

ASSESSMENT OF FARMERS' PREFERRED CASSAVA VARIETIES IN BAYELSA WEST AGRICULTURAL ZONE, BAYELSA STATE.

¹Moroyei Ebilade and ²Uchendu Kingsley O.

1: Department of Agricultural Education, School of Vocational and Technical Education, Isaac Jasper Boro College of Education Sagbama, Bayelsa State.

2: Department of Agricultural Economics and Extension, Ignatius Ajuru University of Education Rumuolumeni Port Harcourt Rivers State.

Corresponding author: kingsley.uchendu@iaue.edu.ng

Abstract

The study examined farmers' Preferred cassava varieties in Bayelsa West Agricultural Zone, Bayelsa State, Nigeria. Specifically, the study examined cassava varieties cultivated in the study area, identified the farmers' preferred cassava varieties and ascertained the rationale for farmers' preference for cassava varieties in the study area. The study adopted a descriptive survey. The sample size of 200 registered cassava farmers was drawn through a multistage sampling procedure, which involved purposive and proportionate random sampling techniques at various stages. Data were collected using structured questionnaire that was validated using test re-test method. Data were analyzed using frequency counts, percentage and sum for objectives 1, 2 and 3. Farmers' preferred cassava varieties and the rationale for their preference were ranked. The findings showed that: 58.00% of the respondents cultivated Sunshine and TME 419 varieties. 56.00% of the farmers cultivated both Obasanjo 2 (TMS 13f1343) and Poundable (TME 693). Findings on preferred cassava varieties, Sunshine is ranked as the most preferred cassava variety among the respondents (20.0%), followed by Hope (NR130124) variety which was ranked second (18.5%). The findings further confirms that farmers' rationale for cassava varieties preference was based on yield as the most ranked trait followed by disease resistance and adaptation to local conditions. The study concluded that most of the cassava varieties introduced in the study area, such as: Sunshine varieties, TME 419, Hope (NR130124), Obasanjo 2 (TMS 13f1343), Poundable (TME 693), and Game Changer (TME 13f1160) are being cultivated by farmers in the area. We therefore recommend that Agricultural research centers saddled with the responsibility of developing cassava varieties should work closely with agricultural extension service organizations and cassava farmers to develop and promote the preferred cassava varieties such as Sunshine, Hope (NR130124), among others, for onward adoption in the study area.

Keywords: Cassava Varieties, Assessment of farmers' Preferred varieties

Introduction

Cassava (*Manihotesculenta, Crantz.*) is among the staple food crop that is widely cultivated by rural, peri-urban and urban dwellers in Africa (Banmeke, Emola, Akeredolu-Ade, Kareem & Hussain, 2022). According to Abdoulaye, Abass, Maziya-Dixon, Tarawali, Okechukwu, Rusike, Alene, Manyong and Ayedun (2014) as cited in Ojeleye (2018), as a regional asset, cassava serves as one of the most vital basic food sources for over 200 million people living in Sub-Sahara Africa. In West African sub-region, cassava is the most grown food crop due to its value in the sub-regional economy service. According to Mondo, Ireng, Ayagirew, Donsop-Nguezet, Karume, Njukwe, Mapatano, Zamukulu, Basimine, Musungayi, Mbusa, Kazam-Wali, Civava and Mushagalusa (2019) and Acheampong, Onwusu and Nurah (2018), cassava is considered as the number one crop with high economic transforming value in the region. In Nigeria, cassava is recognized as essential commodity that has the potential to create the needed economic transformation, address the twin problems of food insecurity and mal-nutrition, reduce poverty and generate foreign exchange.

Essentially, cassava production in Nigeria do not only serve as source of calories, but also an outstanding income generating enterprise for rural households (Ojeleye, 2018). Cassava like other agricultural products, generate both food and income to about 65-70% of the people living in Nigeria. Udoh, Ndoh, Asuquo and Ndaeyo (2005) reported cassava to be a popular energy food in tropical regions with prolific yield and production, noting that the crop has successfully replaced cocoyam and yam, and it is said to provide up to 40% of all the calories consumed in most African households. Cassava production is critical to Nigeria economy

because over 70% of people living in the country especially in rural areas depends largely on cassava for food, income, employment generation, and foreign exchange, raw materials for industrial and pharmaceutical products. Based on these, several attempts have been made by Nigerian government and other relevant stakeholders within the food sector to ensure increase in supply and availability of cassava in Nigeria.

