Nigeria Journal of Plant Breeding
Volume 3(1), pages 16 - 23, January 2026
ISSN: 2814-3531

https://pbanjournal.org/

PLANT BREEDERS ASSOCIATION OF NIGERIA

Full Length Research

EVALUATION OF THE AGRONOMIC TRAITS IN CASSAVA VARIETIES FROM OKUKU IN OWERRI -WEST, SOUTH-EASTERN. NIGERIA – A RANK SUMMATION INDEX APPROACH

Nwosu, M.U; Ngwuta, A.A; and Onyewuchi, O.P
Department of Crop Science and Technology, Federal University of Technology, P.M.B. 1526, Owerri Imo State, Nigeria

Received 11th September, 2025; Accepted 9th December, 2025

ABSTRACT: The experiment was conducted to evaluate the agronomic traits in local cassava varieties cultivated in Okuku alongside some improved varieties between January 2023 and January 2024. The experiment was laid out in a Randomized Complete Block Design (RCBD) with four replications. Data collected were subjected to analysis of variance (ANOVA) and means separation was done using Least Significant Difference (LSD). The Analysis of Variance showed significant differences ($p < 0.05$) among the cassava varieties evaluated. TMS-IBA980581 recorded the highest mean value 9.00 for days to 50% sprout followed by Nwjeni which had 8.25 while the rest of the varieties had the lowest mean value of 8.00. Akwatakwa had the highest tuber yield with 6.28t/ha followed by Obanyanyam and Nwajeni with yield values of 4.91t/ha and 2.77t/ha respectively. The lowest yield value was 0.39t/ha obtained from TMS-IBA980581. Rank summation index was used for all the traits studied to identify and select the best performer amongst the varieties. Rank summation index identified and selected Akwatakwa with RSI value of 10 as the best performer in the study area followed by, Obanyanyam and Nwajeni with RSI value of 23 and 35 respectively.

Key Words: cassava, varieties, evaluation, agronomic traits, rank summation index.

INTRODUCTION

Cassava (*Manihot esculenta Crantz*) is a significant root crop in Africa. Cassava can be produced year-round due to its ability to survive in poor soils, drought, good resistance to pests and diseases and high yield per hectare of land. Cassava is a very important food crop in Africa and has been known to be the major staple of large number of Nigerians. It ranks third in importance after rice, and maize. Africa accounts for more than 50% (203 x 10^6t) of the total global production and Nigeria is the leading producer with 7.7 x 10^6 ha under cultivation for the crop (FAO 2021) and about 84% of the cassava produced are consumed (FAO, 2014). Cassava plant is versatile such that every part is useful. In Nigeria, the stem can be propagated and the roots can be fermented, boiled and used for different purpose like “fufu”,” garri”, wet” abacha” and dried” abacha” alibo, starch. The leaves can be used as vegetables in soups and sauces. It has other diverse uses in pharmaceutical, confectionary and livestock industries in Nigeria (Eke-Okoro and Dixon, 2000). The current cassava yield cassava is only 12.3t/ha (Nkonya, Ponder, Kato, Omobowale, Phillip, and Ehui, 2010), whereas the potential yield is 28.0t/ha and the yield for improved varieties at research stations ranges from 13.40t/ha (Eke-Okoro and Dixon, 2012).

To improve any crop, it is important to assess the varieties on ground to determine their vegetative and

