

TUBURA Innovation: Maize and Banana Projects, from Research to Roll-Out



TUBURA Rwanda

Basic Information:

- Supply inputs (DAP, Urea, NPK 17, lime) and other products (Sun King Pro solar lamps) to small farmers on credit
- Also provide direct delivery, extension trainings and visits, weather-indexed insurance.
- In Rwanda since 2007
- Work in 13 districts in Rwanda
- About 85,000 direct clients in the 2015A season
- Have a network of about 550 Field Officers based in cells throughout the country.

TUBURA Program



Inyongeramusaruro ku gihe, mu kagari, ku idene



Ubwishyu buhoro buhoro mbere itariki ntarengwa



Ubwishingizi ku bakiriya bacu mu gihe habayeho ibiza*

*Ukeneye ibindi bisobanuro, mwabereba mu ngingo zo kuvugwaho ku bwishingizi



Inyigisho nshya mu nama z'amahuriro



Ikurikiranabikorwa rya buri muntu mu murima we



Umusaruro UHEBUJE

Umusaruro ushobora guhinduka kuri buri muntu



Ibiciro by'inyongeramusaruro

Bigenwa na Leta - Kimwe no kubandakizi
TWE MERA NKUNGANIRE (VOCA)

+ 19% + 2.500 F =

Serivisi no kwiwandikisha n'inyigisho

UHEBUJE

TUBURA Products:

2015



EJO HEZA! Ntuhombe ibishya byi ki igihembwe!



Steps in the Introduction of a new TUBURA Product

1. Identify many promising potential products
2. Test products on station or in small farmer trials
3. Test products in larger farmer trials
4. Do pilot sales trials, test potential adoption
5. Look at data, discuss impact, make a decision
6. Work out contracts with suppliers
7. Market products to clients, take orders
8. Organize all logistics and storage
9. Distribute products to farmers, do training at the same time
10. Follow-up on customer satisfaction and success of products



Product Highlight 1:

**Tissue Culture FHIA
17 Banana Plants**

Banana trials



Banana trials



Trials Results:

Tubura Station Trial in Nyamasheke

Variety	Harvests/ mat	Bunch weight (kg)	Price/ bunch (FRw)	Days planting to first harvest	Tons/ ha	Revenue/mat/year (sold green)
FHIA 17	1.71	52.1	3,400	672.5	66.3	2,702
FHIA 25	1.75	37.0	2,336	666.5	47.7	1,881
ICYERWA	2.98	16.5	1,079	582.5	32.8	1,339
INJAGI	2.69	18.4	1,292	582.5	32.9	1,443
LOCAL	2.36	15.8	1,122	643.8	26.8	1,186

Trial Results: Basic Impact

	FHIA 17	Poyo (local)
Kg/are/year	557	320
Revenue/are/year after maturity	92,000 FRw	68,000 FRw

	FHIA 25	Mazizi (local)
Kg/are/year	526	188
Revenue/are/year after maturity	30,000 FRw	11,000 FRw

	Injagi	Other cooking varieties
Kg/are/year	255	125
Revenue/are/year after maturity	29,000 FRw	12,000 FRw

Trial Results: Basic Impact

	FHIA 17	FHIA 25	Injagi
Revenue/are/year diff. from control	20,000	14,000	17,000
Cost/are	9,600	9,600	9,600
Cumulative profit diff. are/first 5 years	90,400	60,400	58,400
Profit/adopter of 5 pack/first 5 years	28,250	18,875	18,250
ROI/first 5 years	942%	629%	608%
Adoption rate (5 packs)	23%	15%	9%
Profit/all clients/ first 5 years	6,500	2,800	1,640

Impact Estimates: FHIA 17

Nominal value, 15% adoption

Profit/5-pack adopter	Year 1	Year 2	Year 3	Year 4	Year 5	TOTAL/ 1 st 5 years	TOTAL/ all clients
No out-planting	-3,000	3,000	7,500	7,500	7,500	22,500	3,375
With out-planting	-3,000	3,000	10,500	18,000	22,500	51,000	7,650

Present-day value (25% discount rate), 15% adoption

Profit/5-pack adopter	Year 1	Year 2	Year 3	Year 4	Year 5	TOTAL/ 1 st 5 years	TOTAL/ all clients
No out-planting	-2400	1,920	3,840	3,072	2,458	8,890	1,334
With out-planting	-2400	1,920	5,376	7,373	7,373	19,642	2,946

Marketing to clients

Banana Tissue Culture Plants

Fresh. Cooked. Beer. All in one bigger banana!

