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ASSESSMENT OF SOME LOCAL AND IMPROVED SWEET POTATO (*Ipomoea batatas* (L.) Lam.) VARIETIES FOR GROWTH AND YIELD POTENTIAL IN OWERRI, IMO STATE, NIGERIA.

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ABSTRACT

The experiment was conducted at the Federal University of Technology Owerri Research farm between the end of May – the end September of 2024, with the aim of assessing some local and improved sweet potato varieties for growth and yield potential. Each variety was planted in a 3m × 3m ($9m^2$) plot size, at a planting distance of 1.0m ×0.3m. The experiment was laid out in Randomized Complete Block Design with three replications and separated from each other at a space of 1m. Vine cuttings were planted on ridges and poultry manure was applied at four weeks after planting at the rate of 3.2t/ha. Data for growth and yield parameters were collected and subjected to Analysis of variance and means separation was done using Least Significant Difference (LSD). The Analysis of Variance showed Significant differences ($p<0.05$) among the sweet potato varieties for both growth and yield parameters. Solo Gold recorded the highest mean percentage sprout count emergence of 88.88% followed by Ex-Igbariam (81.48%), while the lowest was obtained in Sokuwa Duglu (1.85%). Mothers Delight had the highest total yield with 81.30kg/ha which was followed by Bende 2 (72.55kg/ha) and Bota Akpulu (45.65kg/ha) respectively. The lowest yield was obtained from Sokuwa Duglu (0.63kg/ha). The various agronomic parameters assessed which showed significant differences were ranked (rank 1-15). Bende 2 with Rank Summation Index (RSI) value (34) was the best performing variety, followed by TIS 8164 and mothers delight with RSI 62 and 65 respectively. On the other hand, the RSI showed the worst performing variety in sokuwu duglu with RSI (151), Api duglu and TIS 87/0087 with RSI 122 and 97 respectively. Therefore, to boost the harvest of sweet potato in this region, the varieties Bende 2 and Mothers delight are highly recommended.

Key words: Sweet potato, Varieties, Assessment, Growth, Yield.

1. Introduction

Sweet potato (*Ipomoea batatas* [L.] Lam)) is a tuberous rooted perennial crop that is usually grown as annual crop. It originated from Central America (Ecocrop, 2010) and is widely grown as an important staple food in most parts of the world. There are over 403 varieties of sweet potato of which the flesh can be white, yellow, red, purple, pink, violet and orange or brown while the skin colour varies among yellow, red, orange and brown. Taxonomically, the sweet potato (a dicotyledonous root crop) belongs to the family Convolvulaceae, genus Ipomoea and species Ipomoea batatas (Wikipedia, 2024). It is also known as the bindweed or morning glory family. It is an herbaceous, perennial vine that grows in tropical and subtropical regions. The crop has great food and health values. Many parts of the plant including the leaves, roots and vines are edible. The roots are widely used as carbohydrate food; the tender leaves commonly eaten by man while the leafy stems are fed to livestock (Woolfer, 1992). Beside these, the crop has been noted to provide surprising health benefits including fighting cancer, diabetes, vitamin A deficiency, and inflammation; preventing arteriosclerosis, heart disease, depression, emphysema, arthritis, stroke, muscle cramp and stomach ulcers; reducing arthritis and inflammation and curing bronchitis and stomach ulcers (Alum et al., 2013). Sweet potato is adaptable and can grow under many different ecological conditions. It has a shorter growth period than most other root crops (3 to 5 months) and shows no marked seasonality: under suitable weather conditions it can be grown all year round. Adverse weather conditions rarely cause a complete crop loss. Sweet potatoes have been cultivated since about 3000 B.C. Presently, Nigeria is the number one producer of sweet potato in Africa with annual output of 3.46 million metric tons and globally the second largest producer after China (Olagunju et al., 2013). Being an important food security crop in Nigeria, it is widely grown in different agro-ecological zones largely by small scale farmers for home consumption and the surplus sold in local markets.

