

Co-operative Membership and Benefits Accruable to Cassava Producers in Enugu State, Nigeria

Itodo, Emeka Paul

Department of Co-operative Economics and Management, Enugu State University of Science and Technology, Enugu State, Nigeria. <https://orcid.org/0009-0000-7923-2063>

*Corresponding Author: Itodo, Emeka Paul

DOI: <https://doi.org/10.5281/zenodo.21794490>

Article History	Abstract
Original Research Article	
Received: 06-06-2026	
Accepted: 11-07-2026	
Published: 04-08-2026	
Copyright © 2026 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.	
Citation: Itodo, E.P. (2026). Co-operative membership and benefits accruable to cassava producers in Enugu State, Nigeria. UKR Journal of Economics, Business and Management, 2(8), 39-46.	<i>The study looked at co-operative membership and benefits available to Nigerian cassava farmers in Enugu State, Nigeria. Three hundred and twenty-four (324) members of registered co-operative societies were sampled using simple random sampling as part of a descriptive survey research design. A structured questionnaire was used to collect the data, and its validity was assessed for both content and clarity. Cronbach's Alpha was used to assess the instrument's reliability; the results showed a coefficient of 0.82, indicating consistent and reliable results. For data analysis, frequency tables and percentages were employed, and for testing hypotheses, the Chi sq\ (χ²) statistic was employed. According to the study, cassava producers in Enugu State can benefit greatly from co-operative membership (χ² = 70.671 > 11.07), but they also face a number of interconnected difficulties (χ² = 38.888 > 15.507). By enhancing their access to essential inputs, technical expertise, and training opportunities, co-operative participation greatly increases cassava farmers' income, investment potential, and market engagement. Notwithstanding these advancements, persistent problems like inadequate funding, subpar infrastructure, and weak institutional support still prevent farmers from reaching maximum productivity and economic efficiency. Improved cassava varieties, ongoing farmer training, and easily accessible funding are all ways that the government and development organizations should strengthen their support for co-operatives. These initiatives will boost investment, maintain productivity gains, and improve members' standard of living throughout Enugu State. Stronger ties between co-operative banks, improved infrastructure, and accessible credit should all be given top priority in policy. e</i> Keyword: Co-operative Effect, Rural Empowerment, Agricultural Productivity, Institutional Support, Enugu State.

INTRODUCTION

The perennial root crop known as cassava (*Manihot esculenta* Crantz) is widely grown in the tropical lowlands due to its high starch content and ability to adapt to a variety of agroecological conditions. It is mainly propagated through stem cuttings. It is still one of the most crucial crops for food security in many developing nations, especially in Africa. An estimated 278 million metric tons of cassava were produced worldwide in 2018, with nearly 61 percent coming from Africa, according to FAO STAT (2019). Nigeria continued to be the world's top producer, with 42.5 million metric tons, or about 18% of the total. Nigeria's share of global cassava production increased to roughly

21.5% by 2018. Additionally, according to FAO STAT (2019), Sub-Saharan African nations would produce nearly 62% of the world's cassava by 2025, underscoring the region's increasing importance in the global cassava market.

Cassava is still mostly used as a food crop throughout Africa, with households directly consuming 88% of the crop's production. Before being consumed, more than half of this amount is processed into various food items (Oyewole & Eforuoku, 2019). Comparatively smaller amounts are used for industrial uses like ethanol production, starch extraction, and other manufacturing

processes, as well as animal feed. However, current trends show that cassava is progressively moving away from its customary use as a subsistence crop and toward becoming a significant commercial and industrial commodity in a number of African nations (Reincke *et al.*, 2018). Nigeria has continuously remained the world's top producer of cassava. The nation recorded about 57.64 million metric tons in 2015, which amounts to about 20.8 percent of the world's total output and roughly 37.3 percent of Africa's production. The country's productivity is still quite low in spite of this remarkable production volume. According to estimates, average yields are roughly 13.63 metric tons per hectare, which is significantly less than the potential yield of about 40 metric tons per hectare under improved production techniques (Nnadozie *et al.*, 2015).

In Nigeria, cassava is mostly grown by small-scale farming households using basic farm tools and traditional production techniques. Access to farmland is typically acquired through inheritance, communal ownership, or rental agreements, and the majority of producers cultivate relatively small landholdings, usually less than two hectares. Inadequate access to financing, a lack of formal agricultural credit, and a lack of investment capital among rural farmers further limit production expansion (Oguntuase *et al.*, 2015). Furthermore, processing operations have traditionally relied on time-consuming, labor-intensive traditional methods. Less than 5% of the nation's total cassava output is used industrially, despite the fact that the introduction of better processing technologies has progressively decreased labor requirements and increased processing efficiency, encouraging greater production (Shittu *et al.* 2016).

