RETURNS TO VINE MULTIPLICATION IN TANZANIA AND UGANDA AND IMPLICATIONS FOR SCALING-OUT QUALITY PLANTING MATERIAL

SPHI

Sweetpotato for Profit and Health Initiative

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The problem?

Potential yield =15t/ha

We need to do a lot

Including…

Establishment of an efficient seed system involving cleaning, multiplication and distribution of vines to root farmers

Current sweetpotato yield =5t/ha

Different distribution channels exist

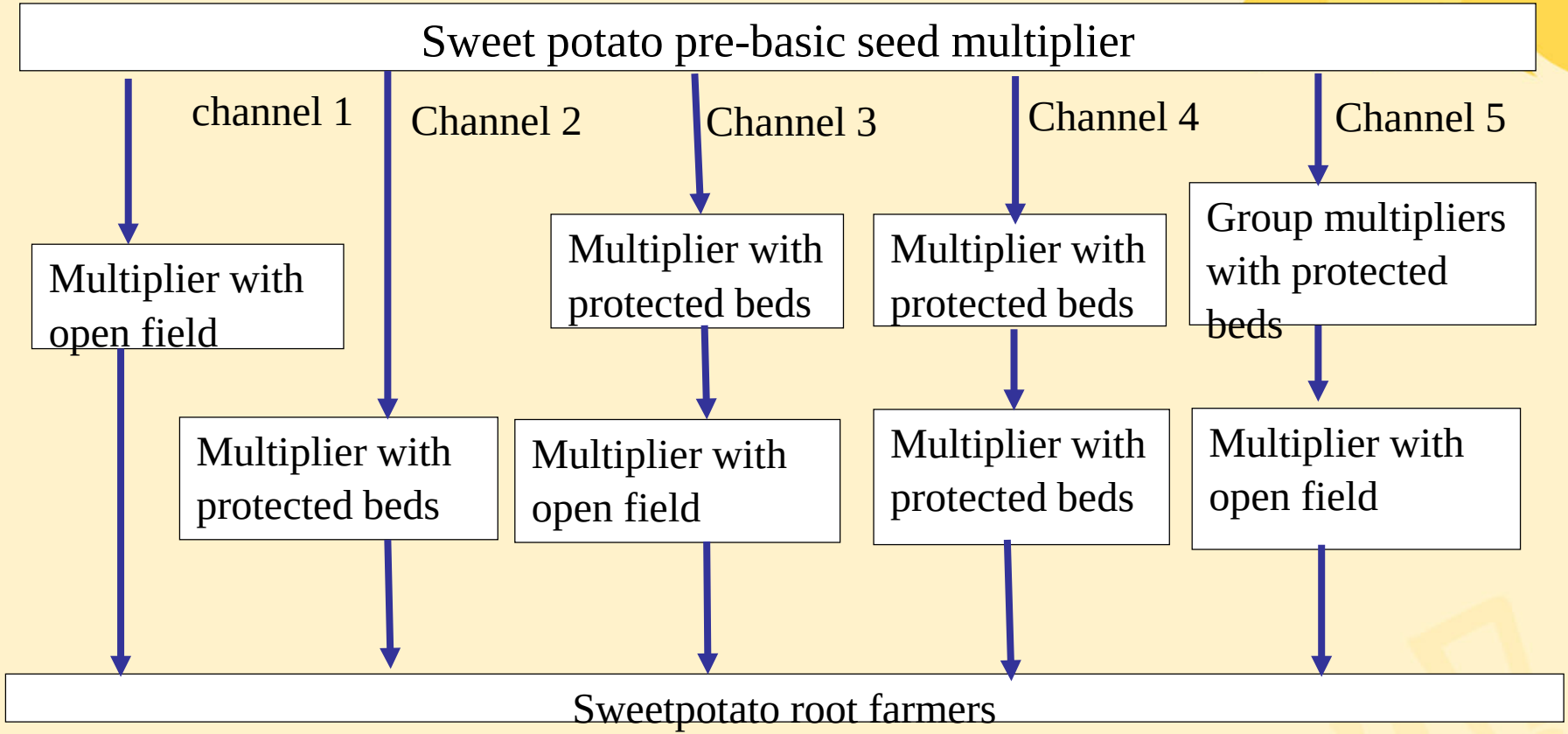

Fig 1: Vine Dissemination channels in UG and TZ

…..And different vine multiplication methods by Vine multipliers (VMs) exist

1. Open field= new vines got from pre-basic seed source all the time
2. Open field; small protected structure (<15msq.) compliments pre-basic vine sources
3. Open field; large protected structure (>15msq.) compliments pre-basic vine sources
4. Rapid Vs Conventional vine multiplication
5. Triple S method
6. Different level of management.. etc

