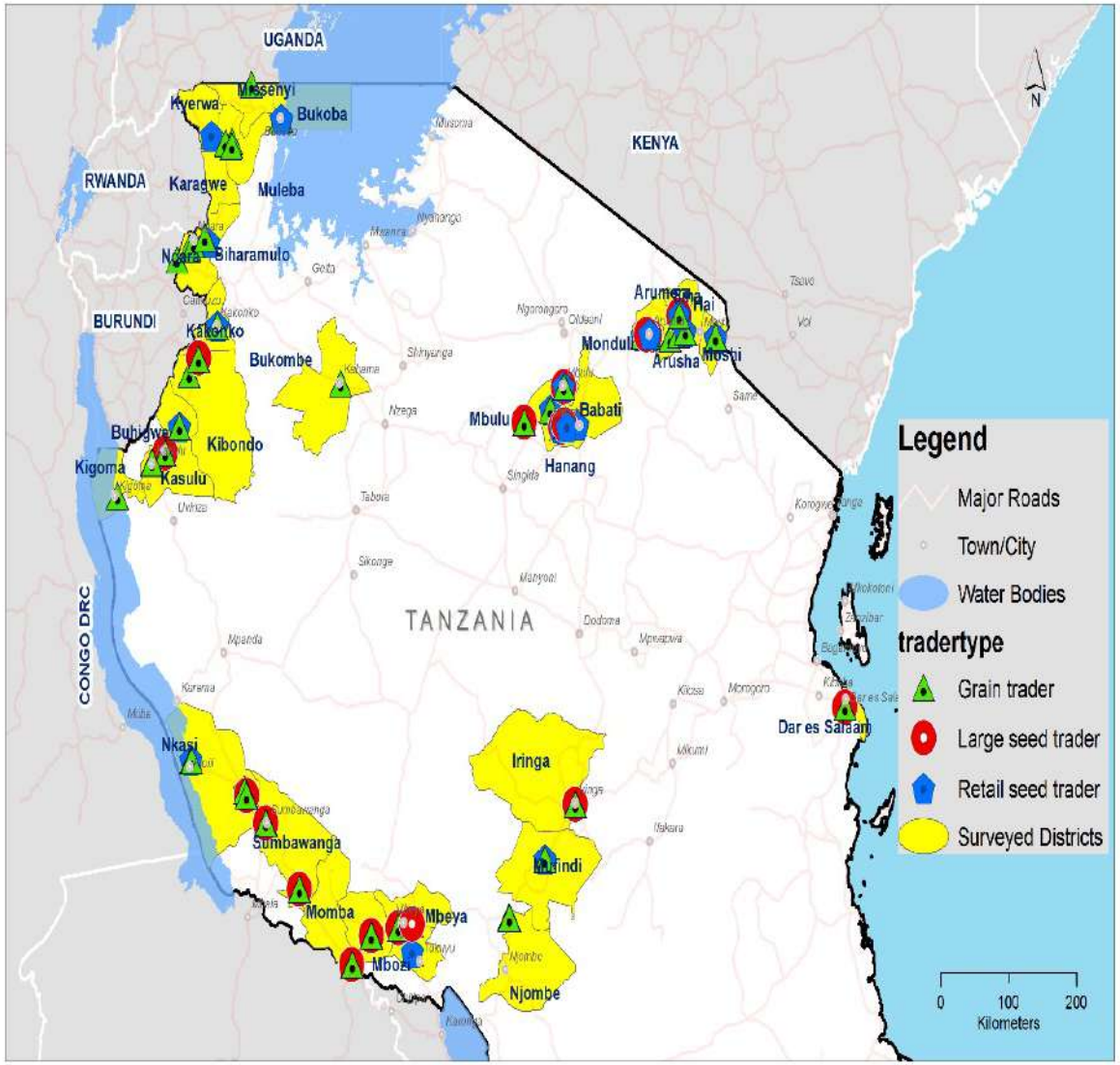
Partnerships:

- **PABRA (Alliance of Bioversity International + CIAT),**
- **Tanzania Agricultural Research Institute (TARI)**