High dry matter content is a desirable property of sweet potatoes and the most important factor that makes it a better competitor in the feed and starch industry (Tsou et al.,1987). Sweet potato cultivars with high dry matter content have better marketing appeal for feed and starch extraction. High dry matter also contributes to longer post- harvest storage of sweet potato roots (Tsou et al., 1987). The field evaluation of newly developed potato varieties for stability of performance is essential for successful selection of high yielding and consistently better performing varieties. Yield reliabilities from year to year is of great significance to subsistence farmers than wide spatial adaptation (Evans, 1993).

The concern about possible harmful environmental effects of inorganic fertilizers has stimulated a lot of interest in improving N-fertilizer use efficiency. Improved index of crop response to applied N and quantification of the influence of factors affecting this response would make a substantial contribution to the improvement of N-fertilizer use efficiency (Okorie,1992). Quantifying varietal responses to applied N in specific environments therefore becomes inevitable. Field evaluation of newly developed sweet potato varieties for their response to N fertilizer under the humid tropics is essential for the successful selection of consistently high yielding and stable cultivars. This research work evaluates the growth and yield potential of twelve sweet potato varieties: King J (Umuspo 1), Ex-Igbariam, Solo Gold, Mothers Delight (Umuspo 3), TIS 87/0087, TIS 8164, Bende 1, Bende 2, Bota Akpulu, Igbariam Akpulu, Api Duglu, and Sokuwa Duglu in Owerri, Imo State of Nigeria.

The Aim (s):

i. To grow and identify sweet potato varieties that will have better growth and agronomic characters in the study area.

ii. To identify the sweet potato varieties with high yield potential in the study area.

Materials and Methods

Description of the Study Area:

The study was conducted in the Teaching and Research Farm of the School of Agriculture and Agricultural Technology, Federal University of Technology Owerri, Imo State. Owerri lies at latitude 05º 27ºN and longitude 07º 02ºE at an elevation of 55 meters above sea level and is in the tropical rainforest region of southeastern Nigeria. The area has a bimodal pattern of rainfall with peaks in July and September. It has minimum and maximum annual temperature of 20ºC and 32ºC respectively and mean annual rainfall of 2500 mm and relative humidity of 85-89% (Nwosu and Adeniyi, 1980).

Treatments:

The treatments comprised 12 sweet potato varieties (Table 1). The sweet potato varieties were obtained from four different locations namely: 6 improved varieties from National Root Crop Research Institute (NRCRI), Umudike, 2 local varieties from Abia State, 2 local varieties from Imo State and 2 local varieties from Nasarawa State respectively.

Table 1: List of sweet potato varieties and their locations used for the study

Sweet Potato Varieties	Designation	Location
King J (Umuspo 1)	KINRC	NRCRI
Ex-Igbariam	EXNRC	NRCRI
Solo Gold	SONRC	NRCRI
Mothers Delight (Umuspo 3)	MONRC	NRCRI
TIS 87/0087	TINRC 1	NRCRI
TIS 8164	TINRC 2	NRCRI
Bende 1	BELNR 1	Abia
Bende 2	BELNR 2	Abia
Bota Akpulu	BOLNR	Imo
Igbariam Akpulu	IGLNR	Imo
Api Duglu	APLNR	Nasarawa
Sokuwa Duglu	SOLNR	Nasarawa

2. Land Preparation and Experimental Design.

The experimental field was cleared using a cutlass. The area was measured using tape and ropes and ridges were made using a shovel. Each variety was planted in a 3m × 3m($9m^2$) plot and at a planting distance of 1.0m × 0.3m. The experimental design was randomized complete block design. Each block contained 12 plots and was replicated 3 times and separated from each other at a space of 1m. The planting material was approximately 20cm length with at least three leaf nodes. The total land area for the experiment was 13m × 41m ($533m^2$) with a total of 72 ridges (Each plot contained two ridges with 9 plants per ridge giving a total of 18 plants per plot and 54 plants per variety and a sum total of 648 plants for the entire experiment (approx.12, 158plants/ha).