Co-operative societies are becoming more and more significant institutional platforms in this production environment for addressing many of the challenges faced by cassava farmers. Members can access better planting materials, agricultural inputs, extension assistance, technical expertise, production training, and timely market information by joining co-operative organizations. Co-operative members are also better positioned to negotiate favorable prices, lessen middleman exploitation, and increase their overall market competitiveness through collective marketing and bargaining (Ojiagu & Onoh, 2017). These institutional benefits boost household income, increase production efficiency, strengthen farmers' ability to weather market swings, and encourage more extensive rural economic development. As a result, agricultural co-operatives are still crucial for promoting sustainable livelihoods and raising farming communities' socioeconomic standards.

The effectiveness of co-operative participation in cassava production is still constrained by a number of issues,

despite these contributions. The potential advantages of membership are diminished by farmers' continued lack of access to agricultural mechanization, inadequate rural transportation infrastructure, inadequate storage and processing facilities, and, in certain cases, weak managerial capacity within co-operative organizations (Abdul-Rahaman & Abdulai, 2018). Furthermore, the profitability, productivity, and long-term sustainability of cassava farming are still impacted by enduring structural limitations, such as unstable land tenure systems, shifting climatic conditions, and inconsistent agricultural policies. As a result, even though co-operative societies offer beneficial support services, many cassava growers still have to deal with low yields, little productivity growth, and comparatively small financial gains from their operations.

In light of this, this study looks at the advantages that Enugu State's cassava farmers receive from joining co-operative societies while also examining the main issues that still have an impact on their production activities. The goal of the study is to produce empirical data that will help policymakers, agricultural development organizations, co-operative administrators, and other pertinent stakeholders develop strategies that can boost co-operative societies' efficacy, enhance the standard of living for cassava farmers, and encourage sustainable development throughout the cassava value chain.

LITERATURE REVIEW

Co-operatives

A co-operative is "an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly owned and democratically controlled enterprise," according to the International Co-operative Alliance (1995). Therefore, a co-operative is a member-owned and member-governed organization that was founded to advance the shared interests of its members via equitable participation, shared ownership, and group decision-making. In co-operative businesses, members share management responsibilities as well as the profits from operations. According to Novkovic and Miner (2021), these organizations function according to democratic principles, wherein all members have equal voting rights regardless of the amount of capital invested. Co-operatives emphasize long-term socio-economic development over short-term financial returns in order to create sustainable value for their members and the larger community, in contrast to traditional business organizations that prioritize profit maximization. By using this strategy, they boost local economies, create jobs, and improve community resilience (Cheney *et al.* 2019). Additionally, co-operatives contribute significantly to environmental sustainability and societal welfare by encouraging moral business practices, social responsibility, and environmental

stewardship (Carini & Carpita, 2020). As a result, the co-operative model is an equitable and participatory form of business that places a high priority on sustainable economic growth, inclusive development, and collective prosperity.

The Co-operative Effect and Benefits

The co-operative effect, a term coined by Chukwu (1990) to explain the extra benefits people receive from working together as opposed to alone—is frequently used to characterize the advantages of belonging to co-operative societies. By showing the general improvement in members' socioeconomic circumstances both before and after joining a co-operative organization, the co-operative effect goes beyond short-term financial gains. Investment opportunities are a significant aspect of this effect. High production costs and decreased operational efficiency are the results of many smallholder farmers operating under severe financial constraints and lacking the resources necessary to independently purchase modern farm equipment and production technologies. Members of co-operative societies are better able to purchase machinery and other productive assets that would otherwise be out of their individual budgets by pooling financial and material resources. Additionally, co-operatives' credit and savings programs promote consistent saving practices while offering members reasonably priced loans to support investments in agriculture and other sources of income. By combining produce from individual farmers, agricultural marketing co-operatives improve members' economic performance by strengthening their negotiating position, reducing reliance on middlemen, and empowering members to bargain for more favorable market prices. Similar to this, supply co-operatives lower production costs by buying agricultural inputs in large quantities and selling them to members at comparatively low costs. According to Ojiagu and Onoh (2017), farmers in South-East Nigeria who participated in co-operative societies saw a significant increase in their incomes due to better market access and increased negotiating power.

