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Research Article

Socio-economic Disparities among Yam Farmers in Delta State, Nigeria: A Gender Gap Analysis

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Abstract

Agricultural productivity has been seriously affected by climate change and gender inequalities and these have led to high losses for local economies and importations of food abroad. In view of this, the study investigated the socio-economic differences among yam farmers in Delta State, Nigeria: a gender gap analysis. The specific objectives were to: ascertain the gender gaps existing among the farmers as regards to crop production, determine the causes of gender gaps among the farmers and estimate the possible ways to bridge the existing gaps. Multistage sampling techniques were used in this study. Three (3) local governments out of the 25 local governments in the State were used for the research based on their activities on yam production. Two communities per L.G. were purposefully selected due to their active participation in farming activities. This gave a total of 6 communities that were used for the study. Twenty (20) farmers each were randomly sampled from each community and this gave a total of 120 farmers that were used as the sample size. Findings of the study indicated that greater proportions (60%) of the farmers were male, while 40% of them were female. Result also showed that the majority (42.5%) of the farmers who cultivated yam was married, 31.5% were single and 16% were divorced. The average mean age of the yam farmers was 47 years while the average household size was 8 persons. The mean year of yam farming experience was 14 years while the average farm size for yam farmers was 1.21ha. Findings of the study shown that there are gender gaps in terms of yam production in the study areas and those gaps are; limited access to factors of production, poor access to capital investment, inadequate access to education, limited access to technologies and imbalance participation in decision making. As a result of these, the causes of gender gaps are as follows; differences in cultural norms and traditional beliefs, women's limited access to high value crops, effects of climate change and male domination in decision making. The possible ways to bridge the gender gaps among yam farmers in the State are; creation of policy intervention that target women's engagement in the agricultural policy, integrating women in policy formulation and implementation, empowering women through knowledge skills and capacity building, giving women access to have control over land use and other resources and improving women farmers' access to climate-smart agriculture respectively.

Keywords: *Gender Inequalities, Yam farmers, Factors of production, Economic development.*

INTRODUCTION

Investment in agricultural sector improves productivity and employment opportunities, reduces poverty, and enhances sustainable development (World Bank, 2014). This improves that agriculture sector is critical to Nigeria's economic growth and national development.

Yam (*Dioscorea*spp.*)* is a staple food crop in West Africa that provides food for a large percentage of the population. Presently, Nigeria is the largest producer of yam in the world with two-thirds of global yam production each year (Eniola, 2015). Yam is an important crop in Nigeria, andis a highly prized crop in the country when compared to other

crops. It has socio-cultural, medicinal, nutritional and economic value (Amaefula, 2018). Yams are a stable food crops thatdo not only serve as an integral vehicle for food security, but also as a source of income, and employer of labour in the producing areas like Nigeria. West and Central Africa accounted for about 94% of world production with Nigeria as the leading producer in the world accounted for 34 million tons (Toba, 2020). Yam also ranked second after cassava in root and tuber crop production in Nigeria and it is grown in 27 of the 36 States of the country of which the North central zone is the major producer (Eniola,2015). The common species of yams grown in the Nigeria are *Dioscorearotundata* (white yam) and *Dioscoreaalata* (water yam). Yam consumption also cuts across all the States of the federation and this echoes the importance of the crop in Nigerians' diet. According to Eniola (2015), in year 2013, 46 percent of Nigerian households consume yams during post planting season and 53 percent during post-harvest season.

In sub-Saharan Africa, majorities of the rural dwellers relied on agriculture for their livelihood and agriculture which is the major stays of the economy can be hindered as a result of gender inequality. In this case, productivity is seemed to be generally low for women farmers compared to men counterpart (Kilic, Palacios-López& Goldstein, 2015). Based on this, providing access to productive resources for women, along with strategies for reducing gender disparities, should be a priority for policy makers. However, women farmers constitute a heterogeneous group and also face a range of problems, constraints, and other forms of inequality. They may be disadvantaged in access to land (both land size and soil richness), crop choice, tenure security, livestock, education, extension services, and legal and social traditions, among other factors (Mukasa& Salami, 2015) and such disparities may affect their outcomes for production (Kilic, Palacios-López& Goldstein, 2015). As a matter of this Ikhide *et al* (2021), stated that using a gendered computable general equilibrium (CGE) model, is important to investigate both the impact of gender disparities in productivity in the Nigerian agriculture sector and the effects of policy interventions intended to close the gender gap (Ikhide et al,2021). Gender equality in agricultural is very important for sustainable agricultural development. To achieve sustainability in any country of the world, Farmers are particularly in need of gender balance; this is as a result of the seasonal pattern of their activities in crop production.