Data Collected:

1. Sprout count at 2WAP: Sprout count was done at 2 weeks after planting.
2. Number of leaves per plant: This was obtained by counting the total number of leaves on each plant, including both fully expanded and partially expanded leaves at 3, 6 and 9 weeks after planting respectively.
3. Vine length: It was obtained by measuring the length of the main vine (stem) from the base of the plant to the tip, using a rope and a ruler at 3, 6 and 9 weeks after planting respectively.
4. Average Root Number per plot: The total number of roots harvested from each plot were counted and divided by the number of plants in the plot to get the average root number per plot.
5. Number of marketable roots per hectare (root >100g): All roots from each plot were harvested and counted, separating those >100g (marketable) from those <100g (non-marketable) and converted to hectare.
6. Number of non-marketable roots per hectare (root <100g): All roots from each plot were harvested and counted, but only the roots <100g were recorded as non-marketable and converted to hectare
7. Weight of marketable roots per hectare: The total marketable roots (> 100g) from each plot were weighed and recorded.
8. Weight of non-marketable roots per hectare: The total non- marketable roots (< 100g) from each plot were weighed and recorded.
9. Average root diameter per plot: The diameter of a representative sample of roots (at least 3-5) from the plot was measured using a rope and a ruler.
10. Average root length per plot: The length of a representative sample of roots (at least 3-5) from the plot was measured using a rope and a ruler.
11. Weight of top biomass (above-ground biomass) per hectare: The sweet potato vines were cut at soil level, and all the foliage and stems collected and weighed to determine the total biomass per hectare.

4 Statistical Analysis:

All the data were subjected to Analysis of Variance (ANOVA) test using Genstat software (edition 4) while mean separation was done using Least Significant Difference (LSD) at 5% level of probability using the procedure by Obi (2002).

3 Results and Discussion:

Growth Parameters:

At 9 weeks after planting, there was a significant difference ($p<0.05$) among the varieties and a varietal grand mean of 202.85 number of leaves was obtained. Varieties King J, Bota Akpulu, Igbariam Akpulu, TIS 8164, Bende 1, Bende 2 and Solo Gold possessed mean number of leaves value greater than the grand mean. The highest mean number of leaves of 370.56 was obtained in Solo Gold, while the lowest mean number of leaves was observed in Sokuwa Duglu with a value of 42.67. Therefore, at 9 WAP, Variety Solo Gold (370.56) and Bende 1 (303.22) performed better in leave production than variety Api Duglu (94.06) and all the varieties that produced fewer leaves than it, with Sokuwa Duglu (42.67) producing fewer leaves amongst all the varieties (Table 3). The result of mean leaf number per plant from this present study is higher compared to that reported by Okorie et al., (2012) who reported a mean leaf number per plant values ranged from 26.47 in variety TIS 86/0356 to 55.33 in TIS 87/0087.

At 9 weeks after planting, there was a significant difference ($p<0.05$) among the varieties and a grand mean vine length of 208.99cm was obtained. Ex-Igbariam, Mothers Delight, IgbariamAkpulu, TIS 8164, Bende 1, Bende 2 and Solo Gold had a mean vine length values above the grand mean with the highest mean vine length observed in Solo Gold possessing a mean vine length of 265.38cm and closely followed by Bende 2 with a mean vine length of 259.22cm. The lowest mean vine length was observed in Sokuwa Duglu with a mean vine length of 72.33cm (Table 4). Therefore, at 9 WAP, Variety Solo Gold (265.38cm) and Mothers Delight (260.23cm) performed better in vine length production than variety King J (111.22cm) and all the varieties that produced shorter vine length than it, with Sokuwa Duglu (72.33cm) recording the shortest vine length amongst all the varieties. The highest mean vine length at 9 weeks after planting recorded in this study ranged from 72.33cm in variety Sokuwa Duglu to 265.38cm observed in Solo Gold. This result differed from that reported by Okorie et al., (2012) who had mean vine length ranged from 49.00cm in variety TIS 86/0356 to 104.00cm in TIS 87/0087.