Challenges Facing Cassava Producers

Despite the many benefits of joining a co-operative, cassava growers in Enugu State and many other parts of Nigeria still face a variety of institutional and production difficulties. One of the main obstacles is a lack of funding, which keeps many co-operative societies from hiring skilled workers, keeping efficient financial and administrative records, and investing in cutting-edge agricultural technologies that can boost output. Since many financial institutions are hesitant to lend money to rural farmers and internally generated funds within co-operative societies are often insufficient to finance large-scale agricultural activities, access to formal credit continues to be a persistent challenge. Improved and disease-resistant planting materials are another challenge

for cassava growers, and rising labor costs and agricultural input prices drive up production costs. Mechanized farming and farm expansion are still constrained by restrictive land tenure systems. Inadequate processing and storage facilities also result in significant post-harvest losses, which lower the amount and quality of marketable produce. Farmers who lack access to trustworthy market information are more vulnerable to being taken advantage of by middlemen and having their commodity prices fluctuate, which lowers profitability. Reduced yields and subpar crop quality are also largely caused by the regular occurrence of pests and disease outbreaks. Additionally, institutional support from government agencies is frequently inconsistent and inadequate, with many agricultural programs failing to give co-operative organizations sufficient capacity-building or long-term support.

Theoretical Framework

Mancur Olson's Collective Action Theory (1965), which explains the difficulties groups face in banding together to pursue common goals and generate benefits for all, serves as the foundation for this study. Olson claims that people often have an incentive to refrain from participating in group endeavors because they anticipate reaping the rewards of others' contributions without having to pay for them. As the size of the group grows, this tendency—also known as "free-riding"—becomes more noticeable, making accountability, supervision, and coordination more challenging. As a result, any collective organization's ability to safeguard and advance the interests of its members is crucial to its survival and efficacy. In the absence of such alignment, collective organizations are likely to lose their effectiveness or eventually fail to achieve their goals. The collective action problem, which emerges when reasonable people realize that they may benefit personally by withholding their contributions while still anticipating the results produced by others' efforts, is at the heart of Olson's argument. All members will be worse off than they would have been through active cooperation, though, if every member uses this tactic, making it impossible for the organization to accomplish its goals. This leads to a significant paradox in collective behavior, whereby choices that seem reasonable from an individual standpoint eventually have unfavorable effects on the group. As a result, Olson characterized collective action as a social conundrum where private interests frequently clash with the provision of shared or public benefits. The theory also pinpoints two significant barriers to joining collective organizations. The first is the free-rider incentive, in which people purposefully refrain from making contributions because they anticipate that others will pay for group efforts. The second is the fear of ineffectiveness, which makes members less inclined to actively participate because

they feel that their individual contributions are too small to affect the final result. Olson used examples of labor strikes, protest movements, and social campaigns to highlight these difficulties, where participation is often discouraged by both reasons. As a result, Collective Action Theory offers a suitable framework for comprehending how co-operative societies operate by elucidating why maintaining active member participation can be challenging in the absence of strong institutional mechanisms that promote dedication, responsibility, and collaboration among members.

Empirical Review

Olaosebikan *et al.* (2018) used a mixed-method research design to investigate gender disparities in biofortified cassava production participation throughout Oyo and Benue States. Significant differences between the two states were found in the results. Because they had better market opportunities and stronger institutional ties, male farmers in Oyo State dominated cassava production. On the other hand, due in large part to prevailing consumer preferences, women—including both younger and older female farmers—played more significant roles in cassava processing and marketing activities in Benue State. Inadequate labor availability, inadequate market infrastructure, expensive processing equipment, and limited access to training were all identified by the study as significant barriers to cassava production and value addition. Adebayo (2018) used the double hurdle econometric model and descriptive statistical methods to examine the factors influencing smallholder farmers' access to formal agricultural credit in Kogi State. The results showed that while factors like age, educational attainment, and borrowing costs had a significant impact on the amount of credit accessed, farm size, farming experience, and household income significantly increased farmers' chances of obtaining formal credit facilities. The study also found that significant barriers preventing farmers from obtaining formal agricultural financing included insufficient collateral, drawn-out administrative processes, and hostile staff attitudes at some financial institutions. Solomon (2019) evaluated Delta State farmers' understanding of and approaches to managing cassava diseases. A binary logit model and descriptive statistics were used in the analysis of data gathered from 569 cassava farmers. The findings demonstrated that when it came to information on disease prevention and control, many farmers relied more on other farmers than on agricultural extension agents. The study also found that farmers' knowledge of cassava diseases was highly influenced by factors such as age, educational attainment, farming experience, and farm size. However, the respondents' adoption of