In attempt to boost cassava production and to reduce the twin problem so final-nutrition and food insecurity, the International Institute of Tropical Agriculture (IITA), in partnership with other national partners and the United Nations Children's Fund (UNICEF) collaborate to develop Cassava Mosaic Disease (CMD) resistant, starch and high yielding cassava (Kolawole, Agbetoye & Ogunlowo, 2010). Notably, within the period of 2002-2010, IITA through their Research for Development (RFD) project known as Integrated Cassava Project (ICP), supported the government effort to boost cassava production. This effort came in form of presidential initiative in 2002 during the administration of the then President Olusegun Obansajo. It is as a result of this effort that the IITA through Agricultural Development Programme (ADP) and National Agricultural Research Service (NARS) widely promoted more than 40 old and new cassava varieties to Nigerian cassava farmers (Abdoulaye et al., 2014). The choices of cassava varieties to be cultivated depends largely on the farmer's preference. Since preference is a foundational concept that explains an individual's inclination to choose one option, outcome, or course of action over others when multiple alternatives are available (Hausman, 2015). Some farmers may prefer the starchy variety, others may choose to cultivate the CMD resistant variety, yet another may decide to produce the high yielding variety.

Also, the choice of cassava varieties to be cultivated by the farmers depends on other factors such as the geographical location, size of farm, type of farmer, capital outlay, land tenure system and ownership, government policy, return on investment, and agronomic practices employed (Okonkwo & Eyaba, 2020). Cassava farmers' preference can also be based on taste and colour of the produce, as well as subjective importance farmers place on the stem (Wale, Mburu, Holm-Miller,&Zeller, 2005; Acheampong et al., 2018). The adoption of farmers' preferred cassava varieties, in addition to good agronomic practices, have been found to increase output per unit land area by not less than forty percent (40%) (Mondo et al., 2019). The successful extension dissemination and farmers adoption of cassava technology could be improved through the understanding of farmer's choice of varieties.

Statement of the Problem

Cassava farmers in Nigeria have continued to witness and record low output in production (Abdoulaye et al., 2014). This continued yield gap is largely attributed to the cultivation of suboptimal varieties that fail to meet the unique agro-ecological realities and socio-economic needs of local farmers including seasonal flooding, acidic soils, high humidity and continuous infestation of pests and diseases such as cassava mosaic disease and cassava brown streak disease. These conditions requires the cultivation of varieties with specific traits including high yield potential, early maturity, flood tolerance, disease resistance and good processing qualities for garri, fufu, and starch production. Yet, there is limited empirical data on which cassava varieties farmers in Bayelsa West Agricultural Zone actually prefer. This knowledge gap has serious implications, including making extension services to often promote varieties that farmers perceive as unsuitable, leading to low adoption rates, continued use of low-yielding varieties and increased vulnerability to climate

variability and food insecurity. This study therefore seeks to assess farmers' preferred cassava varieties in Bayelsa West Agricultural Zone, Bayelsa State, Nigeria.

Aim and Objectives

The aim of the study was to assess farmers' preferred cassava varieties in Bayelsa West Agricultural Zone, Bayelsa State, Nigeria. Specifically, the study:

- i. identified cassava varieties cultivated in Bayelsa Central and Bayelsa West Agricultural Zones;
- ii. determined the preferred cassava varieties among the farmers in the study area; and
- iii. ascertained the rationale behind farmers' preference for cassava varieties in the study area.

Methodology

The study was conducted in Bayelsa West Agricultural Zone in Bayelsa State (overall coordinates 4.750°N, 6.083°E), located in the Niger Delta region of southern Nigeria. Bayelsa West Agricultural Zone is one of the three agricultural zones in Bayelsa State. It is made up of two Local Government Areas (LGAs) - Sagbama LGA and Ekeremor LGA (Wauton, Odinwa & Ekeogu, 2022).

Sagbama LGA is one of the eight LGAs in Bayelsa State. It serves as the headquarters for the Bayelsa West Senatorial District. The LGA lies at approximately 5.15°N, 6.20°E in the freshwater swamp forest and lowland rainforest ecological zone of the state. The LGA spans an area of about 945 km² with generally flat, low-lying topography (0–20 m above sea level), with numerous rivers, creeks and seasonal flooding. Sagbama LGA is bounded by Ekeremor LGA to the west, Kolokuma/Opokuma and Yenagoa LGAs to the east/northeast, Southern Ijaw LGA to the south/southeast and Patani LGA (Delta State) to the northwest. Major livelihood activities in Sagbama LGA is subsistence-based

agriculture, integrated with fishing due to the deltaic environment with crop cultivation (including cassava, rice (prominent in floodplains), yam, cocoyam, plantain, banana, maize, sweet potato, oil palm, rubber, coconut, raffia palm, cocoa, okra, pepper, tomatoes, sugarcane, pineapple, citrus and mango), fishing and aquaculture, livestock rearing (mainly poultry, goats, and pigs and collection of non-timber forest products.