This study investigated..

a. The financial feasibility of different vine multiplication methods

and

b. Estimated the number of vine multipliers required to ensure access of clean vines by sweetpotato root farmers in sufficient quantities

Case study methods were used, involving…

Differences in SPVD pressure; drought and use of protected structures…

Study area	a. SPVD pressure	b. Drought	c. Protected structure			#. of cases
			Large >15msq	Small <15msq	None	
North/ Eastern Uganda	Low	High	4	0	4	8
Central/Western Uganda	High	Low-Moderate	5	2	0	7
Southern TZ	Low	High	0	21	2	23
Mwanza & Geita	High	Moderate*	3	1	0	4
Shinyanga	Low	High	0	0	2	2

Theory/ tools used:

- ✓ Transaction cost (TC) theory to explain the “non-cash” costs faced by vine multipliers
- ✓ Financial analysis tools to analyze profitability different vine multiplication methods
- ✓ Combination of TC theory, financial analysis and wide literature review to logically estimate the number of multipliers required in Uganda and Tanzania

Findings….

Transaction costs- a summary

Type of TC	Transaction cause	%
Asset specificity TCs		
Temporal	Perishability of vines	38
Physical	Roaming animals	26
Dedicated	Difficult to procure nets	90
Human	Difficult to repair nets	48
Site asset specificity	Dist.to pre-basic multipliers	38
Uncertainty TCs		
	Limited availability of vines	70
	Few vine buyers	68
	Limited vine quantities from pre-basic multipliers	68

A note on protected structures..

Aspect	Finding
Nets	Strength of the netting material-Generally weak
Supports	Metal supports preferred to wood
Size (small)	Entry into nets, single variety per net, management issues
Shelf life	1.5 years (for small); 3 years for large
Pests	Rodents, insects within nets
Replacement of vines	Every year
Need for structures	Mixed responses/ Different observations

The “not right” cases of protected structures

.. And a number of good cases

Generally, in vine multiplication,

- ✓ There were higher TCs in high SPVD areas Compared to low SPVD areas

- ✓ There were higher TCs in managing vines in small protected structures

Results of financial feasibility

Method	LOW SPVD areas				High SPVD areas			
	NP (USD)	NPV	IRR (%)	PBP	NP	NPV	IRR (%)	PBP
Rapid_PST_REC	3,303	5,999	40	4.2	2,392	2,438	23	5.0
Rapid_noPST_REC	7,426	23,368	154	1.4	7,173	11,934	78	1.8
Rapid_noPST_ACT	1,718	20,994	313	2.0	1,230	5,010	111	2.0
Conv_PST_REC	1,298	-6,103	-1	n/a	277	-4,451	-35	n/a
Conv_noPST_REC	446	-130	12	n/a	375	-279	7	n/a
Conv_noPST_ACT	2,518	9,683	408	1.2	2,765	9,928	510	1.2
Conv_Cons_plot	3,505	15,404	164	1.2				

PST- Protected structure; ACT –Actual practices; REC- Recommended practices (Irrigation, fencing, advertisement)

Results show that…

- ✓ Multiplication of vines is more profitable in low SPVD than high SPVD areas.
- ✓ Rapid multiplication is more profitable than conventional multiplication….. but risky…. because of limited vine market
- ✓ Use of protected structures is not as profitable as multiplying without their use-i.e directly replace vines from pre-basic sources

A note on convectional vine multiplication

Quantity of vines harvested from conventional plots were higher than expected because…..

a) High density planting (by some DVMs)

b) More harvests than the recommended single harvest

c) Cutting vines deep to the soil surface

Over-harvesting vines could lead to….

a) Poor quality vines offered for planting

b) Poor quality roots

c) Poor root yields

Estimating the number of Vine multipliers (VMs) required in Uganda and Tanzania

Summary of the procedures/steps

Step	Estimates based on…
Vine requirement by root farmers	National data on SP acreages; quantity of vines required/ha etc
Target of SP land under clean vines	40% of SP land planted clean vines
Capacity of VMs to produce enough vines	Multiply at least 4 varieties, Basic seed multiplication , Rapid multiplication, at least 0.4 ha
SPVD Vs drought considerations	Vine replacement after 3 seasons in high SPVD and 4 seasons low SPVD
Vine demand	10% in high SPVD; 20% in low SPVD areas

Number of VMs needed

Country /Region	High SPVD	Low SPVD	Gender		Total
			Male	Female	
Uganda	64	51	76	39	115
Tanzania			118	66	184
Tabora			11	5	16
Shinyanga			41	18	59
Mwanza			10	5	15
Simuyu			20	8	22
Geita			22	9	31

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&

I cant imagine a world without Sweetpotato

Thank you