*Corresponding Author E-mail: anayomaryjane@gmail.com
Whatsapp: +2348034188688

yield performances. Therefore it is important to assess the local varieties alongside the improved varieties recommended in the same zone. Hunger and food insufficiency remain critical challenges in many parts of Nigeria, particularly in rural and semi-urban communities. Despite Nigeria being the largest producer of cassava globally, the country still faces persistent food insecurity due to inadequate agronomic practices, low yielding local varieties and limited value addition. In regions like Okuku in Owerri-West, Southeastern Nigeria, local varieties are often underutilized or poorly understood in terms of their agronomic characteristics. As a result, the potential of these cassava varieties to contribute to food sufficiency and economic stability remains largely untapped. This gap not only affects food availability but also limits the resilience of local communities against hunger and poverty. The need to combat hunger is clearly reflected in the Sustainable Development Goals (SFG_S) of the UN, whose target is to eradicate hunger by 2030 (FAO 2015). Cassava forms as an important part of the diet of more than half billion people and provides a livelihood for millions of farmers, processors and trade world (FAO 2015). Cassava is a staple food in Nigeria, valued for its adaptability to diverse climates and soils as well as its role in household food security. The main objective of this sturdy therefore is to evaluate the local varieties from Okuku for agronomic and yield potentials. This will help to provide necessary information in future cassava breeding programs, help farmers in selecting the best varieties for cultivation and increase the availability of affordable food. To achieve this objective, rank summation index method Mulumba and Mock (1978) was used to select the best performing cultivars.

Index selection is one of the ways of selecting more than one trait at a time. Mulumba and Mock (1978) developed the rank summation index, calculated by ranking genotypes for the traits of interest and then summing the ranks of each trait. In rank summation index, variances and covariances are not needed. Rank summation index has been used in research such as cassava brown streak disease response and association with agronomic traits in elite Nigerian cassava (Ano, Ochwo-Ssemakula, Ibanda, Ozimati, Gibson, Onyeka, Egesi, and Kawuki, 2021) and the best cassava genotype with maize and melon intercrop (Olofede, Okereke,and Ikeorgu 2002). Very often selections based on single traits such as yield can be deceitful because many genes interplay to give rise to the total performance of a crop, thus the choice of rank summation index in this study.

MATERIALS AND METHOD

The research was carried out at the Center for Agricultural Research, School of Agriculture and Agricultural technology of the Federal University of Technology Owerri, Imo State, Nigeria between January 2023 and January 2024. The center is located at latitude $5^0 27N$ and longitude $7^0 02"E$ with mean temperature of 29°C, relative humidity of 89% and altitude of 50 to 70cm above sea level.

Sourcing of materials

Mature and healthy stem cuttings of three local cassava varieties were obtained from a local subsistence farmer in Okuku, Owerri-West local government area, Imo State, Nigeria, and mature and healthy stem cuttings of five improved cassava varieties were obtained from National Root Crop Research Institute (NRCRI), Umudike, Abia State, South-East Nigeria.. The stem cuttings of each cassava variety were collected from the middle stems of the respective seven-month-old plant. The stem cuttings were covered with grass while transporting to the plantation area in order to reduce evaporation and dryings.

Treatments and experimental design

In this study, Randomized Complete Block Design (RCBD) was employed. The experiment was carried out under field condition using eight varieties as treatments, namely, Akwatakwa, Nwajeni, Obanyanyam, TMS154810, TMS164773, TME419, IBA980505, and TMS-IBA980581 with four replications. The experimental field was cleared, and ridges were made before planting. The plots were 12m long and 1m wide with intra row spacing of 1mx1m. Therefore, the total size of each plot was $12m^2$. The cuttings were planted with inclined stake orientation on the 3rd of January, 2023. Totally, there were 12 plants per plot for each variety. Weeding was done with hoe at 4, 8 and 12 weeks after planting, while harvest was done at 48weeks after planting.

Data collection

Data were collected on days to 50% sprouting, plant height plant Girth, number of primary branches,

petiole length, number of tubers, tuber weight, tuber girth, tuber length, tuber yield.

Data analysis

Data collected was subjected to analysis of variance (ANOVA) using GENSTAT, while treatment means were compared using Least Significant Difference of at 5% probability level (Obi, 2002).

Rank summation index approach

Rank summation index was used as described by (Mulamba and Mock, 1978; Komolafe, Ariyo, and Alake 2021) for all the traits studied to identify and select the best performer amongst the genotypes. Following ranking, a selection index is obtained by summing the ranks of each trait studied.