Studies in sub-Saharan Africa (SSA) countries have assessed the extent of the gender agricultural productivity gap and have made progress towards identifying its underlying causes (Kilic*et al*., 2015). McCarthy and Kilic (2015) analyzed the nexus among gender, collective action and agriculture in Malawi; found that the active participation of women and young adults in social groups improves agricultural productivity and welfare. Aguilar *et al*. (2015); Singbo, Njuguna-Mungai, Yila and Sissoko (2020), indicated a 23.4% gender productivity differential among farms in Ethiopia and found that only 10.1% of this gap can be attributed to the characteristics of the plot manager and that the rest is due to household characteristics and structural disadvantages. Oseni*et al*. (2015) found that the gender productivity gap in Nigeria is primarily due to a knowledge gap in agricultural practices. In the south, asymmetric access to extension services is the main cause of the knowledge gap, while in the north; the knowledge gap is due to an endowment effect. Women have limited access to extension services, which limits the adoption of improved agricultural technology. Karamba and Winters (2015); Singbo, Njuguna-Mungai, Yila and Sissoko (2020), investigated whether participation in an input subsidy program helped reduce the gender gap in Malawi. Their results showed that participation in the program improved the agricultural productivity of both maleand female farmers but did not provide disproportionate help to female farmers to overcome gender disparities in agricultural productivity.

The impact of policy measures to improve the productivity of women farmers and close the gender gap has been in existence according to research, but the economy-wide impacts of gender disparities/ the effects of policy interventions to resolve them are rare (Karamba& Winters, 2015; Ngoma, Machina & Kuteya, 2021; Anderson *et al*., 2021). As a result of this, United Nations Entity for Gender Equality and the Empowerment of Women, *et al* (2015), used a partial-equilibrium approach to estimate the welfare and GDP effects of closing the gender gap in agricultural productivity (Ikhide et al,2021).

Women have been the focus of gender studies and the term 'gender issues' has been widely used to refer to the disparity faced by women in the field of agriculture and other social lives of human endeavors (Anaglo, Boateng, &Boateng, 2014). Gender is; therefore, a term always associated with roles and responsibilities of males and females in the society as a social classification of sex. It is the social cultural difference between males and females as against the biological difference. Gender roles give us an insight into issue affecting women and it is focused mainly on the social and economic structure of a society (Udemezue and Onwuneme, 2017).

In Nigeria and most African Countries, women farmers play a very important role in agriculture (Nduka*et al*, 2020). According to them, Women are regarded as the bedrock of food production particularly in developing countries and they proved that the contributions of women to national development, has been a major area of interest and the focus of a considerable amount of research activity. Based on this, researchers have focused on the dynamic role women have played in changing the rural communities and it has been discovered that women constitute a potential group in rural development combing domestic, procreative and other activities, to ensure survival of their families (Nduka*et al*, 2020).

Women have a principal role in agribusiness, food processing and consumer-related activities. Women perform the bulk of substance production (70%) and the reproductive work (Ndukaet *al*, 2020). The International Labour Organization (2013) in Ndukaet *al* (2020) estimated that 78% of women in Africa are active in agriculture, compared to only 64% of men. Women play pivotal roles in food security because of their strategic position in the household and productive work they do outside (Ndukaet *al*, 2020). They further stated that out of 95% small-scale farmers in Nigeria who actually feed the nation, 55% of them are women. Therefore, women have been found to contribute 60% of the labour force, produce 80% of food, and earn 10% of the monetary income but own one percent of the farm asset.

In most parts of rural Nigeria, division of labour within the households is gender specific and according to age. Men and women perform different roles; have unequal decision-making power as well as differences in access to land and control over agricultural productive resources (Udemezue *et al*, 2021). As a result of these differences, their views, needs, priorities and constraints to improving their productive potentials differ. This affects their various outputs even in agricultural development. Therefore, understanding of gender participation and constraints in food production, processing and marketing among rural farmers in Nigeria is important due to the current threat to food security as a result of the economic recession facing the country and this calls the need to increase and sustain the enterprise among farmers (Udemezue *et al*,2021). This will ensure also effective allocation of resources for increased and sustainable crop development activities, thereby increasing farming outputs for improved livelihoods for the people.

Despite the important roles women play in family farming in Nigeria, they are hardly given any attention in the area of training and/or visitation by extension agents with improved technologies. Banks hardly grant loans to them and are rarely reached with improved seeds, fertilizer, farm inputs, as well as selective in crop production; among others. These conditions have placed the women in a vicious cycle of poverty and are highly disadvantaged in economic empowerment for agricultural development. Therefore, it is in the light of the above statement that this paper was born. Specific objectives were to identify the forms of gender gap existing in the study area, examine the cause of the gap, and suggest the possible ways to bridge the gaps and determine the constraints to yam production in the study area.

