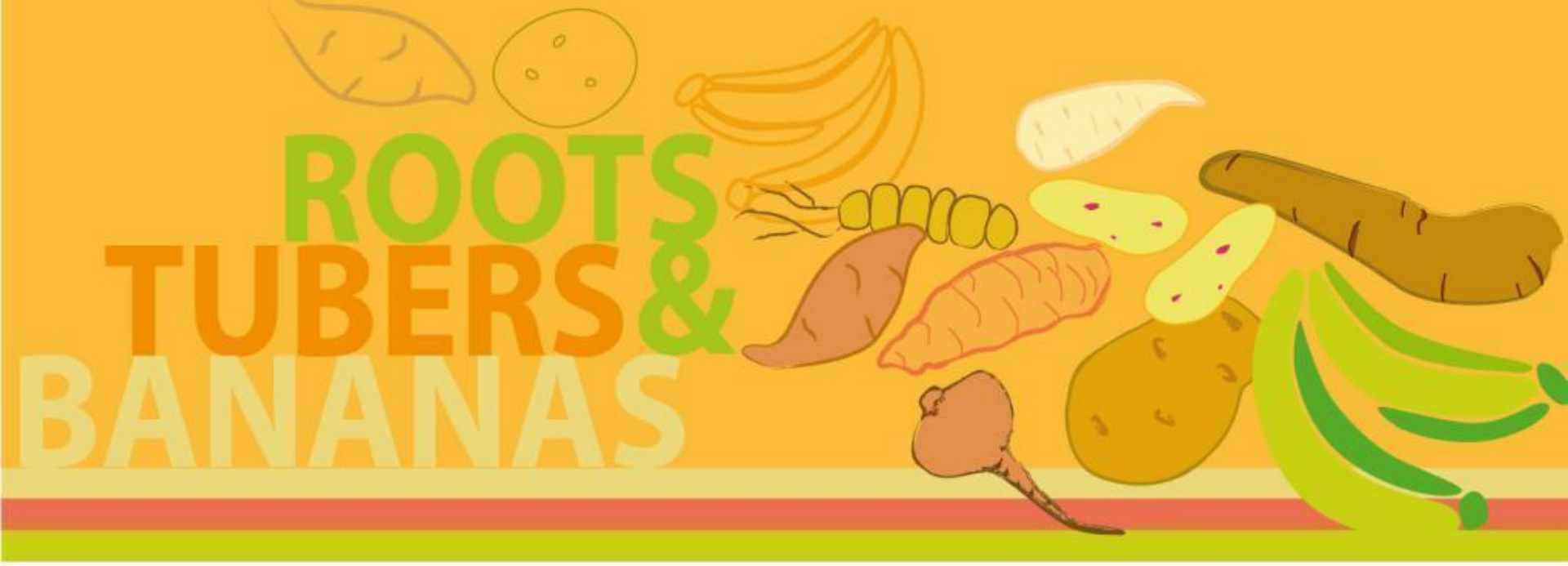

EFFECT OF VINE HARVESTING ON ROOT AND VINE YIELD OF DIFFERENT SWEETPOTATO VARIETIES IN UGANDA

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CGIAR Research Program on Roots, Tubers and Bananas

IFAD Investing in rural people

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Presentation outline

- Introduction
- Objectives
- Materials and Methods
- Results
- Conclusions

INTRODUCTION

- Sweetpotato vine is a common fodder used by small-scale pig farmers in Uganda.
- Vines usually obtained at time of root harvesting but it is also possible to partially remove them during the production cycle (detopping).

Introduction cont'd

- Sweetpotato vines are highly perishable, lasting 2-3 days
- Making silage is an easy and affordable technology for conserving roots and vines for feeding pigs in times of shortage.





Introduction cont'd

- sweetpotato silage pig diets have successfully been tested, validated and promoted in Uganda under the framework of the RTB-ENDURE project
- Over 77 tons of SP silage made, and sold in Masaka and Kamuli districts
- However, vine harvesting from sweetpotato gardens to be used either as fresh fodder or processed into silage might compromise the root yield at harvest.
- Timing of vine harvesting is very important to achieve optimum root and fodder yield (Dual-purpose)
- SP varieties released/ land races were not yet categorized - Dual purpose/ Forage/ Root (Nguyen and Leon Velarde, 2009).

OBJECTIVES

- Assessing the effects of vine harvesting on the root yield of the four selected sweet potato varieties.
- Identify suitable dual-purpose sweetpotato varieties in Uganda
- Determine effect of vine harvesting on chemical composition of sweetpotato roots

Materials and Methods

- Study site: UMU farm - Nkozi, Masaka (central region) and Kamuli (eastern Uganda).
- Experimental design: Split plot design with Varieties as main plots and vine harvesting time as sub plots
- Sweetpotato varieties: NASPOT 11 (cream), 12 O, 13 O (Orange) and local variety
- Plot sizes were 10m x 10m, Net plot sizes for detopping/ no detopping were 4mX5m ($10m^2$ each)

Materials and Methods contn…

- Data collection: data was collected on fresh weight of vines at 85, and150 days after planting (DAP), fresh root weight at 150 DAP, SPVD and *Alternaria blight* and weevil infestation (scale of 1-9, 1- no infection/infestation, 9- severe)

- Root- vine ratio was computed using root and vine dry matter

- **Data analysis:** Data was analyzed using Genstat 12th edition.

