Effect of Gender Awareness on Improved Agricultural Practices of Groundnut Production in Akwanga Local Government Area of Nasarawa State, Nigeria

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DOI: https://dx.doi.org/10.47772/IJRISS.2025.90300173

Received: 28 February 2025; Accepted: 06 March 2025; Published: 05 April 2025

ABSTRACT

The study analyzed the effect of gender awareness on improved agricultural practices on groundnut production in Akwanga Local Government Area of Nasarawa State, Nigeria. Specifically, it described the socio-economic characteristics of groundnut farmers; identify sources of information on improved practices of groundnut production to farmers, compared the level of gender awareness and adoption of improved practices, examining the effects of socioeconomic variables, and identifying constraints hindering the adoption of improved practices of groundnut production in the study area. Multistage sampling technique was used to select 118 respondents for the study. Data were obtained from a primary source with the aid of a well structured questionnaire and analyzed using descriptive and inferential statistics. The adoption of improved groundnut practices was dominated by male (55%). The average age of the respondents was 38 years indicating that they were active and productive in groundnut production. The mean response for farming experience was 23.25% indicating that most of the farmers were into farming for about 23 years. Access to credit was generally low as 66% of the farmers had no access to credit facilities. The result further revealed high level of awareness (78%) of improved groundnut practices. The coefficient of determination (R) was 0.893 indicating that the variables tested accounted for 89.3% of the variation in the dependent variable while the remaining 11.7% to the error terms. The study concludes that constraints underscore the complexities faced by farmers in adopting improved practices and highlight the necessity for tailored interventions. It was recommended that a targeted strategy for disseminating information on improved practices on groundnut production should put in place to compliments the existing ones considering the identified sources such as agricultural extension services and online resources in the study area. Policies that foster gender inclusivity in agricultural practices, ensuring equal opportunities and participation should be implemented by the government and Non-Governmental Organizations, provision of financial support and access to credit facilities to farmers to overcome financial barriers hindering the adoption of improved practices should be provided by the Bank of Agriculture, Central Bank of Nigeria, Commercial Banks and other financial institutions.

Keywords: Agricultural practices, gender awareness, groundnut production, Nasarawa state

INTRODUCTION

Groundnut (*Arachis hypogaea* L.) is an important crop in Nigeria, with significant contributions to the country's agricultural sector and economy. Nigeria is one of the leading producers of groundnuts in the world, and the crop plays a significant role in the country's agricultural sector and economy. According to the Food and Agricultural Organization (FAO, 2020), Nigeria produced approximately 3.8 million metric tons of groundnuts in 2020. The country's production has been relatively stable over the past decade, with an average annual production of 3.7 million metric tons between 2011 and 2022. The main producing states are Kano, Kaduna, and Taraba, which account for more than 50% of the country's production (Adebayo & Ogunniyi, 2020). According to the National Bureau of Statistics (NBS, 2019) in Nigeria, Nasarawa state produced 339,175 metric tons of groundnuts in 2019. This represents about 11% of the total groundnut production in Nigeria, making it the fourth-largest producer of groundnuts in the country after Kano, Kaduna, Taraba followed by Gombe, and Bauchi States as at 2019.

Nigeria is also a major exporter of groundnuts, with the crop being one of the country's top agricultural export products. According to the National Bureau of Statistics (2021), groundnut export revenue reached N30.6 billion in the first quarter of 2021. The main export destinations for Nigerian groundnuts are Vietnam, India, and Indonesia (Mohammed, *et al.*, 2013). Nevertheless, the potential in groundnut production have not been fully harnessed owing to the varied arid land mass untapped in the country. This is to say that Nigeria have the potential of being number one in groundnut production and exportation in the global market with the adoption of improved agricultural practices.

Improved agricultural practices in groundnut production can help to increase yields, improve the quality of the crop, and reduce production costs. Improved agricultural practices in groundnut production include improved seed varieties, soil fertility management, integrated pest management, irrigation among other practices (Okoye, *et al.*, 2020). It is essential to promote the adoption of these practices among smallholder farmers, as they can help to enhance the sector's potential to contribute to the country's economic development and food security.

Groundnut production in Nigeria is an important agricultural activity that involves both men and women, with gender roles and responsibilities varying across different regions and communities (Abdullahi, Suleiman, & Mohammed, 2023). However, the productivity of smallholder farmers in the state is limited by several challenges, including poor access to improved seed varieties, limited access to credit and inputs, inadequate pest and disease control measures, and poor soil fertility management practices. These challenges, if not adequately addressed, could hinder the growth of groundnut production in Nasarawa State, especially Akwanga Local Government Area which is considered as hub of groundnut production. Understanding the gender dynamics in groundnut production can help to identify opportunities for improving the sector's productivity and inclusiveness. This study will examine the gender awareness and responsibilities in groundnut production in Akwanga local government in Nassarawa State. According to Agbanu (2015), farmer’s sources of awareness information on improved practices could be through village leaders, extension agents, friends and relative, farm and field days. Gender dynamics play a significant role in groundnut production in Nigeria, with women making significant contributions but facing several challenges (Adebayo & Ogunniyi, 2020). Promoting gender awareness of improved groundnut production practices is essential in enhancing the sector's productivity and inclusiveness. Upon this background that the research will examine gender awareness of improved agricultural practices of groundnut production in Akwanga Local Government Area of Nasarawa State Nigeria

The demand for groundnuts in Nigeria is high, both for domestic consumption and for export. groundnut is used in the production of various food products, including groundnut oil, peanut butter, and roasted nuts, among others. The crop also has significant economic potential for smallholder farmers, providing a critical source of income and nutrition for rural communities.