Table 2: Mean Percentage (%) of Sprout Emergence at 2 Weeks After Planting

Varieties	Number of Vines planted	Number of Emerged Sprouts	Percentage (%) Sprouts
King J (Umuspo 1)	18	11.00	61.11
Ex-Igbariam	18	14.66	81.48
Solo Gold	18	16.00	88.88
Mothers Delight (Umuspo 3)	18	13.66	75.92
TIS 87/0087	18	6.00	33.33
TIS 8164	18	9.33	51.85
Bende 1	18	12.33	68.51
Bende 2	18	14.00	77.77
Bota Akpulu	18	10.66	59.26
Igbariam Akpulu	18	13.33	74.07
Api Duglu	18	3.00	16.66
Sokuwa Duglu	18	0.33	1.85
Mean	18	10.39	57.56
LSD (0.05)	5.42		

Table 3: Number of Leaves of 12 Sweet Potato Varieties at 3, 6 and 9 Weeks After Planting

Varieties	Number of Leaves 3WAP	6WAP	9WAP
King J (Umuspo 1)	13.53	77.68	245.11
Ex-Igbariam	10.21	46.80	172.44
Solo Gold	15.51	102.42	370.56
Mothers Delight (Umuspo 3)	8.48	50.20	147.78
TIS 87/0087	5.56	32.03	163.33
TIS 8164	8.80	66.12	217.89
Bende 1	20.85	111.55	303.22
Bende 2	12.50	62.88	209.66
Bota Akpulu	14.93	76.40	261.00
Igbariam Akpulu	15.42	65.53	206.45
Api Duglu	7.77	25.22	94.06
Sokuwa Duglu	1.33	4.33	42.67
Mean	11.24	60.10	203.00
LSD (0.05)	4.68	30.87	114.20

Table 4: Vine Length (cm) of 12 Sweet Potato Varieties at 3, 6 and 9 Weeks After Planting

Varieties	Vine Length (cm) 3WAP	6WAP	9WAP
King J (Umuspo 1)	13.41	66.36	111.22
Ex-Igbariam	17.88	134.01	223.60
Solo Gold	32.43	189.70	265.38
Mothers Delight (Umuspo 3)	16.70	156.74	260.23
TIS 87/0087	9.61	86.66	223.86
TIS 8164	17.89	168.54	246.67
Bende 1	30.08	154.65	230.27
Bende 2	26.85	184.87	259.22
Bota Akpulu	18.89	117.02	185.77
Igbariam Akpulu	24.19	165.07	234.00
Api Duglu	8.68	58.56	195.31
Sokuwa Duglu	2.83	9.07	72.33
Mean	18.29	124.27	209.00
LSD (0.05)	8.82	44.15	89.85

4 Yield Parameters

There was no significant difference ($p>0.05$) among the varieties and the grand mean root number of 1.28 was obtained. Varieties Bende 2, Mothers Delight, Bota Akpulu, King J, TIS 87/0087 and Bende 1 possessed mean root number greater than the mean value, with the highest mean value of 2.09 obtained in Bota Akpulu followed by King J with the mean root number of 1.68 while the lowest mean root number value of 0.24 was observed in Igbariam Akpulu respectively (Table 8). Therefore, at harvest, Variety Bota Akpulu (2.09) and King J (1.68) performed better in root number production than variety Solo Gold (0.86) and all the varieties that produced fewer root number than it, with Igbariam Akpulu (0.24) producing fewer number of roots amongst all the varieties. The highest mean root number per plot in this present study was recorded in Bota Akpulu with the value of 2.09 closely followed by King J and Mothers Delight with the mean values of 1.68 and 1.66 respectively. The lowest mean root number per plot of 0.24 was observed in Igbariam Akpulu. The result of the mean root number per plot in this study is far lower than that reported by Mohammed Awel (2018) who recorded the highest mean root number per plot of 90.66 in variety local, which was closely followed by varieties Beletech and Belela with the mean values of 87.00 and 76.33 respectively, a research carried out in Ethiopia.