RESULTS AND DISCUSSION

Growth performance of the cassava varieties

The Days to 50% showed significant difference ($p < 0.05$) between TMS-IBA980581 and the other varieties. The result showed that the "Days to 50% Sprout" ranged from 8.00-9.00% with "TMS-IBA 980581. The above-ground Components showed different performances across varieties (Table 1). Statistically, there were significant differences ($P < 0.05$) among the varieties. Number of primary branch ranged from 0.00 -2.75, Petiole length ranged from 11.89cm in "TMS 154810" to 19.18 cm in "Akwatakwa", plant height varied from 0.66m in TMS 154810 to 3.03m in "Akwatakwa" while Stem girth ranged from 4.53cm in "TMS 164773" to 8.65cm in "Akwatakwa." In all the growth parameters studied, Akwatakwa showed the highest value compared to the rest of the varieties (Table 1). Cassava is widely adapted to a variety of environmental conditions; but usually the adaptability of most varieties is narrow and shows large genotype X environment (GXE) interaction effects (Noerwijati and Budiono 2015). A day to 50% sprout is an indication that ensures crops survival. Varieties that sprout early are advantageous under limited moisture availability. The result in this study is in agreement with Nwosu and Gbologan (2021) findings which stated that cassava cuttings sprout within 7-14 days after planting under normal condition.

The number of primary branch of cassava helps the plant's structural stability, influences light capture and adaptability to the environment. According to Ekanayake, Osiru, and Porto (1997), the primary stem of cassava plants usually produce two or three secondary branches. However, the environment affects the phenology and growth of cassava which results in variation on the growth, branching rate and leaf formation (Sarawat, Ratanasirwong, Puangprakon, and Jintrawet, 2000).

Table 1: Mean Values for Growth Characteristics of the Eight Cassava Varieties Evaluated In 2023-2024

Cassava Varieties	Days to 50% Sprout	Number of primary branch/ stand	Petiole Length (cm) / stand	Plant height (m) / stand	Stem girth (cm) / stand
Akwatakwa	8.00	2.75	19.18	3.03	8.65
IBA980505	8.00	1.50	16.21	0.72	5.57
Nwajeni	8.25	2.00	18.41	2.10	7.50
Obanyanyam	8.00	2.00	18.87	2.27	7.37
TME 419	8.00	0.00	15.12	2.40	6.40
TMS 154810	8.00	1.50	11.89	0.66	5.60
TMS 164773	8.00	1.50	15.04	0.71	4.53
TMS-IBA980581	9.00	1.25	16.27	0.90	5.11
LSD(0.05)	0.260	0.6712	3.411	0.951	1.217

A variety which forms three or four apices at each point give rise to a healthy branched form with dense foliage (Melifonwu, James, Aihou, Weise, Awaah, and Gbaguidi, 2000). Cassava plant height ranges from 1.5-3.5meters at full maturity, though some varieties may grow taller under optimal conditions. Plant height is important attribute in cassava production and breeding program, cassava varieties

that are taller may shade weeds and compete better for light, but excessive height are prone to lodging. Moderate height is usually preferred for balance between root yield and ease of management. The difference as observed in this study is in line with the findings by Jiwuba, Danquah, Asante, Blay, Onyeka and Egesi (2020) which stated that cassava plant height is influenced by both genotype and environmental condition. The stem girth is crucial in cassava production. Varieties with thicker stem are resistance to lodging, store more carbohydrate and water, giving plant better resilience to drought and regrowth after cutting. The result in this study aligned with the result by Ikeh, Ndaeyo, Udoh, Iboroko and Udounang (2012). The petiole length of cassava plant can vary depending on the genotype, growth stages and environmental conditions. Cassava varieties with longer petioles create a more open canopy, which allow better light penetration to lower leaves and sometimes reducing leaf disease incidence, but shorter petiole create a dense canopy, which may suppress weed but could increase humidity around the leaves.