Ekeremor LGA is one of the eight LGAs in Bayelsa State. It is part of Bayelsa West Senatorial District. The LGA lies at approximately 5.05°N, 5.78°E in the freshwater swamp forest and lowland rainforest ecological zone of the state. The LGA spans an area of about 945 km² with generally flat, low-lying topography (0–20 m above sea level), with numerous rivers, creeks, swamps, and a coastline of about 60 km along the Bight of Bonny to the south. The LGA is bounded by:Delta State to the west and northwest, Sagbama LGA to the east, the Atlantic Ocean (Bight of Bonny) to the south and the transitional zones with other western Bayelsa communities. The primary occupation in Sagbama LGA is agriculture, integrated with fishing due to the deltaic environment with crop cultivation (including cassava, rice (prominent in floodplains), yam, cocoyam, plantain, banana, maize, sweet potato, oil palm, rubber, coconut, raffia palm, cocoa, okra, pepper, tomatoes, sugarcane, pineapple, citrus and mango), fishing and aquaculture, livestock rearing (mainly poultry, goats, and pigs and collection of non-timber forest products.

A multi-stage sampling procedure was used to select 200 hundred farmers from the population of 1,148 cassava farmers who are registered with Bayelsa State Agricultural Development Program (ADP) (Bayelsa State ADP, 2024). In the first stage, the two LGAs were selected to ensure that there was adequate representation of the sample across the study area. In the second stage, 20% of the total communities in each LGA were selected. Thus, from Sagbama LGA, seven (7) (out of thirty-eight (38) communities were selected and six (6) (out of twenty-eight (28) communities from

Ekeremor LGA. In the third (final) stage, 93 and 107 cassava farmers were selected from Sagbama and Ekeremor LGAs respectively giving a total of 200 (representing 52%) out of 387 registered cassava farmers in the selected communities. A structured questionnaire that was reliably tested using test re-test method and Cronbach Alpha correlation value of 0.88 obtained, and validated by Agricultural Extension professionals in the department of Agricultural Economics and Extension, Ignatius Ajuru University of Education Rumuolumeni, Port Harcourt Nigeria, were used to collect data for the study. Frequency and percentage were used to analyze the data and the responses on the farmers' preferred cassava varieties and the rationale for their preference were ranked.

Results

Cassava Varieties Cultivated in Bayelsa Central and Bayelsa West Agricultural Zones

The various cassava varieties developed in Nigeria and other countries and are reported cultivated in Bayelsa Central and Bayelsa West Agricultural Zones are presented in Table 1.

Table

1: Distribution of Respondents According to Cassava Varieties Cultivated in the study area.

Cassava Varieties	Frequency(n=200)	Percentage(%)
TME419	116	58.0
Sunshine	116	58.0
GameChanger(TME13f1160)	111	55.5
Hope(NR130124)	115	57.5
Obasanjo2(TMS13f1343)	112	56.0

Poundable(TME693) 112 56.0

Source: Fieldsurvey, 2025; Multiple responses

Table 1 showsthecassavavarietiescultivated bytherespondents. TheTablerecordedthat58.0%oftherespondentscultivated TME 419 and Sunshine,57.5%grew Hope(NR130124)variety, 55.72%cultivatedObasanjo2(TMS13f1343)andPoundable (TME 693) and 55.0%cultivatedGameChanger(TME13f1160). Thisimpliesthatcassavafarmers in the study area cultivatedallthestudiedvarieties.

Farmers'PreferredCassavaVarietiesinBayelsaState

ThecassavavarietiespreferredbythecassavafarmersarepresentedinTable4.4.