Research Protocol

The study area is Delta State of Nigeria. The state covers a landmass of about 18,050 km^2 (6,970 sq mi), of which more than 60% is land. The state lies approximately between 5°00' and 6°45' E and 5°00' and 6°30' N. It is geographically located in Nigeria's Midwest, bounded in the north and west by Edo State, the east by Anambra, Imo, and Rivers States, southeast by Bayelsa State, and on the southern extreme is the Bight of Benin which covers about 160 kilometres of the state's coastline. There are 25 local government in the State with head quarter at Asaba (Isorhovoja,2015).

Multistage sampling techniques will be used for the study. Three (3) local governments out of the 25 local governments in the State will be used for the research based on their activities on cassava production. Here, Aniocha North, Ndokwa East and Ndokwa West are selected. These give a total of three local governments used for the study. Two communities per L.G. will be purposefully selected due to their active participation in farming activities. IseleAsagba and IseleUkwu, from Aniocha North; Obi-Igbo and, Ashaka from Ndokwa East; Amoji and Ogbe-Ogume from Ndokwa West will be used. This gives a total of 6 communities that will be used for the study. Twenty (20) farmers each will be randomly sampled from each community and this gives a total sample size of 120 farmers that will be used for the work. Data used for this research will be collected through a structured questionnaire. Data collected will be analyzed using, frequency, percentage and mean score.

Result and discussions

Table1 show that 60% of the farmers were male while 40% of them were female. This implies that male dominated the activities of yam production in the study area. This finding is line with that of Eniola (2015) that yam production is a male dominated enterprise in the study area. This is to be expected be seeing from the fact that yam production is a labour-intensive enterprise. Majorities (42.5%) of the farmers were married while 31.6% of the them were single. This indicates that the farmers are more likely to have children that might be used for farming activities. This result is in consonance with the finding of Falola and Achem (2017) which found in their study that the majority (77.1%) of the respondents were married. The average mean age was 47 years. The indication is that farmers were predominantly in their active productive age and this could increase their stamina for yam production. According to Eniola (2015), farming enterprises are mostly dominated by the aged in Nigeria due to its rudimentary way of operation and this makes it unattractive to the youth. Majorities (45.8%) of the farmers had primary education while 42.0% of them completed secondary school. High levels of literacy among farmers could give them chance to adopt the recommended technologies and strategies for yam production. However, 50.0% of the farmers cultivated between 1-2 hectare,39.2 cultivated less than 1 hectare while 8.3% of others cultivated3-4 hectare. The average farm size of the farmers was 1.3 hectare. This implies that farmers were still under small scale farming. The mean year of farming experience was 14 years. This shows that the farmers had long period of farming experience and this could enhance their knowledge on farming activities as

well as technology adoption. More so, the average household size of the farmers was 8 persons. This likely indicates that yam production is a means of catering for the family and income generation in the study area. Large household size is likely to provide enough family labour for farming activities where members of such households are not engaged in farming activities. Majority (75%) of the farmers did not have access to extension services while 25.0% of them have access to extension services. Majorities of the farmers who did not have access could be as a result of the inability of extension workers to discharge their official duty diligently or it could be due to inadequate extension workers to cover a wide range of farmers within the study zone. On the other hand, 58.3% of the farmers did not have access to credit loan while the majority (66.7%) of them belonged to social organization.

Table1: Socioeconomic Characteristics of Yam Farmers in Delta State

Variables	Frequency	Percentage	Mean
Sex			
Male	72	60.0	
Female	48	40.0	
Age			
18-30	9	7.6	
31-40	54	45.4	47 years
51-60	24	20.20	
61 and above	33	27.5	
Marital status			
Married	51	42.5	
Single	38	31.6	
Divorced/separated	15	16.0	
Widowed	16	13.3	
Household size			
1-2	40	33.3	
3-4	50	41.7	8 persons
5-6	10	8.3	
7-8	15	12.5	
9 and above	5	4.2	
Farm size			
Less than 1ha	47	39.17	
1-2ha	60	50.00	1.3ha
3-4 ha	10	8.33	
5 ha and above	3	2.50	
Farming experience			
1-10 years	52	43.3	
11-20 years	38	31.7	14 years
21-30 years	30	25.0	
Educational levels			
No formal education	20	16.7	
Primary school completed	55	45.8	
Secondary school completed	42	42.0	
Tertiary institution	3	2.5	
Membership of social organization			
Yes	40	33.3	
No	80	66.7	
Access to credit loan			
Yes	50	41.7	
No	70	58.3	
Access to extension services			
Yes	30	25.0	
No	90	75.0	