+

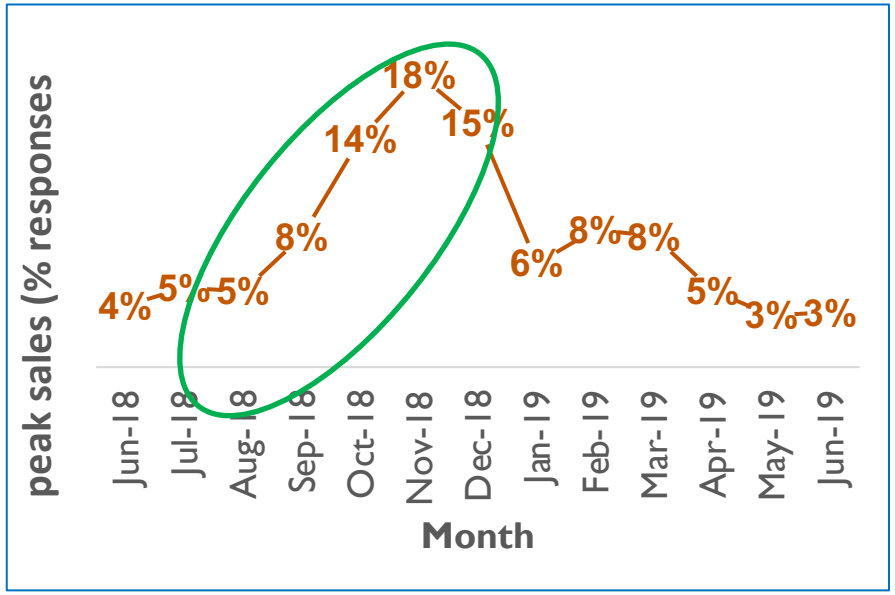
- **Supported by USAID through the Supporting Seed Systems for Development (S34D) activity**

Survey Areas-- July/August 2019:



Findings: seed / seed business

Seed and grain businesses



Type of Trader	Volume (MT)	Non-sowing period		Sowing period	
		% grain	% seed	% grain	% seed
Large Traders (avg)	**2,117 (48.1)**	84.1%	**15.9%**	66.4%	**33.6%**
Retailers (avg)	**295 (4.6)**	80.5%	**19.5%**	61.2%	**38.8%**

Informal seed management: trader practices

Type of Practice	Retailers (N = 41)		Large Traders (N = 23)	
	# yes	% yes	# yes	% yes
Get grain from specific regions - with similar adaptation	9	22	9	39
Seek out specific varieties to buy (which can be planted)?	31	76	17	74
Buy from specific growers who are known for high quality seed?	11	27	7	30
Ask growers (ahead of time) to multiply select varieties	0	0	0	0
Keep each variety pure—as single variety?	30	73	18	78
Keep freshly harvested stocks apart?	30	73	21	91
Grade stocks (which grain/which seed)?	19	46	16	70
Do germination tests?	5	12	0	0
Have special storage conditions (to help with seed viability)?	16	39	11	48
Sort out 'waste' (pebbles, dirt, dust)?	27	66	19	83
Sort out 'bad grains/seed'-that is broken, immature, or discolored?	27	66	18	78
Sell seed and grain separately, at different prices?	19	46	17	74

Clear practices to manage informal seed:

