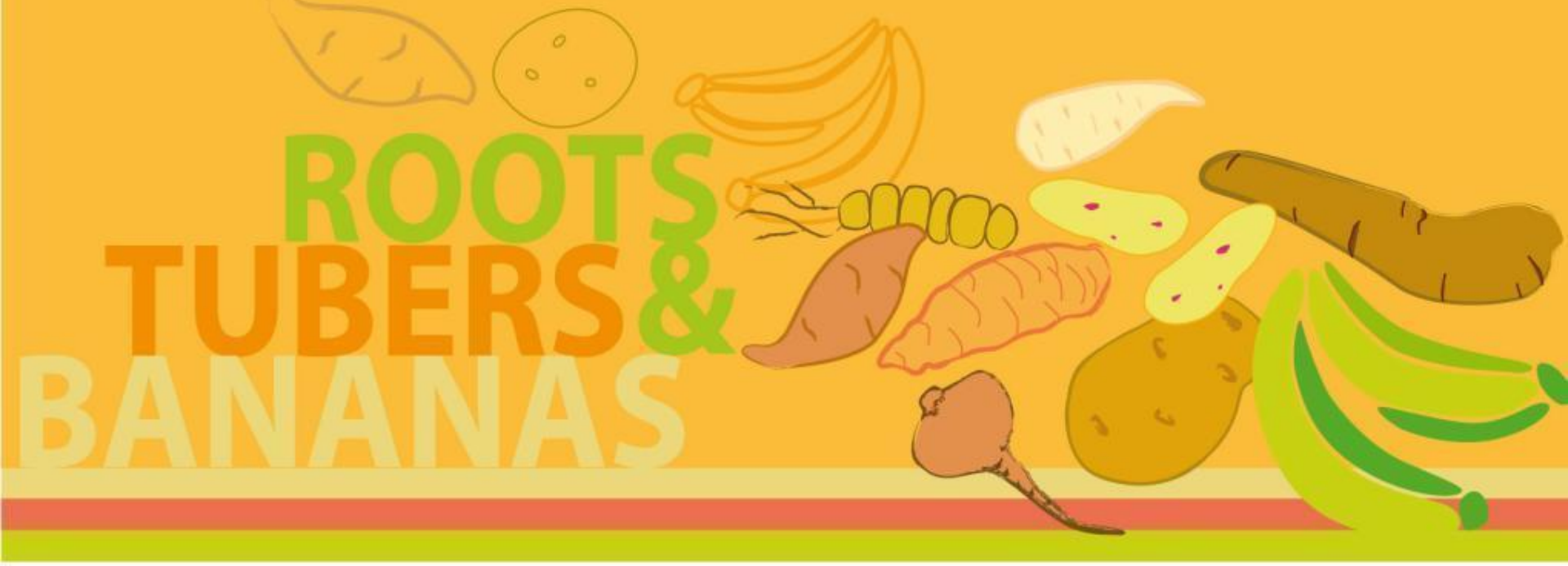

RTB-ENDURE

Sweetpotato sub-project

SWEETPOTATO VINES SILAGE BASED DIETS FOR GROWING PIGS

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29th Sept, 2016

CGIAR Research Program on Roots, Tubers and Bananas

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Introduction

- Pig population in Uganda is estimated at 3.5 million (MAAIF and UBOS, 2015)
- Pig production is constrained chiefly by feed scarcity and high cost of feed (Muhanguzi *et al.,* 2012)
- In Uganda, Sweetpotato vines (SPV) are the most fed forage to pigs (Pezo *et al.,* 2014)
- Availability of SPV is high during SP growing period

Objectives

1. Determine quality of silage prepared from sweetpotato vines
2. Determine the nutrient digestibility of sweetpotato vines silage supplemented with concentrate in growing pigs
3. Determine the growth performance of pigs fed on sweetpotato vines silage based diets

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Experiment 1:

DETERMINING QUALITY OF SILAGE

Methodology

- Trial was conducted at MUARIK
- Trial consisted of 10 treatments
- Trial lasted for 1 month
- Objective was to determine the quality of SP silage
- Key variables measured were PH, DM, CP, NDF, EE, Ash
- Chemical analysis was done on all the silages
- Results were used in selecting silage for the second experiment