Source: Field work, 2023

Forms of gender gaps existing among yam farmers in Delta State, Nigeria

Table2 indicates that a higher proportion (92%) of the farmers was strongly agreed that gaps in farm participation as a result of ethnic norms brought discouragement among female farmers in yam production in the study area. Due to the belief that there is already an existing gap in farming acticivities that men were the hegemonic class (dominant)yam farming, women have fear and also feel inferior that engaging themselves in yam farming could bring relegation to their womanhood. The proportion of the farmers who opposed the fact may be their lack of relevant information and awareness about what others thought. In most African societies, for example, widows face discrimination in asset inheritance, and this leads to poverty and disadvantage with regard to productive resources that affect agricultural productivity. This finding is in line with Njikam, Araar and Elemo (2021), who saw ethnic customs as a source of gender disparities among farmers in a social system. However, 85%,73% and 70%% of the farmers were of the view that limited access to factors of production, gender gaps in the use of agricultural inputs and an imbalance in educational system were the forms of gender gaps existing in the study area. According to the majority of the respondents, men's access to factors of production such as land was higher compared with women counterpart. With the exception of women who bought land with their money, the differences were statistically significant in all cases. However women's access tocredit was lower compared with men in some gender studies and this could bring an imbalance in crop production in a society. There is gender disparity in the use of agricultural inputs such as application of pesticides and fertilizer application. Men dominated in pesticide and herbicides application while their women counterparts were highly represented in fertilizer application in the study area. This implies unequal representations of input application among farmers in the State and this could spread hunger and poverty among farmers. This finding agreed with Torkelsson and Unditi(2018) thatgender gap in agricultural productivity has been associated with women's limited access to factors of production, including land, labour, fertilizer, irrigation, pesticide and improved seeds. Women's access to agricultural production resources could be constrained because of lack of a range of material and technological resources. Researchers have found in previous studies that such constraints came up due to limited access to farm inputs and affordability of modern technologies, including improved seeds, irrigation technologies and finance, and this holds back agricultural productivity (Gbemisola*et al*,2015).Also, some farmers pointed out that inadequate participation in policy/decision making(65%),low access to some valued crops like yam(63%),high access to the so called women crop like sweet potato(59%),gender gaps in extension services(50%) and gender gaps in labour productivity(43%) were forms of gender gaps prevailing in the study area. low representatives in decision/policy formulation and little access to some valued crops are forms of gender gaps among yam farmers in delta State. These gaps have to be closed to avoid unwavering poverty and an incessant hunger in the country. To address gender gaps and differences in agricultural productivity in Africa, there is a need for gender-targeted policy reforms at different levels of governance across the continent. First, to close the gender gap in agricultural productivity, we need to understand the disadvantages and challenges that women face as producers. According to Torkelssonand Onditi (2018), closing the gender gap in agricultural inputs alone has been seen to create the potential of liberating 100–150 million people from hunger, therefore resulting in benefits that spread far beyond female managed farms. This will also create significant economic benefits in terms of Gross Domestic Product (GDP) growth. Hence, investing in female farmers will not only boost agricultural growth but also bring countries closer to achieving the objectives of the Comprehensive Africa Agricultural Development Programme (CAADP) that targets 6 per cent agricultural growth and allocates at least 10 per cent of the budget to agriculture (Torkelsson and Onditi,2018),). The findings are in line with that of Torkelsson and Onditi (2018) that saw limited access to farm inputs and affordability of modern technologies as the forms of gender gaps existing in their study.

Table2: Percentage distributions of the farmers according to the forms of gender gaps existing

Variables	Percentage
Gaps in farm participation due to ethnic customs	92
Limited access to factors of production	85
Gender gaps in the use of agricultural inputs	73
Imbalances in educational system	70
Low participation in decision making	65
Low access to valued crop like yam	63
High access to neglected crops like sweet potato	59
Gender gaps in extension services	50
Gender gaps in labour productivity	43

Source: field work, 2023

Causes of gender gaps among yam farmers in Delta State

Table3indicates that marginalization of women in decision making (M=4.13), unequal access to some crops (M=4.01), women's low access to education (M=3.32) and different perception about the crop (M=3.02) were the identified variables that cause gender gaps among yam farmers in Delta State. This result agreed with Torkelsson and Onditi (2018), who said that factors for gender gap in their study conducted in Tanzania, malewi and Uganda were unequal

access to educational system, male domination in decision making and females' lack of access to high valued crops. According to them, education levels among female farmers across the three countries studied are extremely low. Really, female farmers have been to school, but they have had about two years of less education than their male counterparts, having on average 3.3 years of schooling in Malawi, 3.7 years in Tanzania, and 4.6 years in Uganda. This trend may affect the farmers' tendency and ability to adopt new technologies. Apart from the low level of education, disadvantages in technical knowledge, access to labour and non-labour inputs and technologies could explain the lower productivity on women's plots. In terms of ranking, marginalization in decision making, unequal access to highly valued crop like yam and imbalances in educational system among male/ female farmers were ranked 1st,2nd and 3th as the variables that caused gender gaps in the study area.