Tuber Yield and Yield Components of the Cassava Varieties

There were significant difference (P< 0.5) among the varieties studied in yield and its component (Table 2). The result revealed that tuber girth varied from 8.71cm in "TMS-IBA 980581" to 20.33 cm in “Akwatakwa”, tuber length ranged from 14.39cm in "IBA 980505" to 39.67cm in "Akwatakwa", tuber weight ranged from 0.47kg in TMS-1BA 980581 to 7.54kg in “Akwatakwa", also number of tubers varied from 2.00 in TMS 164773" and “IBA 980505" to 20.50 in Akwatakwa" while tuber yield ranged from 0.39t/ha in “TMS-IBA 980581" to 6.28t/ha in "Akwatakwa" (Table 2).

Table 2: Mean Values for Yield and Yield Components of the Eight Cassava Varieties Evaluated In 2023-2024

Cassava Varieties	Tuber girth (cm)/ stand	Tuber length (cm)/ stand	Tuber weight (kg) / stand	Number of tubers / stand	Tuber yield (t/ha)
Akwatakwa	20.33	39.67	7.54	20.50	6.28
IBA980505	19.12	14.39	1.67	2.00	1.40
Nwajeni	15.33	25.88	3.32	12.75	2.77
Obanyanyam	13.07	32.12	5.90	14.75	4.91
TME 419	12.82	19.51	4.00	5.75	2.04
TMS 154810	11.47	30.21	2.45	5.00	2.04
TMS 164773	11.37	25.72	0.82	2.00	0.68
TMS-IBA980581	8.71	20.74	0.47	1.25	0.39
LSD(0.05)	5.337	11.759	2.987	6.712	2.493

Tuber yield and its components varied across varieties (Mulualem, and Ayenew (2012). Number of tubers, tuber length, tuber girth and tuber weight are important factors influencing cassava yield and these characters vary based on genotype, climate, soil fertility and agronomic practices. . Several authors (Ntawuruhung and Dixon 2010, Agahiu, Baiyeri and Ogbuji 2011) reported that storage root number, length and diameter are the main yield components contributing to yield enhancement in cassava. To maximize cassava yield, an ideal variety should be able to produce moderate to high number of tubers that are long, thick and heavy. Akwatakwa produced the highest yield (6.28t/ha), followed by Obanyanyam (4-91t/ha) and then Nwajeni (2.77t/ha) whereas TMS-IBA980581 produced the lowest yield (0.39t/ha). The low yields obtained in this study might be probably due to poor soil fertility. Howeler (2014) noted that potassium deficiency alone can reduce cassava yield by 40–60%. Another reason for the low yields might be due to genotype x environment interaction. Akinwale, Akinyele, Odiyi, and Dixon (2010) noted that some varieties are poorly adapted to humid southeastern Nigeria, which reduces bulking

efficiency. Additionally, the general low yields might be due to the fact that the crops were grown during off-season and in a research center.

Rank Summation Index (RSI) for the Agronomic Traits

Determining the performance of the varieties through ranking, the result revealed that the lowest Rank Summation Index value was obtained in Akwatakwa (10), followed by Obanyanyam (23) and Nwajeni (35) and the highestt was TMS-IBA980581 (68) (Table 3). The lower the rank summation index, the better the performance. Thus, Akwatakwa was the best performer across multiple traits, followed by Obanyanyam and Nwajeni and the poorest was TMS-IBA980581.

Table 3: Rank Summation Index (RSI) for agronomic traits studied.