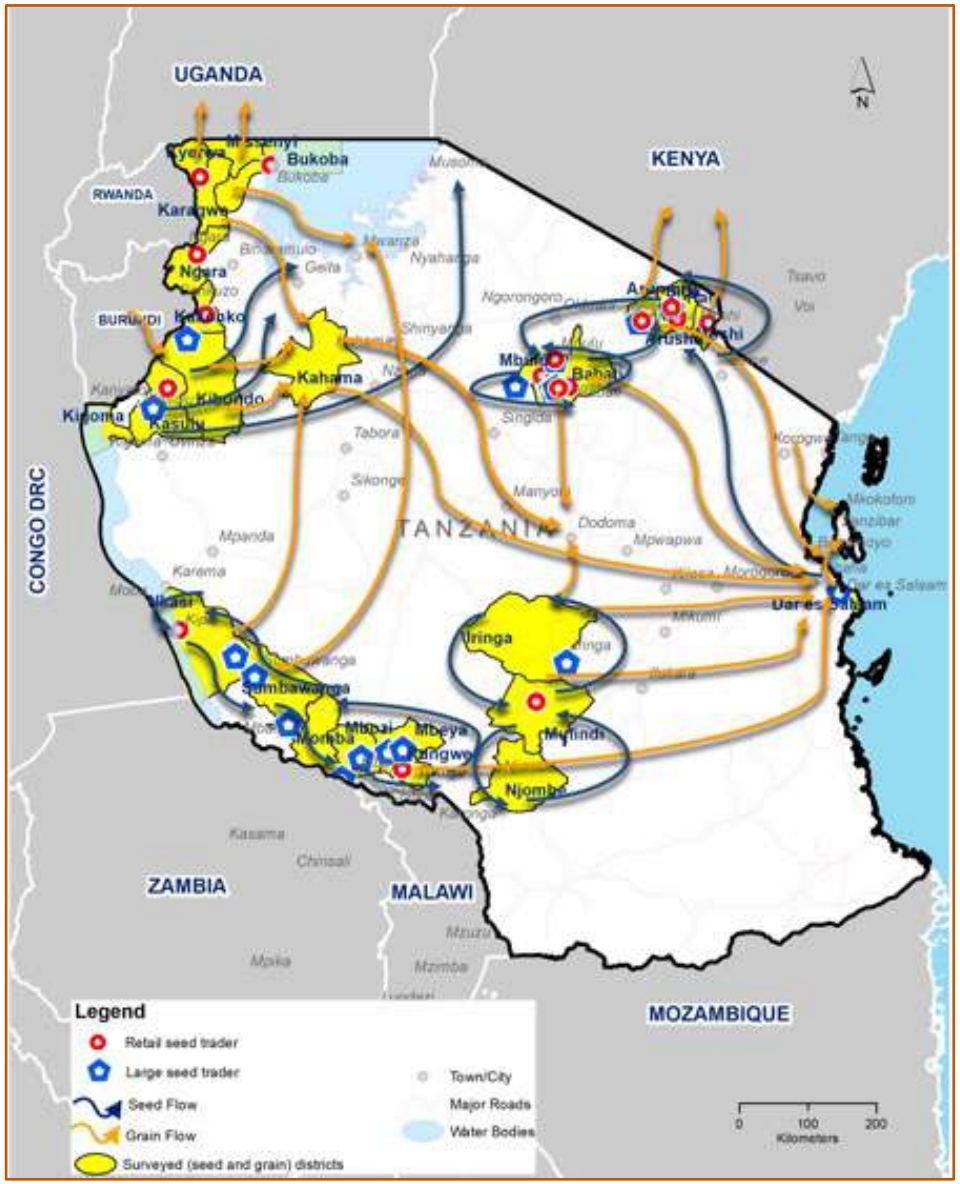
larger traders used on average **6.7**,

Retailers used on average 5.5.

Many traders sell seed and grain separately, at different prices.