Composition of silage treatments

	Treatment									
	I	II	III	IV	V	VI	VII	VIII	IX	X
Sweetpotato vines	100	80	95	97.5	95	97.5	72	64	72	64
Sweetpotato roots	-	20	-	-	-	-	18	16	18	16
Maize bran	-	-	5	2.5	-	-	-	-	-	-
Cassava four	-	-	-	-	5	2.5	-	-	-	-
Lablab	-	-	-	-	-	-	10	20	-	-
Gliricidia	-	-	-	-	-	-	-	-	10	20

Nutritive composition of the silage

	Diet									
	I	II	III	IV	V	VI	VII	VIII	IX	X
pH	3.94^{ab}	3.98^{a}	3.83^{c}	3.95^{ab}	3.94^{ab}	3.92^{ab}	3.90^{b}	3.94^{ab}	3.93^{ab}	3.95^{ab}
DM	21.98^{d}	23.23^{cd}	24.63^{bcd}	25.26^{abc}	26.74^{ab}	28.10^{a}	26.69^{ab}	26.68^{ab}	23.5^{cd}	23.62^{cd}
CP	20.71^{a}	17.38^{b}	19.58^{ab}	19.88^{ab}	18.75^{ab}	17.24^{b}	18.42^{ab}	19.10^{ab}	19.63^{ab}	19.40^{ab}
NDF	31.86^{a}	24.76^{bcd}	27.33^{abc}	25.38^{bcd}	23.53^{cd}	23.65^{cd}	25.96^{abcd}	30.46^{ab}	20.49^{d}	24.51^{bcd}
EE	2.69^{a}	1.25^{bcd}	1.95^{abcd}	1.93^{abcd}	1.88^{abcd}	1.16^{d}	2.27^{abc}	2.33^{ab}	1.21^{cd}	2.55^{a}
ASH	6.17^{ab}	4.91^{e}	5.90^{ab}	5.95^{ab}	5.69^{bcd}	5.20^{de}	5.33^{cde}	6.38^{a}	5.23^{cde}	5.74^{bc}

- All treatments resulted in silage with CP above the requirements for growing pigs
- Silage from treatment II was selected for the next experiments

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Experiment 2:

Determining performance of pigs

Methodology

- 48 pigs were used in the trial
- Trial was conducted at MUZARDI Masaka
- Trial lasted 90 days
- Key variables collected were feed intake and average daily gain
- Data was collected on a weekly basis

Composition of diet treatments

Diet		silage	Maize soybean	Total
1	MSM	-	100	100
2	SL60 MSM40	60	40	100
3	SL80 MSM20	80	20	100
4	SL100	100	-	100

Composition of Maize soybean diet

Ingredients	%
Maize bran	75.7
Soybean	21
Shells	2
Premix	0.5
Salt	0.5
Lysine	0.3

Composition of silage

Ingredient	%
Sweetpotato vines	75
Sweetpotato roots	20
Maize bran	5

Feed intake and conversion

	Diet			
	MSM	**SL60MSM40**	**SL80MSM20**	**SL100**
Initial BW(kg)	13.4	13.4	13.4	13.4
Final BW(Kg)	50.6	30.4	22	13.1
DMI(kgDM)	1.15	1.53	1.46	1.27
ADG (g/d)	431.4	202.9	88.1	76.7
FCR	**2.67**	**7.54**	**16.57**	**16.57**

The supplemented silage at 40 % had the highest DMI

- Of the silage based diets, supplemented diet at 40% had the lowest FCR affirming its superiority of the three

Pig growth rates (g/day)

Month	Diets							
	MSM		SL60MSM40		SL80MSM20		SL100	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
1	368.6	102.9	122.9	78.6	60.0	91.4	-8.6	70.0
2	352.9	94.3	187.1	80.0	101.4	87.1	-1.4	70.0
3	572.9	167.1	298.6	175.7	102.9	128.6	22.9	90.0
Average	**431.4**	**121.4**	**202.9**	**111.4**	**88.1**	**102.4**	**4.3**	**76.7**

- The 40% supplementation of silage with maize soybean diet was the most superior silage based diet

Photographic representation of pig performance

Other observations

- The use of maize bran as a ferment starter reduced the amount of effluent from the silage
- Pigs fed on maize soybean diets consumed more water though it was not measured

Conclusions

- All sweetpotato vines silage based diets had more than 17% CP which is more than the recommended level for growing pigs.
- Feeding sweetpotato silage alone does not support optimum levels of weight gain
- The best level of supplementation was found to be 60% silage and 40% maize soybean diet

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THANK YOU FOR YOUR ATTENTION!