suggested disease management practices remained comparatively low despite having some awareness. Anarah & *et al.* (2019) used multiple regression analysis and structured questionnaires to examine how farmers in Anambra State perceived climate variability and its effects on agricultural output. According to the study, many farmers were aware of discernible changes in the climate that had an impact on their farming operations. Bush burning, overuse of chemical fertilizers, deforestation, and unsustainable land-use practices were listed by respondents as the main human activities causing climate variability. The results showed that by decreasing soil fertility and raising production risks, these environmental practices posed serious risks to cassava productivity.

METHODS

A descriptive survey research design was used in the study. Members of twenty-six (26) primary multipurpose co-operative societies that were registered made up the target population. Using the simple random sampling technique, a sample of 324 respondents was chosen from this group. A structured questionnaire was used to gather primary data, which was then carefully examined to guarantee both content validity and presentation clarity. The Cronbach's Alpha reliability test was used to determine the research instrument's reliability. The test yielded a coefficient of 0.82, indicating that the questionnaire had a high degree of internal consistency and produced trustworthy results. The research objectives were addressed by analyzing data collected from the field using frequency distribution tables and percentage statistics, and the research hypotheses were tested at the 0.05 level of significance using the Chi-Square (χ^2) statistical technique. The expression for the Chi-Square statistic is as follows:

$$\chi^2 = \sum \frac{(o-e)^2}{e}$$

Where: χ^2 = chi – square

o = observed frequency

e = expected frequency

Σ = summation sign

Operational Assumptions

Level of significance 5% = 0.05

Degree of freedom (df) = (r – 1) (c – 1)

Where: r = Number of rows; c =
Number of columns

Decision: Reject the H_0 if χ^2 calculated is > critical or table value, otherwise do not reject H_0

RESULTS

Table 1: Benefits of Cassava Producers through Co-operative Membership

S/N	Variables	Frequency	%
1	Enhanced opportunities for investment	52	16
2	Improved pricing advantages	94	29
3	Greater recognition within formal economic and financial circles	72	22
4	Improved ability to respond to changing market trends	58	18
5	Expanded opportunities for specialization	30	9
6	Educational and training benefits	18	6
Total		324	100

Source: Researcher's field survey, 2025.

Table 2: Challenges Facing Cassava Producers

S/N	Variables	Frequency	%
7	Insufficient capital for production activities	54	17
8	Limited availability of improved cassava varieties	42	13
9	Rising costs of labour and planting materials	32	10
10	Constraints associated with the land tenure system	18	6
11	Limited access to agricultural credit facilities	50	15
12	Inadequate storage and preservation facilities	44	14
13	Limited access to reliable market information	38	11
14	Infestation by pests, disease outbreaks and weed invasion	30	9
15	Inadequate government support and intervention	16	5
Total		324	100

Source: Researcher's field survey, 2025.

The combined results indicate that co-operative membership primarily benefits cassava producers through improved pricing advantages (29%), enhanced recognition in formal economic systems (22%), and better market responsiveness (18%). However, these gains are constrained by insufficient production capital (17%), limited credit access (15%), inadequate storage facilities (14%), and restricted availability of improved cassava varieties (13%), highlighting persistent structural and institutional challenges.

Test of Hypotheses

Testing of Hypothesis 1 (Ho₁): There are no benefits accruable to cassava producers through co-operative membership in Enugu State

The data distribution in table 1 show that six rows and two columns are found, therefore, applicable degree of freedom is $(r-1)(c-1) = (6-1)(2-1) = 5 \times 1 = 5$

Critical value or table value = 11.07

Table 3: Computation of χ^2 Statistics – Refer to table 1 above

S/N	O	E	O – E	(O – E) ²	(O – E) ² /E
1	52	54	-2	4	0.074
2	94	54	40	1600	29.63
3	72	54	18	324	6
4	58	54	4	16	0.3
5	30	54	-24	576	10.667
6	18	54	-36	1296	24
Total	324	324		3816	$\chi^2 = 70.671$

The null hypothesis (H_0) is rejected in favor of the alternative (H_a) because, according to the established decision rule, the computed Chi-square value ($\chi^2 = 70.671$) exceeds the critical threshold of 11.07. This confirms that cassava producers in Enugu State stand to gain significantly from co-operative membership.