Variety: FHIA 17

- ✓ *Can be cooked like Injagi, eaten sweet like Poyo, or processed into juice and beer*
- ✓ *Harvest over 40 kg per bunch!*
- ✓ *1,000 Frw or more additional profit per bunch*
- ✓ *Resistant to some diseases: fusarium and sigotoka. NOT resistant to Kiribiranya.*
- ✓ *Plants from the lab; guaranteed disease-free at planting*
- ✓ *Sold in unit of 5*



Banana Tissue Culture Production



Banana Tissue Culture Production



Banana Logistics and Storage



Banana Logistics and Storage



Banana distribution



Banana distribution outcomes

- 7,096 clients received bananas
- 35,480 banana plants distributed to clients
- Drop rate of 24%. Many dropped clients had also dropped fertilizer, decided buying bananas alone was not worth it.
- Banana planting training was done in 97% of cells.
- 78% of clients stayed for the training.
- 83% of clients prepared their holes in advance.
- 10,000 additional banana plants were given for free for demonstration parcels



Product Highlight 2:

Hybrid Maize Seed

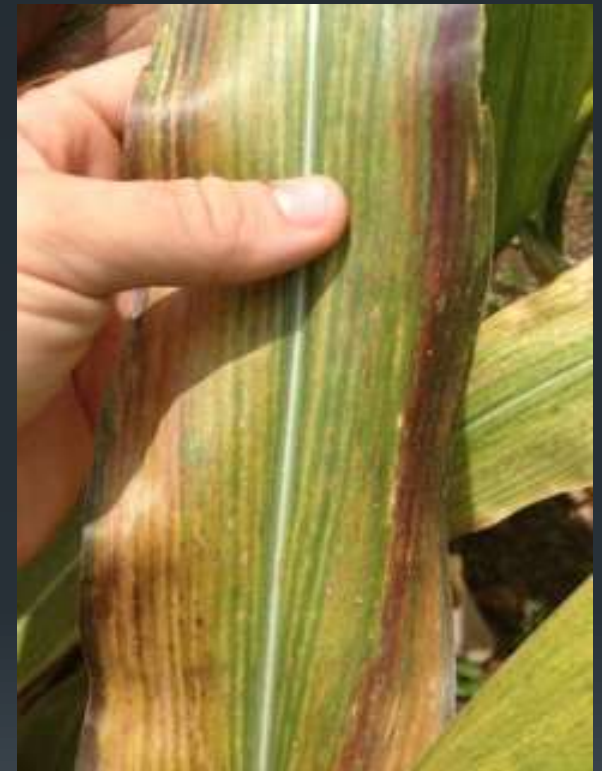
Maize trials



Maize trials



Maize trials: MLND identified



Trial Results

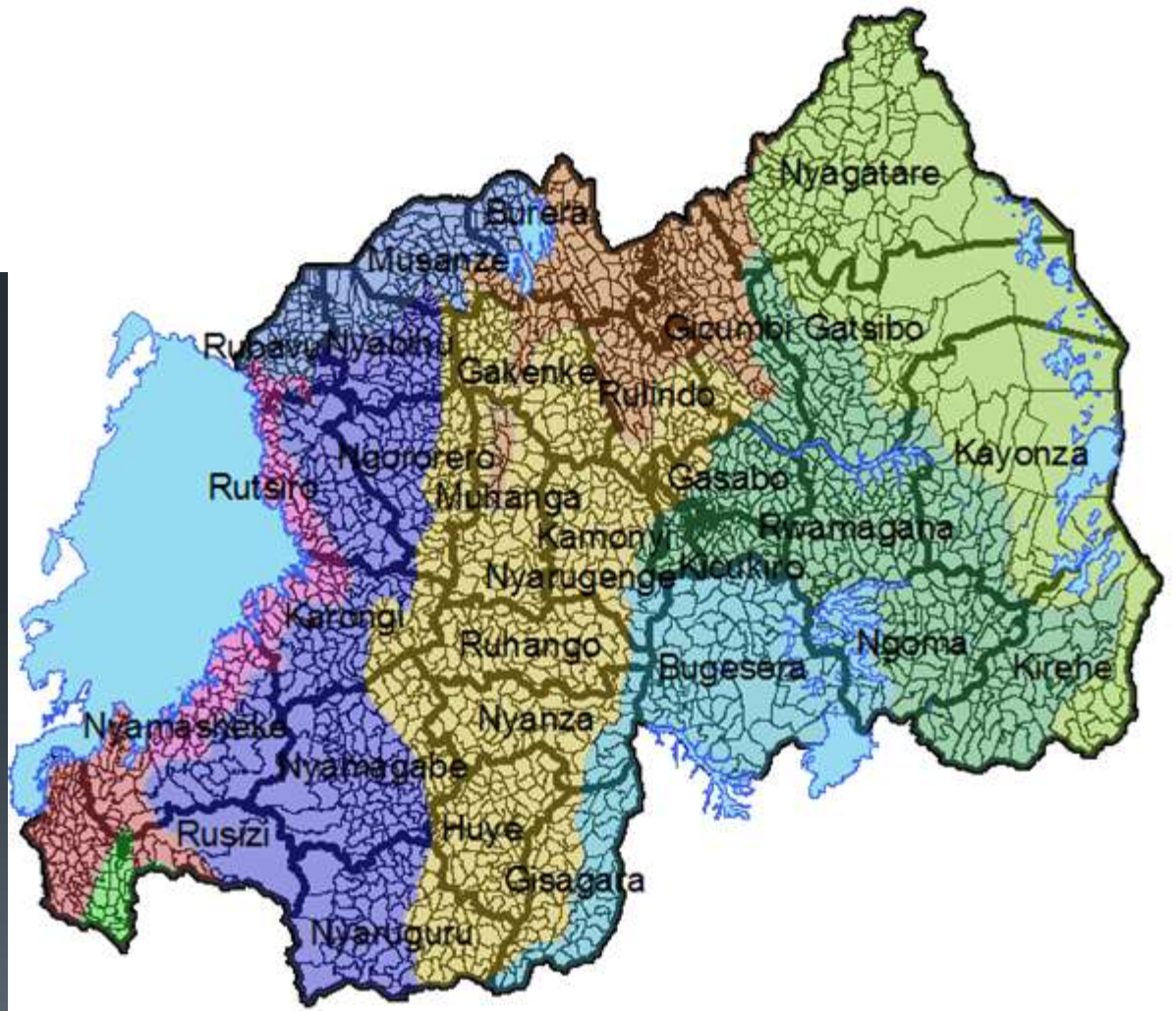
All varieties Overview			Results						
Variation (Control in blue)	Sample (# reps)	District(s)	Days to Harvest	% Preferred	Yield (Kg/are)	Yield: % Change	Profit / Are	Profit: % change	Next Step
ZM 607	100	BUG, GAB, GAT, GIS, HUY, NYM, RSZ, RUT	136	23%	43		8,639		Sell (OPV)