The maximum marketable fresh weight per hectare of 0.06t/ha was recorded on varieties Mothers Delight and Bende 2 respectively whereas, the lowest mean marketable fresh weight per hectare of 0.00t/ha and 0.003t/ha was recorded on Sokuwa Duglu and Igbariam Akpulu respectively (Table 7). The result of the marketable fresh weight per hectare in this study differed from that reported by Mohammed Awel (2018) who recorded the maximum marketable fresh weight per hectare on the varieties Awassa-83 (135.66t/ha) and Kulfo (124.66t/ha); whereas, the minimum mean marketable fresh weight per hectare was recorded on local check (43.66t/ha).

The maximum unmarketable fresh weight per hectare of 0.02t/ha was recorded on varieties Mothers Delight and Bota Akpulu respectively. Whereas, the minimum mean unmarketable fresh weight per hectare was recorded on varieties Sokuwa Duglu (0.001t/ha) and Api Duglu (0.001t/ha) (Table 7). The result in this present study also differed from that reported by Mohammed Awel (2018) who recorded the maximum unmarketable fresh weight per hectare of 26.66t/ha in Awassa-83 and minimum mean unmarketable fresh weight per hectare recorded on variety Beletech (11.33t/ha).

The Average Root Diameter of the varieties studied showed significant difference ($p<0.05$) among the varieties. The thickest variety of 26.80cm was recorded in Mothers Delight, closely followed by Bende 2 and Solo Gold with the thickness of 23.95cm and 22.00cm respectively. Whereas, the thinnest variety of 2.67cm was observed in Sokuwa Duglu (Table 5). The result of the average root diameter in this study is different from that reported by Mohammed Awel (2018) who recorded the thickest variety of 49.33cm in Awassa-83 while the thinnest (28.33cm) was observed in Guntutea. The Average Root Length of the varieties studied showed significant difference ($p<0.05$). The longest average root length of 23.37cm was recorded in Bende 2, closely followed by Bende 1 and Mothers Delight with the average root length of 22.33cm and 21.50cm respectively. While the shortest average root length of 4.00cm was observed in Sokuwa Duglu (Table 5).

The result of the average root length in this study is higher compared to that reported by Mohammed Awel (2018) who recorded the longest average root length of 12.16cm in Awassa-83 while the shortest average root length of 6.63cm was observed in Kulfo.

Variety Igabriam Akpulu had the highest fresh biomass yield of 0.87t/ha closely followed by TIS 8164 and King J with the fresh biomass yield of 0.85t/ha and 0.66t/ha respectively. The variety Sokuwa Duglu gave the lowest fresh biomass yield of 0.05t/ha (Table 8). The result of the fresh biomass yield in the present study is far lower than that reported by Okorie et al., (2012) who recorded the highest mean fresh biomass yield of 8.56t/ha obtained in variety TIS 2532 OP.1.13, followed by TIS 86/0356 and Ex-Igbariam local with the biomass yield of 7.33t/ha and 6.89t/ha respectively. While the lowest mean fresh biomass yield of 3.00t/ha was obtained in TIS 8441.

Table 5: Root Diameter and Root Length of 12 Sweet Potato Varieties at Harvest

Varieties	Root Diameter (cm)	Root Length (cm)
King J (Umuspo 1)	14.39	21.29
Ex-Igbariam	15.92	20.89
Solo Gold	22.00	18.50
Mothers Delight (Umuspo 3)	26.80	21.50
TIS 87/0087	17.95	20.06
TIS 8164	21.83	19.94
Bende 1	13.39	22.33
Bende 2	23.95	23.37
Bota Akpulu	16.17	20.83
Igbariam Akpulu	8.67	12.75
Api Duglu	21.00	18.14
Sokuwa Duglu	2.67	4.00
Mean	17.06	18.63
LSD (0.05)	8.25	9.73

Table 6: Number of Marketable Roots (>100g) and Unmarketable Roots (<100g) of 12 Sweet Potato Varieties at Harvest