Testing of Hypothesis 2 (H_{011}): There are no challenges facing cassava producers in Enugu State

The data distribution in table 2 show that 9 rows and two columns are found, therefore, applicable degree of freedom is $(r-1)(c-1) = (9-1)(2-1) = 8 \times 1 = 8$

Critical value or table value = 15.507

Table 4: Computation of χ^2 Statistics – Refer to table 2 above

S/N	O	E	O – E	(O – E) ²	(O – E) ² /E
7	54	36	18	324	9
8	42	36	6	36	1
9	32	36	-4	16	0.444
10	18	36	-18	324	9
11	50	36	14	196	5.444
12	44	36	8	64	1.778
13	38	36	2	4	0.111
14	30	36	-6	36	1
15	16	36	-20	400	11.111
Total	324	324		1400	$\chi^2 = 38.888$

Following the stated decision criterion, the calculated Chi-square statistic ($\chi^2 = 38.888$) surpasses the critical value of 15.507. Consequently, the null hypothesis is rejected, providing substantial statistical support for the claim that there are diverse challenges facing cassava producers in Enugu State.

DISCUSSION

The findings revealed that there are significant benefits accruable to cassava producers through co-operative membership in Enugu State ($\chi^2 = 70.671 > 11.07$). Membership in co-operatives substantially improved the welfare and income base of cassava farmers in Enugu State. Major benefits identified include expanded investment capacity, favorable pricing, better market adaptability, wider economic recognition, skill development, and training opportunities. These outcomes align with Ojiagu and Onoh (2017), who observed that co-operative participation enhanced farmers' earnings and strengthened their bargaining power in Anambra State. Likewise, Agbo and Chidebelu (2010) emphasized that co-operative membership offered crucial socio-economic advantages that sustained farmers' engagement, particularly among smallholders in Enugu State. The consistency across these studies reinforces the reliability and general relevance of the present results. This study, however, contributes new insights by statistically validating the "co-operative effect" first theorized by Chukwu (1990) through empirical Chi-square analysis. Unlike prior qualitative explorations that

focused primarily on perceived benefits, this research quantitatively demonstrates the tangible influence of co-operatives on investment growth and market responsiveness. These positive outcomes likely stem from collective access to inputs, shared marketing systems, and joint negotiation strategies that reduce middlemen exploitation. Regional differences in infrastructure and leadership capacity may, however, account for variations in the level of benefit experienced. Overall, the study reaffirms co-operatives as vital institutional tools for improving cassava farmers' resilience, productivity, and overall economic stability in southeastern Nigeria.

The study further identified that cassava producers in Enugu State face numerous interrelated challenges ($\chi^2 = 38.888 > 15.507$). Prominent among these are limited capital, poor access to credit, lack of improved cassava varieties, inadequate storage facilities, and weak market information networks among others. These findings resonate with Abdul-Rahaman and Abdulai (2018), who reported similar difficulties among smallholder cassava farmers across rural Africa, particularly restricted credit access and infrastructural deficits. Kuye (2015) also noted that high input costs, limited fertilizer availability, and poor extension services constrained cassava productivity in southwestern Nigeria, patterns consistent with this study's results. The convergence of evidence suggests that production challenges are largely structural and institutional rather than farmer-driven. However, minor deviations from Ojiako *et al.* (2013), who identified labor

and land tenure as more critical issues, may reflect contextual and policy differences across regions. The present study extends understanding by offering empirical validation of these constraints within Enugu's socio-economic environment, demonstrating that co-operative membership alone cannot fully offset systemic barriers. Persistent shortages of credit and farm inputs within co-operatives point to internal administrative weaknesses and insufficient governmental or financial linkages. Addressing these constraints through improved credit systems, stronger institutional coordination, and enhanced rural infrastructure could amplify co-operatives' contribution to poverty reduction and sustainable cassava production in the region.

CONCLUSION AND IMPLICATIONS

Co-operative participation significantly boosts the income, investment potential, and market engagement of cassava farmers in Enugu State by improving their access to vital inputs, technical knowledge, and training opportunities. Despite these gains, ongoing issues such as limited financing, poor infrastructure, and inadequate institutional backing continue to restrict farmers from achieving full productivity and economic efficiency. Government and development agencies should deepen support for co-operatives through accessible funding, continuous farmer training, and improved cassava varieties. Such interventions will sustain productivity gains, stimulate investment, and enhance members' livelihoods across Enugu State. Policies should prioritize affordable credit, better infrastructure, and stronger co-operative bank linkages among others. These actions will ease financial pressure, lower production costs, and improve cassava farmers' market participation.