Cassava Varieties	Days of 50% sprout	R1	Number of Primary branches	R2	Petiole length	R3	Plant heigh t	R4	Stem girth	R5	
AKWATAKWA	8	1	2.75	1	19.18	1	3.03	1	8.65	1	
IBA 980505	8	1	1.5	4	16.21	5	0.72	6	5.57	6	
NWAJENI	8.25	7	2	2	18.41	3	2.1	4	7.5	2	
OBANYANYAM	8	1	2	2	18.87	2	2.27	3	7.37	3	
TME 419	8	1	0	8	15.12	6	2.4	2	6.4	4	
TMS 154810	8	1	1.5	4	11.89	8	0.66	8	5.6	5	
TMS 164773	8	1	1.5	4	15.04	7	0.71	7	4.53	8	
TMS 1BA980581	9	8	1.25	7	16.27	4	0.9	4	5.11	7	
AKWATAKWA	20.33	1	39.67	1	7.54	1	20.5	1	6.28	1	10
IBA 980505	19.12	2	14.39	8	1.67	6	2	6	1.4	6	50
NWAJENI	15.33	3	25.88	4	3.32	4	12.75	3	2.77	3	35
OBANYANYAM	13.07	4	32.12	2	5.9	2	14.75	2	4.91	2	23
TME 419	12.82	5	19.51	7	4	3	5.75	4	2.04	4	44
TMS 154810	11.47	6	30.21	3	2.45	5	5	5	2.04	4	49
TMS 164773	11.37	7	25.72	5	0.82	7	2	6	0.68	7	59
TMS 1BA980581	8.71	8	20.74	6	0.47	8	1.25	9	0.39	8	68

Cassava and its components varied across varieties (Mulualem and Ayenew, 2012). According to Temesgen (2022), crop performance is determined by the interaction between its genetic makeup and the environment where it is grown. Akwatakwa variety may be had a superior productive genotype and environmental interaction compared to the other varieties evaluated.

Recent studies and varietal evaluations show that cassava yields in Southeastern Nigeria vary depending on variety and management. In demand – creation trials conducted across Nigeria, IBA980505 achieved mean fresh root yield of 35.4t/ha (IITA, 2021; 0gbuekiri, Ogbe and Kolawole 2023, Ogwuche, Diebiru-Ojo, Najimu, Ossai, Ekanem, Adegbite, Oyebode and, Kulakwo, 2003). Variety profiling consistently classifies TME419, IBA 980581 and IBA 980581 as high yielding clones, typically delivering over 25t/ha under good agronomic conditions (Ogwuche et al 2003). However, the superior performance of the local varieties relative to the improved varieties in this study may be probably due to local adaptation. Landrace varieties maintained by farmers are often subject to long-term selection under local edaphic and climatic stresses, which can confer enhanced tolerance to soil constraints, and intermittent soil moisture. Such adaptive advantage can translate into superior root bulking and yield components under site- specific conditions (Aina, Dixon, and Akinrinde, 2009). Additionally, significant GXE effects have been reported for cassava, with improved genotypes frequently

achieving their maximum potential only under favorable soil fertility and management regimes, under low-input or stressful field conditions, locally adapted genotype often show greater yield stability and outperform released varieties (Ogwuche et al, 2023). Differences in phenology and root bulking dynamics may also contribute: local varieties may establish faster or have bulking periods better aligned to site-seasonal pattern enabling greater accumulation of root biomass where environmental constraints shorten the effective growing season. Finally, variation in planting material heath and management compatibility can depress the performance of improved variety if they are not provided the specific inputs they were bred to exploit, whereas, local varieties tend to be well-matched prevailing farmer's practices (Ogwuche et al, 2023). Collectively, these factors explain why in the study environment, local cassava varieties could show higher growth and fresh root yield than improved varieties, despite the latter's higher potential yield under optimal conditions.

The identification of the best supports the usefulness of Rank Summation Index. RSI was used for selection purpose for the best cassava genotype with maize and melon intercrop Olojede, Okereke,and Ikeorgu 2002) and in brown streak disease response and association with agronomic traits in elite Nigerian cassava (Ano,Ochwo-Ssemakula, Ibanda, Ozimati, Gibson, Onyeka, Egesi, and Kawuki, 2021).

Cassava plays a significant role in African development through serving as famine reserve, staple food, cash crop and raw materials for feed and chemical industries (Nweke, Spencer, and Lynam (2002). Its improvement could be important for food security in Africa where the population is expected double by 2050 (Shackelford, Haddaway, Usieta, Pypers, Petrovan and Sutherland 2018). Thus, for improved and sustained cassava production in Owerri-West Southeastern Nigeria, Akwatakwa, Obanyanyam and Nwajeni respectively are the most suitable varieties.