Varieties	Marketable Roots	Unmarketable Root
King J (Umuspo 1)	6.67	10.67
Ex-Igbariam	3.00	13.33
Solo Gold	4.67	9.00
Mothers Delight (Umuspo 3)	9.00	14.33
TIS 87/0087	3.00	4.67
TIS 8164	6.33	4.33
Bende 1	3.33	11.33
Bende 2	10.33	13.33
Bota Akpulu	8.00	13.00
Igbariam Akpulu	1.33	2.33
Api Duglu	2.00	1.33

Sokuwa Duglu	0.00	1.00
Mean	4.81	8.22
LSD (0.05)	6.00	8.47

Table 7: Marketable Fresh Roots Weight (>100g) and Unmarketable Fresh Roots Weight (<100g) of 12 Sweet Potato Varieties at Harvest

Varieties	Marketable Roots (kg/ha)	Unmarketable Roots (kg/ha)	Total (kg/ha)
King J (Umuspo 1)	22.51	8.13	30.64
Ex-Igbariam	12.51	15.01	27.52
Solo Gold	30.64	5.63	36.37
Mothers Delight (Umuspo 3)	63.79	17.51	81.30
TIS 87/0087	18.76	5.63	24.39
TIS 8164	30.02	5.63	35.65
Bende 1	11.88	10.01	21.89
Bende 2	57.54	15.01	72.55
Bota Akpulu	30.02	15.63	45.65
IgbariamAkpulu	2.50	3.13	5.63
ApiDuglu	12.51	1.25	13.76
SokuwaDuglu	0.00	0.63	0.63
Mean	24.39	8.60	32.99
LSD (0.05)	38.85	9.71	

Table 8: Root Number per plot and Weight of the top biomass of 12 sweet potato varieties at harvest

Varieties	Mean Root Number	Weight of top Biomass (kg/ha)
King J (Umuspo 1)	1.68	220.76
Ex-Igbariam	1.11	76.92
Solo Gold	0.86	126.33
Mothers Delight (Umuspo 3)	1.66	100.06
TIS 87/0087	1.44	78.17
TIS 8164	1.18	284.55
Bende 1	1.35	163.23
Bende 2	1.61	162.60
Bota Akpulu	2.09	122.58
Igbariam Akpulu	0.24	290.81
Api Duglu	1.09	21.89
Sokuwa Duglu	1.00	16.89
Mean	1.28	138.73
LSD (0.05)	1.29	86.54

Rank Summation Index (RSI) according to the method described by Mulumba and Mock (1978) was then utilized to rank the varieties for their overall performance with respect to the growth and yield parameters assessed. To obtain the RSI, varieties were first ranked for each parameter (1 indicating the best performing and 12 indicating the worst performing) and parameter ranks summed to generate overall performance for each variety. Thus, the lower RSI of any variety, the better it's morphological and yield performance. The various agronomic parameters assessed which showed significant differences were ranked (rank 1-15); the rankings were summed up for each of the varieties using rank summation index (RSI). The RSI as shown in (Table 9) indicated Bende 2 with RSI value (34) as the best performing variety under the research environment, followed by TIS 8164 and mothers delight with RSI 62 and 65 respectively. On the other hand, the RSI showed the worst performing variety as sokuwa duglu with RSI (151) and Api duglu and TIS 87/0087 with RSI 122 and 97 respectively.

Table 9: Ranks and Ranks Summation Index (RSI) of Field Parameters which were significant ($p<0.05$) among the varieties.

Varieties	SPC	R1	NLvs	R2	VL	R3	LFL	R4
King J	61.11	7	245.11	4	111.22	11	14.33	1
Ex-Igbariam	81.48	2	172.44	8	223.60	8	11.67	6
Solo Gold	88.88	1	370.56	1	265.38	1	11.56	7
Mothers Delight	75.92	4	147.78	10	260.23	2	10.80	10
TIS 87/0087	33.33	10	163.33	9	223.86	7	11.09	9
TIS 8164	51.85	9	217.89	5	246.67	4	13.44	3
Bende 1	68.51	6	303.22	2	230.27	6	12.03	4
Bende 2	77.77	3	209.66	6	259.22	3	14.23	2
Bota Akpulu	59.26	8	261.00	3	185.77	10	11.16	8
Igbariam Akpulu	74.07	5	206.45	7	234.00	5	11.72	5
Api Duglu	16.66	11	94.06	11	195.31	9	10.18	11
Sokuwa Duglu	1.85	12	42.67	12	72.33	12	4.39	12