Table

2: Respondents' Distribution According to the Preferred Cassava Varieties in the Study Area

Cassava Varieties	Frequency(n= 200)	Percentage(%)	Rank
TME419	33	16.5	3rd
Sunshine	40	20.0	1st
Poundable(TME693)	30	15.0	5th
Obasanjo2(TMS13f1343)	32	16.0	4th
Hope(NR130124)	37	18.5	2nd

GameChanger(TME13f1160)	28	14.0	6th
-------------------------	----	------	-----

Source:Fieldsurvey,a2025

Table 2: showsthecassavavarietiespreferredbythefarmers.The resultshowedthat in rank order, Sunshine is the most preferred cassava variety among the respondents (20.0%), followed by Hope (NR130124) variety which was ranked 2nd (18.5%), and TME 419 was ranked 3rd (16.5%). Others are Obasanjo 2 (TMS 13f1343), Poundable (TME 693) and Game Changer (TME 13f1160), which ranked 4th (16.0%), 5th (15.0%) and 6th (14.0%) respectively.

Rationale for Preferred Cassava Varieties by Farmers in Bayelsa State.

The rationale behind farmers' preference for cassava varieties are represented in Table 3

Table 3: Respondents' Distribution According to their Rationale for Cassava Varieties Preference in the Study Area

Rationale Cassava variety	Yield	Diseaser esistant	Culinary quality	Taste	Adaptation to local condition	Market demand	Cultural and traditional demand	Income ratio
TME419	61(30.50)	43(21.50)	8(4.00)	11(5.50)	31(15.50)	10(5.00)	19(9.50)	7(3.50)
Sunshine	48(24.00)	26(13.00)	27(13.50)	12(6.00)	22(11.00)	14(7.00)	10(5.00)	29(14.50)
GameChanger(TME13f160)	62(31.00)	36(18.00)	16(8.00)	11(5.50)	33(16.50)	13(6.50)	8(4.00)	19(9.50)
Hope(NR130124)	48(24.00)	36(18.00)	21(10.50)	14(7.00)	28(14.00)	18(9.00)	8(4.00)	14(7.00)
Obasanjo ² (TMS13f1343)	54(27.00)	43(21.50)	15(7.50)	12(6.00)	30(15.00)	16(8.00)	10(5.00)	11(5.50)
Poundable(TME693)	47(23.50)	18(16.00)	16(8.00)	15(7.50)	31(15.50)	18(9.00)	13(6.50)	11(5.50)
Total	320	202	103	75	174	89	68	91
Rank	1st	2nd	4th	8th	3rd	6th	9th	5th

Source: Field survey, 2025; multiple responses

Table

3

showstherationaleforcassavafarmers'preferencefordifferentcassavavarieties.OnthepreferenceforTMS419,thetableindicatedthat30.50%oftherespondentsbasedtheirpreferenceonyield,21.50%preferencewasbasedondiseaseresistant,15.50%wasonadaptationtolocalconditions,9.50%preferredthevarietybasedon indicated cultural and traditional demands., 5.50% based their preference on taste, 5.00% based their preference on market demand and risk management, 4.00% based their preference on culinary quality 3.50 was based on income generation.

ForSunshinevariety:amongtherespondents,24.00%preferreditbecauseofyield,14.50%wasbasedonincomegeneration,13.50%preferencewasonculinaryquality,13.00%indicateddiseaseresistant,11.00%preferreditbasedonadaptationtolocalconditions,7.00%basedtheirpreferenceonmarketdemand,thatof 6.00%wasontasteandriskmanagement,and 5.00%oftherespondentspreferredthevarietyduetoitsculturalandtraditionaldemands.

ConcerningtheGameChanger(TME13fl160)variety,31.00%oftherespondentspreferreditbasedonitsyield,18.00%preferencewasbasedondiseaseresistant,16.50%wasbasedonadaptationtolocalconditions,wasduetoincomegeneration, 9.50% based their preference on market demand, 8.00%wasbecauseofitsculinaryquality, thepreferenceof5.50%wasontaste,4.00%notedculturalandtraditionaldemandsand 1.00%citedriskmanagementastheirbasisforthecassavavarietypreferences.

Fortherespondents'preferenceforHope(NR130124)variety,Table4.5showedthat 24.00%markedyieldasthebasisfortheirpreference,18.00%wasbecauseofdiseaseresistant,14.00

%was on adaptation to local conditions, 10.50% indicated culinary quality, 9.00% showed market demand, 7.00% preference was on taste and income generation, 6.50% indicated risk management and 4.00% preference was based on cultural and traditional demands.

Obasanjo 2 (TMS 13f1343) variety: among the respondents, 27.00% preferred it based on yield, 21.50% was on disease resistant, 15.00% preference was based on adaptation to local conditions, 8.00% indicated market demand, 7.50% noted culinary quality, 6.00% showed taste as their basis for preference, 5.50% identified income generation, 5.00% noted cultural and traditional demands, and 4.50% marked risk management.