Conclusion

The study showed that there were significant differences across all the agronomic traits observed among the varieties evaluated. Rank summation index identified and selected Akwatakwa, Obanyanyam and Nwajeni (Okuku locals) respectively the best for cassava production in the study area.

Recommendations

From this study it is observed that some of the Okuku locals outperformed the newly introduced varieties. It is therefore recommended that the Okuku locals be used as parents in breeding programs and farmers can continue using the local varieties until better varieties are obtained.

REFERENCES

Akinwale, M. G., Akinyele, B. O., Odiyi, A. C., and Dixon, A. G. O. (2010). Geneticvariability among cassava genotypes using agronomic and morphological characteristics. World Journal of Agricultural Sciences, 6(3), 285–290.

Aina, O.O., Dixon, A.G.O, and Akinrinde, E.A. (2009). GxE interaction effects on yield and yield components of cassava (landraces and improved) genotypes in the Savanna regions of Nigeria. *African Journal of Biotecknology.*

Agahiu, A.E., Baiyeri, K.P., and Ogbuji, R.O. (2011). "Correlation analysis of tuber yield and yield related characteristics in two cassava (Manihot esculenta Crantz) morphological – types grown under nine management system in the Guinea Savanna Zone of Nigeria," *Journal of Applied Bio Sciences,* vol. 48. Pp. 3316- 3321.

Ano, C.U., Ochwo-Ssemalula. M., Ibanda, A., Ozimati, A., Gibson, P., Onyeka, J., Njoku, D.,Egesi, C, and Kawuki, R.S 2021). Cassava Brown Streak Disease Response and Association with AGRONOMIC Traits in Elite Nigerian Cassava Cultivars. Font. Plant Sci. 12-720532.doi: 10.3389/fpls.2021.7205532.

Ekanayake, I.J., Osiru, D.S.O., and Porto, M.C.M (1997). Agronomy of cassava IITA Research Guide 60, IITA, Ibadan, Nigeria.

Eke-Okoro, O. N., and Dixon, A. G. O. (2000). Influence of genotype × environment interaction on the productivity and stability of improved cassava genotypes in humid ecozones of Nigeria. *Nigerian Agricultural Journal, 31*, 125–133.

Eke-Okoro, O.N, and Njoku, D.N (2012). A review of cassava development in Nigeria from 1940-2010. ARPN *J.Biol. Sci* 7

FAO. (2014). *Food outlook: Biannual report on global food markets*. Food and Agricultural Organization of the United Nations.

Food and Agricultural Organization of the United Nations, FAOSTAT FAO Statistic Database (2021). Available from https//www.fao.org/faostst/en#data/QCL.

Howeler, R. (2014). Sustainable cassava production in Asia: A review. CIAT, Vietnam.

IITA. (2021). Performance and stability of improved cassava clones in demand-creation trials across Nigeria. IITA Publications Repositry. Retrieved from https://biblio.1.iita.org/nandle/20.500.12478/8273

Ikeh, A. O., Ndaeyo, N. U., Udoh, E.I., Ibroko, K.O and Udounang, P.I (2012). Growth and yield of cassava (Manihot esculenta Crantz) as influenced by the number of shoots retained per stand on an utisol. http://www.sciencepub.net/nature

Jiwuba, L., Danquah, A, Asante, I, Blay, E, Onyeka, J, Danquah, E, and Egesi, C (2020). Genotype by environment interaction on resistance to cassava green mite, associated traits and effects on yield performance of cassava genotypes in Nigeria. *Front .plant sci*. 11:572200:doi: 10.3389/fpls. 2020. 572200.