Groundnut production in Nigeria is predominantly carried out by smallholder farmers, who face numerous challenges in achieving optimal yields and quality. These challenges include poor access to improved seed varieties, limited access to credit and inputs, inadequate pest and disease control measures, and poor soil fertility management practices.

To increase groundnut productivity, there is need for concerted efforts to promote the adoption of improved agricultural practices, such as the use of improved seed varieties, effective soil fertility management, and integrated pest and disease management. There is also a need for increased, gender awareness on roles, access to credit and inputs, as well as the provision of training and support services to smallholder farmers. Addressing gender-based constraints and promoting women's participation in the sector through gender-responsive policies and practices can enhance the sector's potential to contribute to the country's economic development and food security. Promoting gender awareness of improved groundnut production practices is essential in enhancing the sector's productivity and inclusiveness which have been lacking.

Adebayo and Ayanwale (2016) have analyzed the issue of gender and household adaptation strategies of groundnut farmers in Kwara State Nigeria while Abugu, Awrareno and Ekpebu (2013) focuses on the socio-economic characteristics and access to credit by groundnut farmers in Delta State, Nigeria. In bridging the gap,

the study examined gender awareness of improved agricultural practices of groundnut production in Akwanga Local Government Area of Nasarawa State, North-Central Nigeria.

METHODOLOGY

The Study Area

The study was carried out in Akwanga Local Government Area of Nasarawa State. The Local Government Area (L.G.A.) is located between 8°54' 22.65"N and 8°24' 30.57"E. of the Northern part of Nasarawa State and has land mass of 102,1546.59m (NPC, 2006). It shares common boundaries with Sanga Local Government of Kaduna State and Wamba, Nasarawa Eggon as well as Kokona Local. Government Areas, to the North, East, South and West respectively. The central and northern parts of Akwanga LGA are hilly measuring up to 600m above the sea level. The LGA has deposits of solid minerals such as Tin, Columbite, Monurite and Clay. Major rivers in the area are Mada, and Gbuku. Akwanga Local Government Area is located within tropical sub-humid and ecological zone of guinea savannah. The study area has distinct wet (March-November) and dry (November-February) seasons. The economic trees found in the area include Locust Bean Tree, Shear nuts, and Cashew nuts, Oranges and Mangoes and Oil Palm Tree. The soil textures of the LGA are sandy loam which supports the production of cassava, yams, melon, groundnut, rice, maize and sorghum. Farmers in Akwanga Local Government Area also rear live stocks such as sheep, goats, poultry and pigs. The study Area has a population of 113430 people (NPC, 2006). The major ethnic groups found in the area include the Mada, Eggon, Nimzon, Rindre, and Hausa/Fulani. Farming is the predominant occupation the people.

Agriculture is the mainstay of the people with groundnut as one of the major cash crops farmed in the area. Groundnut is farmed by both male and female at commercial and subsistence level as much as other crops however, there seems to be limited awareness on the improved agricultural practices in the area especially for groundnut farming. Most of the farmers of groundnut in the area depend on their effort and skill for production which have limited the quantity of output in groundnut production. This however motivated the researcher to embark on this study to ascertain effect of gender awareness on improved agricultural practices of groundnut, being one of the major crop.

Nasarawa State. The fact that groundnut farming in the area is majorly done as family crop just like other crops like yam and rice in the area, preliminary investigation showed that there are about two thousand households in the area and virtually one out of two families is involved in groundnut production either as subsistent or commercial level. This informs the researcher that there are about 1210 groundnut farmers in the study area.