Seed = 10-25% +

Trader seed and grain flows



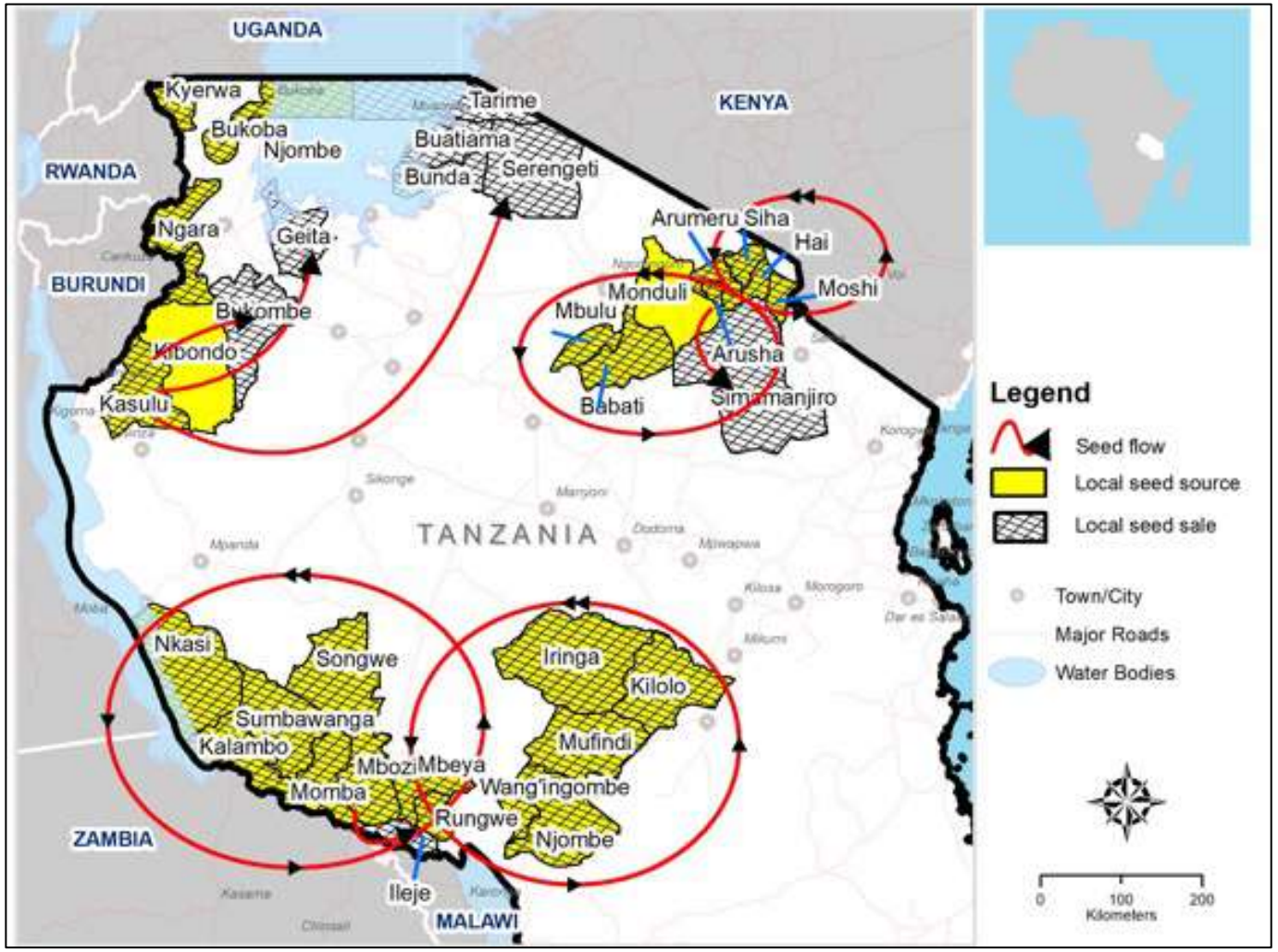
Seed flows- local

Grain flows-

across country

across borders

Yellow bean informal seed: sourcing and sale



Seed sourcing and seed sale generally *within r*egion

Large trader sources of seed and grain (actors)

Source	Grain	Seed	Grain + Seed
Self-production	32.6	34.8	28.3
Farmers directly	73.9	76.1	65.2
Collectors (who source from farmers)	71.7	56.5	52.2
Other traders, small and middle level	54.3	41.3	34.8
Wholesalers	4.3	0.0	0.0
Seed Companies	0.0	0.0	0.0
QDS producers	0.0	0.0	0.0
Research / NARS	0.0	0.0	0.0
Other	0.0	2.2	0.0

Findings: Varieties-
DNA methods and fingerprinting

Genetic identity of yellow bean traded in Tanzania: methodology

Step 1: Establish a panel or library of DNA fingerprints "The reference library"