Key; SPC-Sprout Count, NLvs – Number of Leaves, VL- Vine Length (cm), LFL – Leaf length (cm)

Table 9 cont'd

LFW	R5	PL	R6	PG	R7	RDM	R8	RTL	R9
10.19	9	20.53	3	3.02	4	14.39	9	21.29	4
11.04	6	13.36	8	2.75	7	15.92	8	20.89	5
9.31	11	16.22	7	2.46	11	22.00	3	18.50	9
11.73	4	13.03	9	2.62	10	26.80	1	21.50	3
11.18	5	17.07	5	2.63	9	17.95	6	20.06	7
15.70	2	19.56	4	3.26	2	21.83	4	19.94	8

10.83	7	16.50	6	2.95	5	13.39	10	22.33	2
15.92	1	20.66	2	3.09	3	23.95	2	23.37	1
9.89	10	13.01	10	2.82	6	16.17	7	20.83	6
13.57	3	21.29	1	3.40	1	8.67	11	12.75	11
10.75	8	12.97	11	2.69	8	21.00	5	18.14	10
4.11	12	4.59	12	0.83	12	2.67	12	4.00	12

Key; LFW- Leaf Width, PL-Petiole Length, PG- Plant Girth, RDM- Root Diameter, RTL- Root Length.

Table 9 cont'd

NMRT	R10	NUMRT	R11	WTUMRT	R12	WTBM	R13	RSI
6.67	4	10.67	5	8.13	5	220.76	3	69
3.00	8	13.33	2	15.01	3	76.92	10	81
4.67	6	9.00	6	5.63	6	126.33	6	75
9.00	2	14.33	1	17.51	1	100.06	8	65
3.00	8	4.67	7	5.63	6	78.17	9	97
6.33	5	4.33	8	5.63	6	284.55	2	62
3.33	7	11.33	4	10.01	4	163.23	4	67
10.33	1	13.33	2	15.01	3	162.60	5	34
8.00	3	13.00	3	15.63	2	122.58	7	83
1.33	10	2.33	9	3.13	7	290.81	1	76
2.00	9	1.33	10	1.25	8	21.89	11	122
0.00	11	1.00	11	0.63	9	16.89	12	151

Keys; NMRT- Number of Marketable Root; NUMRT- Number of Unmarketable Root WTUMRT- Weight of Unmarketable Root; WTBM- Weight of Biomass.

5 Conclusion:

This study was undertaken to assess some local and improved varieties of sweet potato for growth and yield potential in Owerri. Solo Gold recorded the highest mean percentage sprout count emergence of 88.88% at two weeks after planting, followed by Ex-Igbariam which had 81.48% while the lowest was obtained in Sokuwa Duglu with 1.85%. It was also observed from the study that Sokuwa Duglu recorded the poorest performance in both the growth and yield parameters collected. This could be as a result of the inability of the variety to properly adapt to the environment. Bota Akpulu produced the highest root number per plot with a mean number of 2.09 roots. This was closely followed by King J and Mothers Delight with mean values of 1.68 and 1.66 roots per plot respectively. The lowest mean roots number per plot of 0.24 was obtained in Igbariam Akpulu. Mothers Delight had the highest total yield with 81.30kg/ha which was closely followed by Bende 2 and Bota Akpulu with yield values of 72.55kg/ha and 45.65kg/ha respectively. The lowest yield value was 0.63kg/ha obtained from Sokuwa Duglu. Amongst the twelve (12) sweet potato varieties sourced from the four different locations and assessed in Owerri Southeastern Nigeria, two varieties namely; Mothers Delight and Bende 2 were observed to be the best performing varieties in the agro-ecological zone and are therefore recommended to boost sweet potato production in the region.

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