PAN 53	4	HUY	129	25%	67.2	56%	13,745	59%	Test again
SC 637	21	GAT, KRG, RSZ, RUT	152	81%	67.2	56%	13,428	-4%	Roll out
PAN 4M-21	61	BUG, GAT, GIS, HUY, KRG, NYM	125	44%	61.7	43%	12,443	-11%	Roll out
PAN 7M-89	24	HUY, KRG, RSZ	147	8%	59	37%	11,798	-7%	Test again
WH 403	26	BUG, GAT, HUY, NYM, RUT	128	23%	58.3	36%	12,239	5%	Test again
SC 791	16	GAB, RUT	160	6%	56.5	31%	10,795	-17%	Test again

SC 513	17	GAT, KRG, RSZ, RUT	148	12%	56.3	31%	10,476	-4%	Test again
SC 403	44	BUG, GAT, GIS, HUY	121	25%	52.3	22%	9,941	-6%	Roll out
H 629	36	KRG, NYM, RSZ	150	39%	51.8	20%	10,680	9%	Test again
PAN 63	16	HUY, KRG	149	56%	49.3	15%	9,502	-14%	Roll out
M101	53	GAB, GAT, GIS, NYM	133	30%	47.9	11%	9,769	3%	Sell (OPV)
Pan 691	22	GAB, RUT	159	59%	47.3	10%	9,170	-7%	Roll out
Pan 67	16	BUG, KRG	144	25%	43.5	1%	8,129	-12%	Test again
H071	34	GAB, HUY, RSZ, RUT	157	29%	38.9	-10%	7,645	-6%	Test again
PAN 683	26	GAB, HUY, NYM, RSZ	154	35%	37.3	-13%	6,683	-11%	Test again
M 103	41	BUG, GAT, GIS, HUY	120	5%	34.3	-20%	6,560	-1%	Test again
Pool 9A	16	GAB, RSZ	160	38%	32	-26%	6,014	-6%	Sell (OPV)

Variety Choice

Rwanda Agroecological Zones

- l'arrière pays de Cyangugu
- la Plaine de Bugarama
- la crête Zaïre-Nil
- le Mayaga et Bugesera périphériques
- le Plateau Central
- le bord du lac Kivu
- les crêtes et plateaux bordant les savanes de l'Est
- les cônes et hautes plaines volcaniques
- les hautes terres de Burebuka
- les savanes de l'Est et du Bugesera Central