- Develop a list of improved varieties of target crop currently in use in the target countries-– released/ official varieties and local landraces.
- Collect breeder seed of these varieties to develop the library
- Sample and ship leaf or DNA to collaborating lab (LGC outsourcing service)
- Analyze data to establish a panel or library of DNA fingerprints

Step 2: Develop fingerprints of trader samples

- Yellow grain samples (501) corresponding to trader survey data collected
- TARI nominated samples (breeder seed of released yellow bean varieties (reference) assembled
- Seed sent to Kawanda (Uganda) for seed germination and leaf sampling
- Leaf samples shipped to Intertek (Sweden) to run the reference library (markers) to establish fingerprints of trader samples and return data
- Data analyzed to majorly cluster trader samples around the reference (yellow released varieties and known landraces)

Trader Samples vs Reference Varieties

61.3% modern TARI released varieties

Key	Reference varieties	% of trader samples	Group name	Type	Release date
Group 1	SELIAN13 NJANO GOLOLI MASINDI YELLOW LONG TZ ; UNLABELED2	44.9	Selian 13	Modern	**2018**
Group 2	Un-clustered	18.9	Unknown	-----	--
Group 3	MASINDI YELLOW SHORT; NJANO GOLOLI	13.2	Masindi Yellow	Landrace from Uganda	--
Group 4	UYOLE16	11.4	Uyole 16	Modern	**2016**
Group 5	MOORE88002 TZ UNLABELED 1 RUSHULA	6.5	MOORE 88002	Modern	1999 released in Burundi, Uganda and DRC
Group 6	NJANOUYOLE UYOLE98; UYOLE NJANO NDEFU; VWAWA MKT MBUZI	5.0	Njano Uyole	Modern	2008

So how did modern varieties enter the informal seed system ?

- TARI dynamic release of modern varieties : 15 between 2011-2020 (yellow+ other types)
- TOSCI scaling up certified + QDS 2.2 MT (2013) to 300-500 MT/ years after
- Many on-farm demonstrations
- Field days
- ....

Moving Forward

Immediate actions needed- to be evaluated

1. **Information (truly link informal traders to better formal sector information)**

- ✓ Link *traders* to info on new varieties, specific sources of quality seed
- ✓ Ensure *traders* represented on commodity and seed/grain platforms
- ✓ Give *traders* tools to popularize and get feedback on varieties/seed quality (incl. PVS trials)

2. **Strategic injections of new varieties (active not passive strategy)**

- ✓ Develop strategy to inject varieties into informal system
- ✓ Use small packs as one entry point (multiple outlets for sale- rural shop)
- ✓ ….

3. **Efforts to enhance seed quality (informal system)**

- ✓ Leverage areas for building on certified seed (scale points with special producers)
- ✓ Work with farmers and traders to keep varieties separate
- ✓ Promote better storage- farmers and traders
- ✓ ……

The current situation- and steps beyond

- ***Expand further lessons learned in Tanzania (use them!)***
  - Other beans types
  - Other crops (…cowpea)

- ***Learn more about 'seed flow processes' (informal sector, formal sector and their interaction) + move learning to other parts of Africa --even beyond.***

→ ***This is a win situation ----------with <u>no (?)</u> $$ investment***

Study drivers

- *Researchers (ABC)/PABRA, TARI*
- Birachi, E. A, Sperling, L., Kadege, E., Mdachi, M., Upendo, T., Kessy R, Mutua, M., Mbiu, J., Raya, N., Ndunguru, A., William, M., Kabungo, C., Mcharo, D., Shida, N., Kilango, M., Magelanga, A., Maganga, R., Kalemera, S., Katungi, E., Mukankusi, C., Malle, S. Dey, B., Templer, N., Rubyogo, J. C., Onyango, P., and Buruchara, R.