Komolafe, R.J., Ariyo, O.J., Alake, C.O.(2021). Diversity in Phenotypic Traits and Mineral Elements of Okra (Ablemoscus esculentus I,. Moench) Genotypes. Int. J. Agronomy 2021:1014. 10.1155/2021/5528703 [DOI] [Google Scholar]

Melifonwu, A., James, B., Aihou, K., Weise, S., Awah, E and Gbaguidi, B. (2000). Manual weed control in cassava farms: IPM field guide for extension agents IITA, Cotonou Benin P. 28.

Mulamba, N.N. and Mock, J.J. (1978). Improvement of yield potential of the Eto Bianco maize (Zea mays). ARPN *Journal of Agricultural and Biological Sciences. 3(*2), 23-29

Mulualem, T and Ayenew, B. (2012). Cassava (Manihot esculenta Crantz) varieties and harvesting stages influenced yield and yield related components, *Journal of natural sciences Research*, Vol. 2, no. 10, pp. 122-128.

Nkonya, E., Ponder, J., Kato, E., Omobowale, O., Phillip, D., and Ehui, S (2019). Enhancing Agricultural Productivity and Profitability in Nigeria' Nigeria Strategy Support Program, Brief Number 19; International Food Policy Research Institute; Washing, DC, USA.

Ntawuruhunga, P, and Dixon, A. (2010). Quantitative variation and interrelationship between factors influencing cassava yield," Journal of applied Biosciences, vol, 26, pp.594-1602

Nweke, F. I., Spencer, D. S. C., and Lynam, J. K. (2002). The cassava transformation. Michigan State University Press, pp. 44–45.

Nwosu, F. O., and Gbolagun, A. O (2021). An analysis of the efficiency of cassava production in Imo State South- East, Nigeria (a stochastic frontier approach*). Direct Research Journal Agriculture and Food Science Vol*, 9, pp 282-289, ISSN 2354-4147.

Obi, I. U. (2002). Statistical methods of detecting differences between treatment means and research methodology issues in laboratory and field experiments. Snapp Press (Nig.) Ltd, Enugu.

Ogbuekiri, H., Ogbe, O.C and Kolawole, O.F. (2023). Yield Performance and Agronomic Evaluation of selected Yellow Cassava Genotypes in Nigeria. *Nigeria Agricultural Journal,54(1).*

Olojede, A.O., Okereke, O.U. and Ikeorgu, J.E.G (2002). Evaluation of new cassava genotypes for intercropping in a cassava –based system of Southeastern Nigeria. *Nigeria Agricultural journal, vol.33*

Ogwuche, T.O., Diebiro-Ojo, M.E., Najimu, A., Ossai, C.U., Ekanem, U., Adegbite, B., Onyebode, C and Kulakow, P (2023). Performance of and Stability of Improved Cassava (*Manihot esculenta Crantz)* Clones in Demand Creation Trail in Nigeria. Crops, 3.209 219,https//doi.org/10.3390/crops3030020.

Sarawat, V., Ratanasriwong, K., Puangprakon, and Jintrawet, A. (2000). "The development of a cassava growth model in Thailand", in *Proceedings of the sixth Regional Workshop*, CABI Publishing, Ho Chi Minh City, Vietnam.

Shackelford, G.E.M Haddaway, N.R., Usieta, H.O., Pypers, P., Petrovan, S.O., Sutherland, W.J. (2018). Cassava farming practices and their agricultural and environmental impacts: a systemic map protocol. Environ Evid 7.30.https.//doi.org/10.1186/S13750-018-0142-2.

Temesgen, B. (2022). Application of Genotype by Environmental Interaction in Crop Enhancement. *International Journal of Research Studies in Agricultural Sciences*. (IJRSAS) 8(12):1-12 doi 10.20431/2454-62224.0802001.

.

HOW TO CITE THIS ARTICLE:

Nwosu, M.U; Ngwuta, A.A; and Onyewuchi, O.P (2026).. Evaluation of the agronomic traits in cassava varieties from okuku in owerri -west, south-eastern. Nigeria – a rank summation index approach. Nigeria Journal Of Plant Breeding (https://pbanjournal.org/), 3(1), 16-23. ISSN: 2814-3531