Results

Root, vine yield and root-vine ratio of four sweetpotato varieties under different vine cutting regimes in Nkozi 2015B and 2016A

Variety	Trt	Root yield (t ha^{-1})		Vine yield (t ha^{-1})		Root-vine ratio		SPVD infection		Weevil infestation	
		2015B	2016A	2015B	2016A	2015B	2016A	2015B	2016A	2015B	2016A
Local	D	3.9	5.2	16.3	24.0	0.8	0.5	4	4	3.5	3.3
	ND	9.9	9.8	22.6	19.6	1.5	1.4	4	5	4.5	3.7
NAS 11	D	9.6	10.4	23.4	19.4	1.7	1.2	3	3.5	2.5	3.3
	ND	8.5	11.4	21.1	27.7	1.5	1.3	3	3	4.7	3.7
NAS 12	D	5.6	12.1	16.5	26.7	1.1	1.1	2.8	3.5	5.0	3.5
	ND	5.9	12.8	17.9	26.6	1.0	1.0	3	3.5	4.3	3.7
NAS 13	D	4.6	10.6	17.2	21.5	1.0	1.0	3.8	4.5	2.5	3.3
	ND	6.3	12.1	18.2	24.5	1.0	1.0	3.5	3.5	3.0	3.7
Mean		8.7		21.5		1.2		3.6		3.6	
LSD season		2.0		3.4		NS		0.2		0.4	
LSD Varty x Season x Trt				NS		NS		0.5		NS	
CV		22.0		9.3		6.2				10	

Root, vine yield and root-vine ratio of four sweetpotato varieties under different vine cutting regimes in Masaka and Kamuli 2016A

Variety	Trt	Root yield (t ha^{-1})		Vine yield (t ha^{-1})		Root-vine ratio		SPVD infection		Weevil infestation	
		KML	MSK	KML	MSK	KML	MSK	KML	MSK	KML	MSK
Local	D	1.8	7.0	7.6	25.9	0.7	0.5	4	3.3	4	3.3
	ND	2.5	8.5	9.2	23.3	0.4	0.6				
NAS 11	D	6.1	17.8	6.2	14.5	2.0	2.9	2.0	2.0	2.8	2.5
	ND	3.2	17.5	5.0	25.0	1.7	1.6				
NAS12	D	3.7	7.4	6.8	18.6	1.3	1.0	2.5	2.5	3.0	2.5
	ND	5.1	12.8	8.3	21.7	1.6	1.3				
NAS 13	D	3.4	7.3	7.2	19.2	1.3	0.8	3.0	3.0	3.0	3.0
	ND	4.8	9.8	7.8	25.0	1.5	0.9				
Mean		7.4		14.5		1.3		3.1		3.0	
LSD vty x site		3.2		NS		NS		NS		0.5	
CV		7.2		6.5		4.5		18.3		5	

Results

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Varieties can be graded as;

Variety	Average R/Vine Ratio	Comment
Local	0.8	Forage
NASPOT 11	1.7	High dual purpose
NASPOT 12	1.2	Low dual purpose
NASPOT 13	1.1	Low dual purpose

R/V= 0 - 1 = forage, 1-1.5 = low dual purpose, 1.5 - 2.0 = high dual purpose, 2-3 =low root production, > 3 = high root production (Nguyen and Leon Velarde, 2009)

Results

Table: Effect of treatment on chemical composition of sweet potato roots

	Parameter							
Treatment	DM	Glucose	Fructose	Sucrose	Starch	Zn	Fe	CP
D	32.33	2.4	1.45	7.18	70.94	0.87	1.51	4.25
ND	31.91	1.97	1.25	5.68	69.28	0.80	1.34	3.77
P-value	<0.000	<0.000	<0.000	<0.000	0.23	0.308	0.005	0.154

Detopped roots had higher dry matter and sugars than the non detopped.

Conclusion & Recommendation

- NASPOT 11 performed best in terms of yield in all locations
- Detopping reduced root and vine yields in all varieties except NASPOT 11
- NASPOT 11 is a suitable dual purpose sweet potato variety
- Harvesting vines from the local variety reduced yield by over 60%
- Detopping increased DM and amount of sugars of SP roots
- Farmers intending to harvest vines for silage should plant NASPOT 11, or NASPOT 12 and 13
- Need to test effect of vine harvesting on all OFSP and other SP varieties.

Acknowledgement

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Thank you for Listening