- *340 + Traders*

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December 17, 2021

G2L Co. Ltd

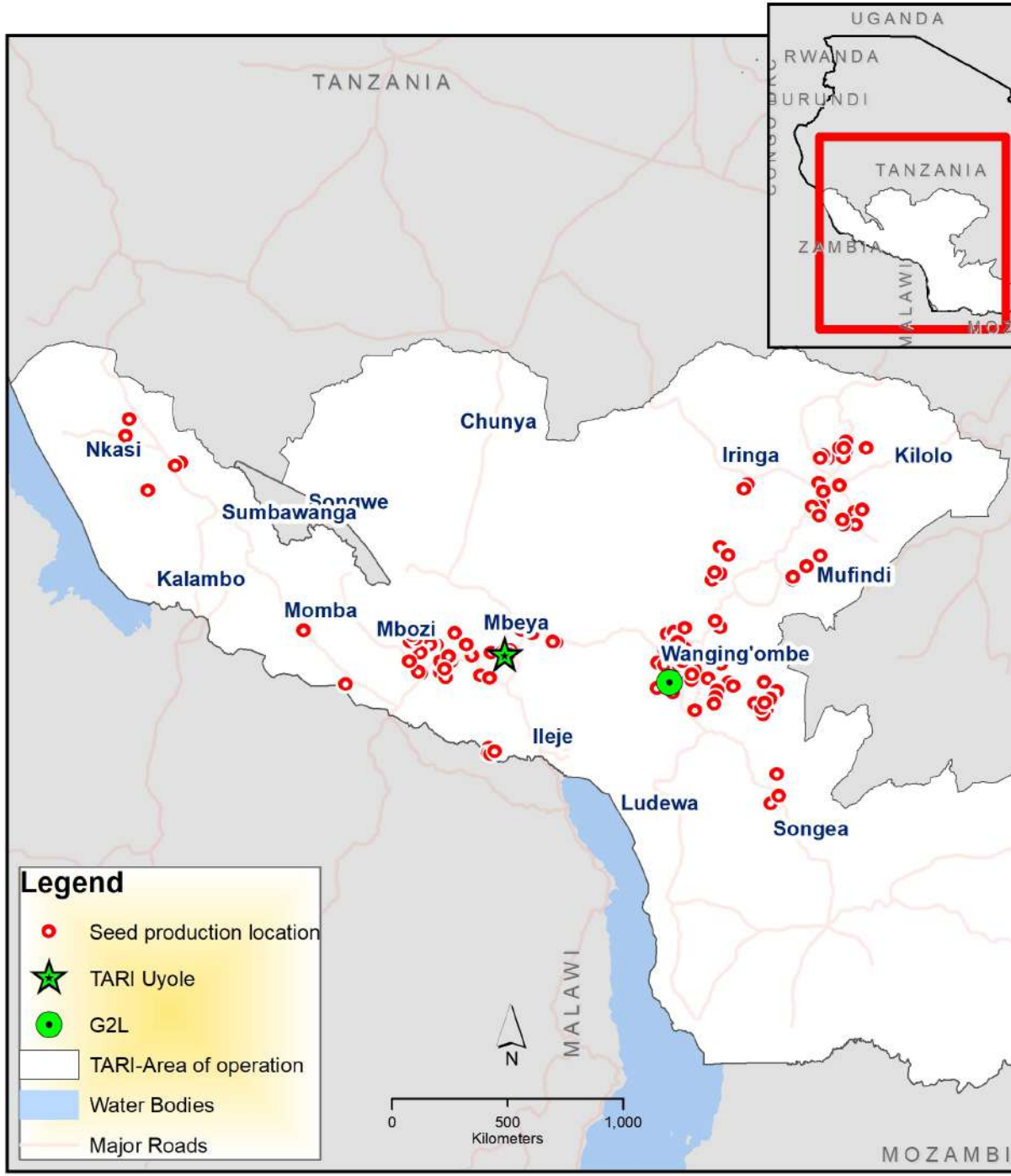
G2L Co. Ltd Products

- The company trades on cereals: (maize, rice), pulses: soybean and common beans.
- 25% of the business is common beans.
- Areas of operation Mbeya, Iringa, Njombe, Ruvuma regions.
- Current capacity:6000tons of Njano uyole (yellow) and Uyole 96 (red kidney).

