RESPONSE OF SOME ELITE COCOYAM VARIETIES TO COCOYAM RAPID MULTIPLICATION TECHNOLOGY

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ABSTRACT
The experiment on the response of some elite cocoyam varieties to cocoyam rapid multiplication technology was carried out in 2012 and 2013 at the Research field of the National Root Crops Research Institute Umudike. Treatment comprised M1, M2 (microcormels from colocasia spp and Xanthosoma spp respectively); and M3, M4 (microsetts from microcormels of colocasia spp and Xanthosoma spp respectively). Each planting material weighed 7g. Plant spacing was 1m x 0.25m on 5m x 4m plots giving a plant density of 40,000 plants/hectare. Experimental design used in this experiment was Randomised Complete Block Design replicated three times. Harvesting was done 7 months after planting. Yield and yield parameters were subjected to Analysis of Variance and Significant means were separated with LSD at 5% alpha level. The experiment confirmed that colocasia spp (Cv.NCe 012) and Xanthosoma spp (Cv NXs 001) responded to Gocken Rapid multiplication Technology.

INTRODUCTION
Nigeria remains the largest producer of cocoyam in the world with an estimated production of 3.26 million metric tones (FAO 2012). It ranks third after cassava and yam in terms of total production, land under crop and importance (National Bureau of Statistics, 2006). Cocoyam is scarce and not easily available and accessible to prospective consumers. This problem is linked with low total output, ascribed to lack of sufficient quantities of planting materials to boost production and the low multiplication ration of cocoyam. Okoye *et al* (2007a; 2007b; 2008ba; 2008b; 2008c) advocated for measures to increase planting materials as a way to enhance yield and allocative efficiency in cocoyam production. This Rapid Multiplication Technology otherwise known as "Gocken Multiplication Technology" having succeeded in *Colocasia spp* (Chukwu *et al* 2009) needs to be extended to the *Xanthosoma spp.* The objective of the study was to evaluate elite cocoyam varieties and their response to the new technology.

MATERIALS AND METHODS
The experiment was carried out in 2012 and 2013 at the western field. The treatment comprised M1, M2 (Microcormels from Colocasia spp and Xanthosoma spp respectively); and M3, M4 microsett from microcormels of Colocasia spp and Xanthosoma spp respectively. Each of the planting materials weighed 7g. Plant spacing was 1m X 0.25m on 5m X 4m plots giving a plant density of 40,000 plants/hectare. Experimental design used in this study was Randomized Complete Block design (RCBD) replicated three times. At 6 weeks after planting, 400kg/ha of NPK 15:15:15 fertilizer was applied as basal dressing. Harvesting was done 7 months after planting. Yield and yield parameters were subjected to Analysis of variance and significant means were separated with LSD at 5% alpha level.

RESULTS AND DISCUSSION
Table 1 show there was significant differences ($P \geq 0.05$) between number of corms of M1 and M3 and M2 M4 in 2012 but not in 2013. Similarly the number of primary cormel from M1 was significantly higher than M2 but there was no significant difference in M3 and M4. The same trend was observed for

secondary cormels. In 2013, there were neither tertiary nor rotted corms nor cormels. The same trend in number of corms and cormels was also observed in the yield of corms and cormels (Table 2). However, there was a higher yield in 2013 compared to 2012. The yield in 2013 doubled almost what was obtained in 2012. This may be because of the more rains in 2013 (214.79mm) which were more evenly distributed compared to 2012 (159.15mm) and not dispersed within the months.

Table 1: Main Effect of Microsett and Microcormel on Yield attributes of Cocoyam Species

Yield attributes	**Colocasia (NCe012) M1**		**Xanthosoma (NXs 001) M2**		**Colocasia (NCe 012) M3**		**Xanthosoma (NXs 001) M4**		**LSD (0.05)**	
	Microcomel					**Microsett**				
	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013
No of Corms.	44	54	33	53	56	50	42	49	8.31	NS
No of Pri. Cormel	230	261	78	95	187	268	115	223	63.6	139
No of Sec. Cormel	74	149	13	23	63	86	0	126	59.3	95
No of Ter. Cormel	3	0	0	0	47	0	0	0	38.7	0
No of Rot	21	0	1	0	13	0	0	0	11.4	0
Corm Yield	2.80	4.33	2.53	7.67	4.40	6.67	3.80	7.00	1.34	5.17
Pri Cormel yield	3.67	8.00	2.20	4.00	4.60	9.03	3.60	7.67	2.21	2.67
Sec Cormel Yield	1.27	2.67	0.20	1.00	2.30	1.67	0	3.33	0.50	4.74
Tert Cormel Yield	0.67	0	0	0	0.47	0	0	0	0.40	0
Wt of Rots (Corms+Cormels)	1.00	0	0.67	0	0.47	0	0	0	3.60	0
Total Yield	8.41	15.00	4.93	12.67	11.77	17.37	7.4	18.00		

Table 2: Main Effects of Cocoyam Species on Corms and Cormels Number and Yield (t/ha)

Yield Parameters	**Colocasia (NCe 012)**		**Xanthosoma (Nxs 001)**		**Lsd (0.05)**	
	2012	**2013**	**2012**	**2013**	**2012**	**2013**
Survival count (%)	60.8	72.5	50.1	58.7	ns	12.4
No of Corms	50	2.0	37	51.0	5.88	Ns
No of Pri. Cormel (PC)	208	265	97	159	45.0	57.3
No of Sec. Cormel (SC)	68	118	6	76	42.0	48.0
No. of Ter. Cormels (TC)	25	0	0	0	12.0	0
No. of rots (corms+cormels)	17	0	0	0	8	0
Yield of Corms	3.60	5.50	3.17	7.34	0.94	1.87
Yield of Pri. Cornels	4.13	8.52	2.90	5.84	1.57	Ns
Yield of Sec. Cormels	1.80	2.14	0.10	2.17	0.05	Ns
Yield of Ter. Cormel	0.27	0	0	0	0.02	0
Weight of rots (corms+cormel)	0.73	0	0	0	0.43	0
Total yield	9.80	16.6	6.17	15.4	2.34	

Table 3: Rainfall amount and frequency for 2012 and 2013 cropping Seasons

2012 (Rainfall in mm)			2013 (Rainfall in mm)	
Month	**Amount**	**Days**	**Amount**	**Days**
Jan	0	0	75.4	2
Feb	88.2	7	84.8	3
March	57	3	408	8
April	142	17	92.8	9
May	233.7	16	466.1	16
June	213	14	239.4	14
July	362	24	280.5	18
August	161.8	19	237.1	15
September	349	25	318	18
October	244.6	16	184.8	14
November	58.5	6	99.8	8
December	0	0	90.8	7
Mean	159.15		214.79	
Std Dev	124.13		133.91	
Minimum	0		75.4	
Maximum	362		466.1	

CONCLUSION

This experiment confirmed that Colocasia spp (Cv NCe 012) and xanthosoma spp (Cv NXs 001) responded to Gocken Rapid Multiplication Technology. It is therefore recommended that the technology should be adopted to rapidly multiply both species of cocoyam.

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