For the Poundable (TME 693) variety, 23.50% of the respondents indicated that their preference was based on yield, 16.00% indicated disease resistant, 15.50% showed adaptation to local conditions and risk management, 9.00% noted market demand, 8.00% indicated culinary quality, 7.50% identified taste, 6.50% pointed at cultural and traditional demands, and 5.50% indicated income generation. In rational preference ranking, from the table, yield is ranked first, followed by disease resistant (2nd), adaptation to local conditions (3rd), culinary quality (4th), income generation (5th), market demand (6th), risk management (7th), taste (8th) and cultural and traditional demands (9th).

Discussion of Findings

From the findings, different cassava varieties were cultivated in the study area, with reasonable number of the respondents cultivating each variety. This corroborate with the findings of Nwachukwu and Apu (2018), who in their study, reported that 70.3% of their respondents adopted TMS 30572 and 65.6% adopted NR 8082 cassava varieties in Abia State.

The findings also suggested that among the number of cassava technologies cultivated, Sunshine was considered as the most preferred cassava among the farmers. This could be it possessed features that are satisfying to the farmers. Rural farmers exhibit carefulness while selecting crop to be cultivated.

The findings on the rationale for cassava varieties preference among farmers are shaped by a number of factors such as agronomic, economic, cultural and risk. The preference of TME 419 (21.05%) and Sunshine varieties (19.81%), especially by larger number of cassava farmers in Bayelsa State may be because these varieties possess better traits, such as diseases resistance, high yield, and ability to remain in soil after maturation, among others, that are beneficial to the farmers. Aluko, Shaib-Rahim and Ogunwale (2019) had reported that rural cassava farmers in Nigeria preferred certain cassava varieties over others based on certain characteristics which they prefer.

References

- Abdoulaye, T., Abass, A., Maziya-Dixon, B., Tarawali, G., Okechukwu, R., Rusike, J., Alene, A., Manyong, V., & Ayedun, B. (2014). Awareness and adoption of improved cassava varieties and processing technologies in Nigeria. *Journal of Development of Agricultural Economies*, 6(2), 67-75.
- Aluko, O. J., Shaib-Rahim, H. O., & Ogunwale, O. G. (2019). Adoption of improved cassava varieties by the women farmers in Akinyele Local Government Area of Oyo State. *International Journal of Environment, Agriculture and Biotechnology*, 4(4), 161-165.
- Banmeke, T. O. A., Emola, D. C., Akeredolu-Ade, B. I., Kareem, R. F., & Hussain, L. A. (2022). Content of YouTube videos on cassava production and processing in Nigeria. *Journal of Agricultural Extension*, 25(4), 62-71.
- Hausman, D. M. (2015). *Preference, value, choice, and welfare*. Cambridge University Press.
- Kolawole, P. O., Agbetoye, L., & Ogunlowo, S. A. (2010). Sustaining world food security with improved cassava processing technology: The Nigeria experience. *Sustainability*, 2(12), 3681-3694.

- Mondo, J.M., Ireng, A.B., Ayagirew, R.B.B., Dontsop-Nguezet, P.M., Karume, K., Njukwe, E., Mapatano, S.M., Zamukulu, P.M., Basimine, G.C., Musungayi, E.M., Mbusa, H.K., Kazam-Wali, L.M., Civava, R., & Mushagalusa, G.M. (2019). Determinants of adoption and farmers' preferences for cassava varieties in Kabare Territory, Eastern Democratic Republic of Congo. *American Journal of Rural Development*, 7(2), 44-52.
- Nwachukwu, I., & Apu, U. (2018). Comparative analysis of the factors affecting the adoption of two improved cassava varieties (TMS30572 and NR8082) in Abia State. *Nigerian Agricultural Journal*, 39(2), 108-113.
- Okonkwo, K., & Eyangba, A.G. (2020). Comparative studies of four varieties of *Manihot esculenta* Crantz. *Research Journal of Botany*, 15(1), 1-5.
- Wale, E.Z., Mburu, J., Holm-Miller, K., & Zeller, M. (2005). Economic analysis of farmers' preference for coffee variety attributes: lessons for on-farm conservation and technology adoption in Ethiopia. *Quarter. Journal of International Agriculture*, 44(1), 121-139.
- Wauton, E.O., Odinwa, A.B., & Ekeogu, C.O. (2022). Evaluation of agricultural projects and Extension Services of the Bayelsa State Agricultural Development Programme (ADP). *Asian Journal of Agricultural Extension, Economics & Sociology*, 1-11.