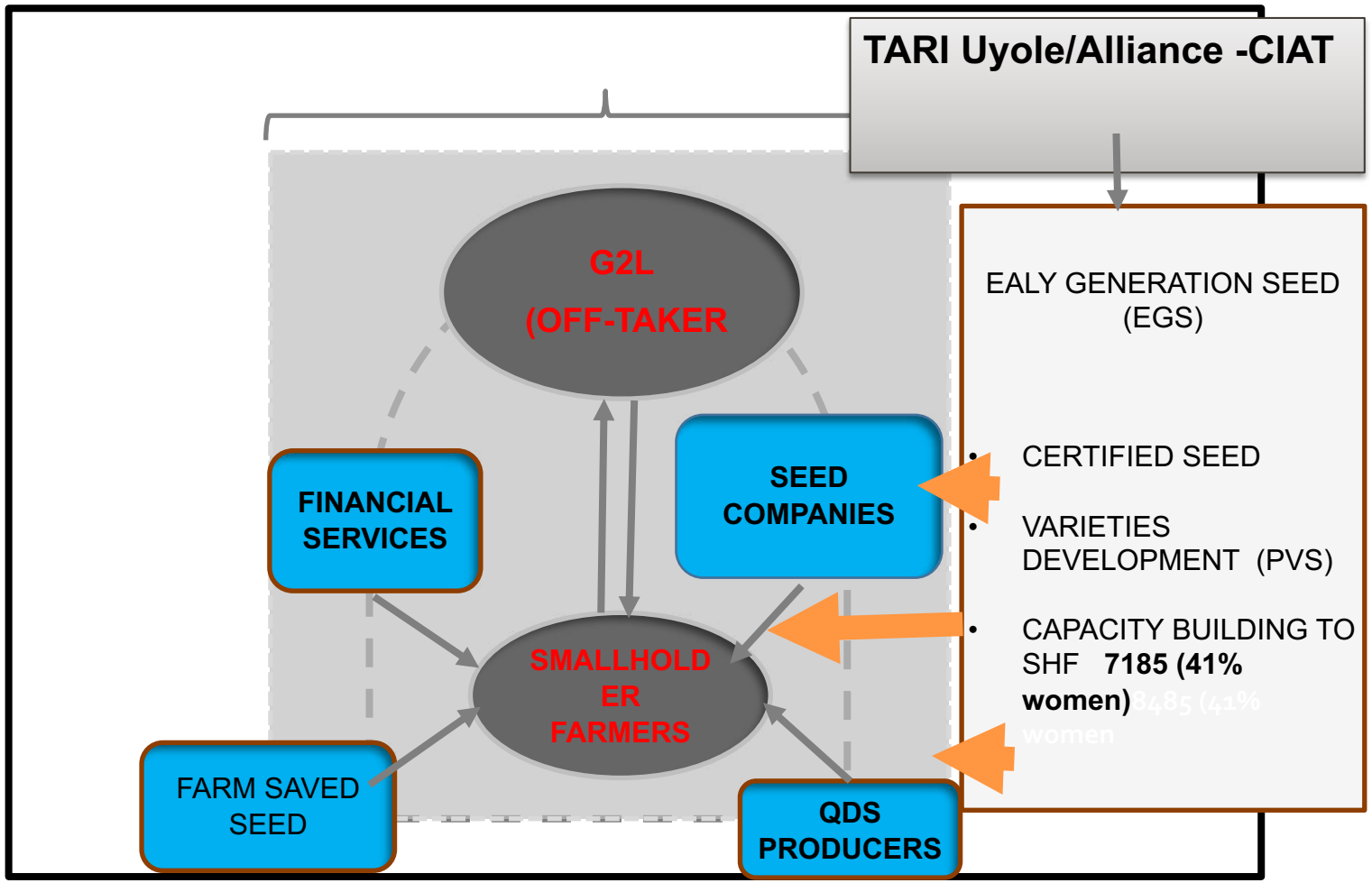
Tanzanian Map G2L operation areas

Southern Highland of Tanzania.