Trial Results: Difference by Ag Zone

Experiment	Variation (Control in blue)	Sample (# reps)	% Preferred	Yield (Kg/are)	Yield: % Change	Confidence (yield)	Profit / Are	Profit: % change	Confidence (profit)
Kanyangese, GAT Alt 1400-1500 EAST	ZM 607	13	69%	55.8			11,652		
	M 103	13	0%	39.5	-29%	99%	7,791	-33%	99%
	M101	24	21%	57.1	2%	Insign.	11,929	2%	Insign.
	PAN 4M-21	12	67%	72.1	29%	99%	14,884	28%	99%
	SC 403	12	8%	59.6	7%	Insign.	11,649	0%	Insign.
	SC 513	1	100%	95.3	71%	Insign.	19,669	69%	Insign.
	WH 403	7	29%	63.5	14%	Insign.	13,454	15%	96%

Nyakarera, RUT Alt 1900-2000 CONGO-NILE	ZM 607	12	0%	55.1			11,500		
	H071	12	8%	51.8	-6%	Insign.	10,698	-7%	Insign.
	Pan 691	12	92%	71.5	30%	99%	14,899	30%	99%
	SC 513	12	0%	55.7	1%	Insign.	10,338	-10%	Insign.
	SC 637	12	92%	69.4	26%	99%	13,963	21%	99%
	SC 719	12	0%	60.1	9%	Insign.	11,640	1%	95%
	WH403	6	0%	60.9	11%	Insign.	12,829	12%	Insign.

Variety Choice

District	Altitude	Hybrid	OPV
Bugarama	Low	PAN4M21	ZM 607
Bugarama	Mid	PAN4M21	ZM 607
Huye	Mid	PAN 53	ZM 607
Huye	High	PAN 53	ZM 607
Nyamagabe	High	PAN 691	Pool 9a
Nyaruguru	High	PAN 691	Pool 9a
Gisagara	Mid	PAN 53	ZM 607
Karongi	Mid	SC 637	ZM 607
Karongi	High	PAN 691	Pool 9a
Mugonero	Mid	SC 637	ZM 607
Mugonero	High	PAN 691	Pool 9a
Nyamasheke	Mid	SC 637	ZM 607
Nyamasheke	High	PAN 691	Pool 9a
Rusizi	Mid	SC 637	ZM 607
Rusizi	High	SC 637	ZM 607
Rutsiro	Mid	SC 637	ZM 607
Rutsiro	High	PAN 691	Pool 9a
Nyanza	Mid	PAN 53	ZM 607
East	Mid	PAN 4M21	ZM 607

Impact Estimates



Impact of Hybrid Maize Seed, One Season		
	OPV Varieties	Hybrid Varieties
Average Production	39 kg/are	56 kg/are
Revenue per season	9,200 FRw/are	13,200 FRw
Profit	8,950 FRw/are	12,250 FRw/are
Difference per are		+3,300
Difference per 2 kg bag (5 ares)		+16,500
Impact (%)		590%

Marketing to clients

Maize Seed

Better seed for a better harvest

Open Pollinated Varieties (OPV)

- *Seed can be saved for 1-3 seasons*
- *Familiar government varieties (ZM 607, Pool 9A)*
- *Sold in 2 kg packages*

Hybrid Varieties

- *Yields and average of 15 kg /are more than OPVs*
- *Better to purchase seed every season as the yield will decline if saved.*
- *Sold in 2 kg packages*

No longer free in 15A. Voucher Program to be determined by MINAGRI.



Maize seed sourcing



Maize seed sourcing



Maize seed distribution



Maize distribution outcomes



- 29,200 farmers purchased maize seed directly from TUBURA
- 61 tons of hybrid seed sold directly to farmers
- 29 tons hybrid sold to agrodealers
- 21 tons OPV seed sold directly to farmers
- 85 tons OPV seed sold to agrodealers
- Adoption about 34% of final season clients
- Adoption lower than expected, probably because first year not free and late government communication

New hybrid maize in farmer fields



Key lessons learned

- Adoption for both maize and bananas was much lower than expected based on farmer need and stated interest in a survey
- But adoption might increase in the future, as we saw when we introduced Solar lamps in the past. Farmers need time to see if the product is good or not.
- It is better to personalize products as much as possible, based on regional needs. Micro-level research is very important.
- It is important to listen to the farmers' ideas to better understand how to serve them
- Follow-up is very important! Checking on good planting practices, germination and plant survival.