Table3: Causes of Gender Gaps among Yam Farmers

Variables	Mean	Ranking
Marginalization in decision making	4.13	1st
Unequal access to highly valued crop like yam	4.01	2nd
Imbalances in educational system among male and female farmers	3.32	3rd
Different perception about the crops	3.02	4th

Source: field work, 2023

Possible Strategies to bridge gender gaps among yam farmers in the State

Data in Table4. show that the majority (86%) of the farmers were of the opinion that Policy intervention for women engagement fully in yam production will help to bridge the gap while 79%) the farmers also believed that involving women in policy formulation and implementation in the study areas would be the best strategy to overcome the problems of gender gaps among yam farmers. This finding contradicted World Bank (2023) that increasing the budget allocated toward agriculture extension services designed to meet women farmers' information, input, and market needs can close the problem of gender gaps in Nigeria. On the other hands, World Bank (2023) is of the opinion that involving women in policy making and implementation in the study areas would be a solution to overcome the problems of gender gaps among farmers. Presences of policy in community, this will not only boost yam production but will also discourage rural-urban drift among male and female farmers in the study area; Presence of policy also reduces the influx to mega cities.

Also, 75% of the farmers were of the view that empowering women through knowledge skills and capacity building on financial management for yam value addition will be a proper solution to promote yam farming in the study area. This attributed to the fact that as to increase yam production in the State, a policy of eliminating all types of gender discrimination in small-scale farming should be implemented (Njikam,Araar and Elemo,2021).

Data in Table4 also indicate that 66% of the farmers were of the point that there should be budget allocation to support gender equality among yam farmers in the state and this could be a lasting panacea for yam production gender disparity in the study area. However, 64% and 62%, of the yam farmers were of the belief that there is need to increase women' access to and use of physical inputs and women's access to and use of extension service have to be improved on. These would enable a greater proportion of the farmers to participate in yam production activities, while 58% and 53% of the yam farmers were of the suggestion that Women should be encouraged to transit to higher-valued- crops; women's access to seed yam purchasing and marketing should be enhanced. These would also enable the majority of the farmers to engage in yam production activities. However,50% of the farmers pointed out that improvement on monitoring and documentation of budget performance and availability of gender disaggregated data was necessary to bridge the gender gaps among the farmers. These findings are line with World Bank (2023) that increasing the budget allocated toward agriculture extension services designed to meet women farmers' information, input, and market needs is necessary for gender gaps to be closed.

Table4: Possible strategies to bridge gender gaps among yam farmers in the State

Variables	Percentage
Policy intervention for women engagement fully in yam production	86
Involving women in policy formulation and implementation	79
Empowering women through knowledge skills and capacity building on financial management for yam value addition	75
There should be Budget allocation to support gender equality among yam farmers in the state	66
There is need to increase women' access to and use of physical inputs	64
Women's access to and use of extension service have to be improved on	62
Women should be encouraged to transit to higher-valued- crops	58
Women's access to seed yam purchasing and marketing should be enhanced	53
Improvement on monitoring and documentation of budget performance and availability of gender disaggregated data are necessary	50

Source: field work, 2023

Conclusion

In most parts of rural Nigeria, production of some crops within the households is gender specific and according to age. Men and women perform different roles; have unequal decision-making power as well as differences in access to land and control over agricultural productive resources. As a result of these differences, their views, needs, priorities and constraints to improving their productive potentials differ. These affect their various outputs even in agricultural development. Therefore, understanding of gender gaps in crop production among rural farmers in Nigeria is important due to the current threat to food security as a result of the economic recession facing the country. This calls for the need to increase and sustain the enterprise among farmers. This will ensure also effective allocation of resources for increased and sustainable crop development activities, thereby increasing farming outputs for improved livelihoods for the people. In the light of these, this paper used available literature and empirical studies to assess the forms of gender gaps, causes of gender gaps and possible strategies to reduce the gender gaps among yam farmers in Delta State, Nigeria.

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