- High potential for bean production.
- TARI Uyole.
- Seed production is supported by TARI Uyole and other development partners.



Partnerships



Challenges

- Lack of coordinated multistakeholders' platform.
  - ❖ Inadequate quantity of early generation seed (EGS).
  - ❖ Client press their odder of different varieties during the harvest time. This year 2021 most client are looking for ***''Sugar beans''***.
- Climate change.
- COVID 19 pandemic (market).
- The Uyole 96 (red kidney beans) discolor, they are not suitable for our international market.
- Women are trustful but they are shy/afraid to be engaged into contract farming.
- Inadequate equipment e.g., duster cleaner, drier and grading machine.

Way forward

- Better varieties of sugar and dark red kidney.
- At least 45% of common bean to be used to process ***Instant Baby Food*** (add Value.).
- Strengthen multistakeholders' platform to support coordination of key actors.
- Continue Linking SHFs with financial institutions for easy financial access.
- Assist to register farmers groups.

Thank you

Asante saana

Grain Market: A Pull for Seed Businesses across Bean Corridors in Tanzania

FEED THE FUTURE SUPPORTING SEED SYSTEMS FOR DEVELOPMENT (S34D)

Dr. Geoffrey Mkamilo- DG TARI

December 17, 2021

Economic importance of Beans in Tanzania

- Bean is one of 45 commodities supported by Tanzania Agriculture Research Institute (TARI).

- In 2019, the production of bean grains is 1.2 million tons per year valued at USD 1.048 B from various bean types .

- Research on common bean is supported by three centers in Tanzania:
  - ❖ Uyole – Southern Highland
  - ❖ Maruku – Lake and Western zone
  - ❖ Selian – Northern zone

Impactful Partnership

- Tanzania Agriculture Research Institute (TARI) collaborates with the Alliance of Bioversity International and CIAT through the Pan-African Bean Research Alliance (PABRA) since 1986:
  - Development of new beans varieties 49 (market demand, climate variability, food security, nutrition, and livelihood).
  - Testing bean corridor approach which is increasingly generating interest from the government investments in beans and increasingly upgrading bean value chain
  - Seed companies producing bean seed has increased from 1 in 2015 to 13 in 2021.
  - Seed production (certified and Quality Declared classes) has increased from 542.7MT in 2015 to 1932.4MT in 2020.
  - Bean yield has increased from 0.77 MT/ha in 2012 to 1.3 MT/ha in 2019.
  - Capacity building to NARS (short term and long-term courses e.g., MSc and PhD) and other value chain actors.

Implications of the yellow bean study in agri-research in Tanzania

- Raised the profile of beans in the country from subsistence to cash crop and attracted different investments in the value chains e.g. private sector entrepreneurs, school feeding programs where several developments partners to improve nutrition of school children.
- Government investment in beans collaboration with IFAD e.g. under '*Agriculture and fishery development program* (AFDP)'.
- Commodity approach across other commodities to accelerates impact.
- Synchronize seed system and grain production/market and demand led breeding (DLB).

Way forward/appreciation

- TARI will catalyze the mainstreaming good lessons from the YB study to other commodities
- The PABRA model is an exemplary partnership between NARS and CGs that we would like to have it.
- As chairman of ASERECA, I request that the YB study should be extended to ASERECA countries since the YB is traded across various ASARECA countries.
- TARI is open to new ideas and ready to work with partners to continue to address all challenges that slowing down the agricultural sector growth
- We extend our sincere appreciation to all donors and development partners who have been key in supporting the transformation of agriculture in Tanzania for a couple of years.

Thank you

Asante sana

Dr. Jeff Ehlers

Programme Officer

Bill & Melinda Gates Foundation

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Q&A

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Closing Remarks

Jean Claude Rubyogo

Alliance Global Bean Programme Leader &
Director
Pan-Africa Bean Research Alliance (PABRA)

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