REFERENCES

1. Abdul-Rahaman, A. & Abdulai, A. (2018). Farmer groups, collective marketing and smallholder farm performance in rural Ghana. *Journal of Agribusiness in Developing and Emerging Economies*, 8(2), 213–234.
2. Adebayo, C.O. (2018). Demand for formal credit among small scale cassava farmers in Kogi State, Nigeria: A double hurdle analysis. *Journal of Tropical Agriculture, Food, Environment and Extension*. 17(2), 45-50.
3. Agbo, F.U. & Chidebelu, S.A.N.D. (2010). Socio-economic determinants of co-operative societies' membership in Enugu State, Nigeria. *Nigerian Journal of Rural Sociology*, 11(1), 48–56.
4. Anarah, S.E., Ezeano, C.I. & Osuafor, O.O. (2019). Perceived effects of climate variability on cassava production among small scale farmers in Anambra State, Nigeria. *Journal of Agricultural Studies*. 7(2), 43-57
5. Carini C, Carpita M. (2020). The impact of co-operative enterprises on social and environmental sustainability. *Sustainability*, 12(4), 1447.
6. Cheney G., Santa Maria, C., & Munoz, E. (2019). Co-operatives and community development: A comparative perspective. *Journal of Co-operative Organization and Management*, 7(1), 1-10.
7. Chukwu, S. C. (1990). Economics of the Co-operative Business Enterprise, Marburg Consult for Self-Help. Marburg.
8. FAO STAT. (2019). Cassava production statistics. Retrieved <http://www.fao.org/faostat>
9. International Co-operative Alliance (ICA) Congress (1995). Centennial Congress and General Assembly. Manchester, United Kingdom
10. Kuye, O.O. (2015). Comparative analysis of constraints to cassava production by cassava farmer loan beneficiaries and loan non-beneficiaries in South-South Nigeria. *Global Journal of Agricultural Research*, 3(3), 38-52.
11. Nnadozie, A.K.O., Ume, S.I., Isiocha, S. & Njoku, I.A. (2015). Nigerian cassava potentials in national economic development. *Science Journal of Business and Management*. 3(5-1): 47-49.
12. Novkovic S, Miner K. (2022). Co-operative governance fit to purpose: Instrumental rationality and member engagement in large co-operatives. *Journal of Co-operative Studies*, 54(1), 5-18.
13. Oguntuase, A., Adebowale, R. & Sanni, L. (2015). CAVA 2 Nigeria Baseline Report.
14. Ojiagu, A. & Onoh, J. (2017). Co-operative societies and smallholder agricultural development. *Nigerian Journal of Co-operative Studies*, 4(1), 22–35.
15. Ojiako, I.A., Ezedinma, C., Okechukwu, R.U. & Asumugha, G.N. (2013). Spatial integration and price transmission in selected cassava products' markets in Nigeria: A Case of Gari. *World Applied Sciences Journal*. 22(9), 1373-1383
16. Olaosebikan, O., Abdulrazaq, B., Owoade, D., Ogunade, A., Aina, O., Ilona, P., Muheebwa, A., Teeken, B., Iluebbey, P., Kulakow, P., Bakare, M. & Parkes, E. (2018). Gender- based constraints affecting biofortified cassava production, processing and marketing among men and women adopters in Oyo and Benue States, Nigeria.

17. Oyewole, M.F. & Eforuoku, F. (2019). Value addition on cassava waste among processors in Oyo State, Nigeria. *Journal of Agricultural Extension*. 23(3), 135-146.
18. Reincke, K., Vilvert, E., Fasse, A., Graef, F., Sieber, S. & Lana, M.A. (2018). Key factors influencing food security of smallholder farmers in Tanzania and the role of cassava as a strategic crop Food Security. 10(4): 911-924.
19. Shittu, T.A., Alimi, B.A., Wahab, B., Sanni, L.O. & Abass, A.B. (2016). Cassava flour and starch: Processing technology and utilization: Tropical Roots and Tubers, Production, processing and technology. John Wiley and Sons Ltd.
20. Solomon, O.E. (2019). Knowledge status and disease control practices of cassava farmers in Delta State, Nigeria: Implications for Extension Delivery. *Journal of Open Agriculture*, 4(1), 22-37.