SHORTAGE OF SWEETPOTATO PLANTING MATERIAL CAUSED BY PROLONGED DRY SEASONS IN AFRICA: STRATEGIES TO INCREASE ITS AVAILABILITY IN UGANDA

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Introduction

Sweetpotato is a staple at the end of latter half of the rainy season and the first part of the ensuing dry season when supplies of other food stuffs are exhausted (Hall *et a*l., 1998)



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Introduction - continued

• Lack of planting is often particularly acute for farmers in areas with prolonged dry seasons

 Scarcity occurs at the onset of rains after the dry season has desiccated the foliage and farmers have harvested the crops [to avoid weevil damage]

 Many developing countries are confronted with degenerated natural resources and drought is happening more frequently (Yanhua Liu, 2004)

SCARCITY OFTEN OCCURS AT ON-SET OF RAINS



Evidence of wanting to plant Early



STUDY OBJECTIVES

Objectives of the study:

- 1. Investigate the extent of lack of planting material and implications for early planting
- 2. Test if possible to increase the quantity available by using fertiliser and rational planting approaches

Therefore, this paper highlights the results of:

- a) Farmer understanding of lack of planting material: (sourcing, buying and selling, and utilisation)
- b) Strategies to increase availability of planting material through:
- i) Intensive techniques of vine production and
- ii) Extended use of available planting material

MATERIALS AND METHODS: FARMERS' KNOWLEDGE ON PLANTING MATERIAL

- Structured questionnaire on planting material was conducted in Mukono, Kamuli, Bukedea and Soroti districts in Uganda
- Pre-tested at non-target locations during field visits
- Administered in 2008 during the dry season (Feb Mar)
- A total of 44, 72, 105, and 50 farmers were interviewed Mukono, Kamuli, Bukedea and Soroti districts
- Data analysed using Statistical Package for Social Scientists (SPSS)

MM CONTINUED: ON-FARM TESTING OF LONGER CUTTINGS AND FERTILISER APPLICATION FOR RAPID MULTIPLICATION

- 10 cm (recommended) long and 20 cm (farmer) long cuttings to produce 30-cm long vines were compared for rapid multiplication technique (RMT)
- Araka, Kabode and Kakamega varieties
- Planted in raised beds (each 1.2m wide x 2m long) at 20cm between rows x 10 cm between plants
- Fertiliser (NPK 25:5:5) applied at applied at 100g/m²
- Replicated 3 times
- Irrigated thrice during first week and twice weekly for other 8 weeks.
- Three harvest lots of 30-cm long cuttings taken at 45 (DAP) and at 3 weeks interval between subsequent harvest lots
- ANOVA tables generated using GenStat

Key parameter: How many 30-cm long obtained



MM CONTINUED: DIFFERENT VINE LENGTH CUTTINGS FOR WARE ROOTS





MM CONTINUED: EXTENDED PLANTING BY REDUCING VINE LENGTH AND PLANT DENSITIES FOR WARE ROOTS

- Planted on hills/mounds of 0.6m²
- Number and placement of cutting

# of cuttings planted			
Top of hill	Sides of hill		
1	-		
2	2		
3	3		

- Planted in 2008 and 2009 under rain-fed conditions
- Harvested roots sorted into marketable and unmarketable sizes

RESULTS: FARMERS' SOURCING PLANTING MATERIAL AND PLANTING ACREAGE (HA)

Response	Percentage failing to plant and to supplement			
	Mukono	Kamul i	Bukedea	Soroti
Av. Normal area (Ha) planted	0.25	0.13	0.38	1.55
% failing to plant	0	61.7	34.9	100
% failing to supplement	0	38.3	65.1	0
Total # of respondents	44	72	105	50

CULTIVATE BIGGER FIELDS



RESULTS: % RESPONDENTS BUYING PLANTING FOR PARTICULAR AREAS (HA)

Hectares	% of farmers buying vines			
	Mukono	Kamul i	Bukedea	Soroti
≤ 0.02	0.0	4.2	1.0	6.0
0.02 - 0.04	0.0	1.4	10.0	34.0
> 0.04	0.0	0.0	1.0	6.0
% total buying	0.0	5.6	11.1	35.2
% did not buy	100	94.4	88.0	46.0
Total # of respondents	44	72	105	50

RESULTS: VINE LENGTHS PLANTED NORMALLY USED BY FARMERS IN DIFFERENT DISTRICTS

Cuttings # (%) of farmers using different lengths (cm) Mukono Kamuli Bukedea Soroti Overal ≤ 20 1.4 28.6 18.0 14.8 \mathbf{O} 12.9 25 4.5 21.0 20.0 1.4 72.7 79.2 45.7 30 58.0 61.2 > 30 4.7 11.1 22.8 18.0 4.0 # of 44 72 105 50 responden ts



RESULTS: NUMBER OF CUTTINGS PRODUCED PER 1.2M² WITHOUT AND WITH NPK APPLICATION IN

RAPADeMULTIPLICATION. # of 30-cm cuttings

lot					
	None	NPK	Average	Lsd _{0.05}	
1	11.7	35.9	23.8	10.15	
2	107.2	191.7	149.5	19.05	
3	78.8	179.0	128.9	38.25	
Total	197.7	406.6	302.2	45.9	
cuttings					

NPK (25:5:5) AND NO FERTILISER



EFFECT OF PLANTING DENSITIES AND PLACEMENT ON EMERGENCE AND ROOT YIELD OF WARE CROPS

# of	% survival		Root yield	
cuttings	Тор	Sides	Тор	Sides
1	73.4	-	1.1	_
2	72.1	64.4	1.7	1.2
3	66.5	57.2	1.6	1.2
Lsd _{0.05}	8.24		0.4	

EFFECT VINE LENGTH ON PLANT EMERGENCE AND ROOT YIELD OF WARE CROPS

Vine length (cm)	% mean plant survival	Root yield (kg/4m²	
10	47.4	1.0	
20	75.7	1.5	
30	77	1.6	
Lsd _{0.05}	6.38	0.3	

Discussion

 Normal sweetpotato plant acreage was largest in Soroti and lowest in Kamuli – Besides eating boiled sweetpotato are



DISCUSSION

 Percentages failing to plant and buying vines were highest in Soroti and lowest in Mukono



DISCUSSION

- More farmer used shorter vine cuttings in Bukedea and Soroti than Kamuli and Mukono
- Fertiliser application more than doubled the number of cuttings produced
- Planting 2 or 3 cuttings resulted in almost the same yield
- No significant difference between the of 20- or 30-cm long planted cuttings



RECOMMENDATIONS

Rational use of available planting for extended planting using 20-cm long cuttings instead of 30-cm long, and planting 2 instead 3 cuttings

Use of compound fertiliser application to produce more planting material

Further investigation in the application of NPK fertiliser to produce planting material and roots





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