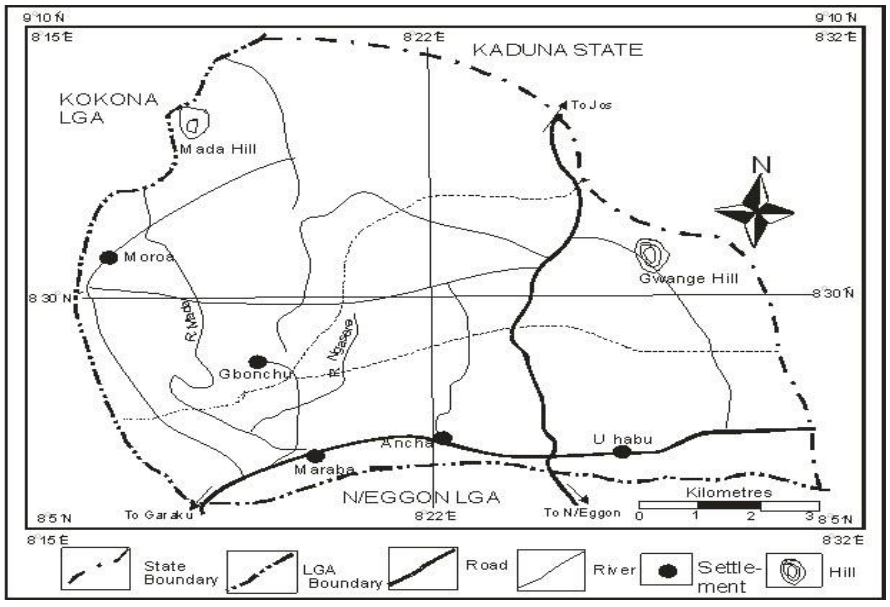

Fig. 1. Map of Akwanga Local Goverent Area

Source: Ministry of lands and survey, Lafia, Nasarawa State

Sampling and Data Collection

The population of this study consists of groundnut farmers in Akwanga Local Government Area, Nasarawa State. The fact that groundnut farming in the area is majorly done as family crop just like other crops like yam and rice in the area, preliminary investigation showed that there are about two thousand households in the area and virtually one out of two families is involved in groundnut production either as subsistent or commercial level. This informs the researcher that there are about 1210 groundnut farmers in the study area.

Multi-stage sampling technique was used to select a sample size of 121 respondents out of which 118 were returned for the study. In the first stage, the Local Government Area stratification method was adopted, in the second stage, the was purposive selection of ten councils wards based on the predominance of groundnut production in the area, In the third stage, a sample allocation of 10% was proportionally used in obtaining a sample size from each of the wards taking 10% of the total population to give a total of 121 groundnut farmers out of which the 118 returned were analyzed as sample size for the study. Data for this study were collected mainly from primary source. The primary data were collected using a structured questionnaire based on the Specific objectives of the study.

Data Analysis

Objectives i, ii and v were achieved using descriptive statistics such as frequency, percentages, mean scores, while objective ii and iv were analyzed using logistic regression analysis.

Logistic Regression Model

The logistic regression is expressed as:

$Z_{Bo} + B_1X1 + B_kXk + ui$ …….. 1

The unknown parameters pi are usually estimated by maximum likelihood. Thus, model is

Explicitly express as: $Z_i=B_o + B_iX + B_2X_2 + ...B_9X_9 + U_i$ …… 2

Where

Z = Probability of adapting to improved agricultural practice (1=high, 0 low)

Bo=Constant term

Bi (i =1,2.....1 1) vector of the parameters to be estimated The independent variable (x) would be:

X_1= Sex: (dummy; male = 1, female = 0)

X_2= Age (years)

X_3= Marital status (dummy; married = 1, others = 0)

X_4= Household size (number of persons)

X_5= Estimated annual income (continuous 1,2,3,4 etc)

X_6=Level of education (years)

X_7= Estimated annual off-farm income (continuous 1,2,3,4 etc)

X_8 = Farm size (hectares)

X_9= Farming experience (years)

U_i = Independent distributed error term.

RESULTS AND DISCUSSION

Socio-Economic Characteristics of the Respondents

The result of sex distribution as shown in table 1 indicate that male farmers were the majority with (55%) while (45%) were female respectively. This implies that males were more involved in groundnut production in the study area. This could be due to socio-cultural background which gives males access to production resources such as land which is a major requirement for groundnut production. This is similar to the findings by Abdullahi *et al.*, (2023) found that groundnut farming in Nasarawa State is still predominantly male-dominated. However, a contrasting study by Oyediran *et al*., (2023) found that women play a significant role in groundnut farming in Kogi State, Nigeria. The study revealed that women accounted for 58.2% of groundnut farmers, while men accounted for 41.8%. The study revealed that men accounted for 75.6% of ground nut farmers, while women accounted for 24.4%.

The result on age distribution of the respondents showed that the average age of the respondents was 38 years. Majority (50.0%) of the respondents were in the age range of 26- 35 years and mostly male. This was followed by 28.8% within the age range of 36-45 years while 2.1% were in the age range of 45 years and above. This implies that the respondents were middle-aged, in their productive years and energetic for greater involvement in groundnut production. This is consistent with the findings of Kalu (2016) who reported that most smallholder groundnut farmers in Nasarawa State, Nigeria are middle-aged.

The distribution of respondents according to marital status showed that 62.7% of the respondents were married, 21.2% of the respondents were single, 2.5 % are divorced and 11% are widowed. This finding agrees with Muhammad *et al*., (2022) found that 85.7% of groundnut farmers in Nasarawa State were married, and they contributed significantly to farm labor. The study revealed that married farmers had an average of 2.5 helpers, which included their spouses and children, compared to single farmers who had an average of 1.2 helpers. The finding suggests that married groundnut farmers in Nasarawa State have a stronger support system, which enables them to contribute more to farm labor and increase their productivity.

The result of level of education showed that majority of the respondents had secondary education (59.3%), 8.5% have attained tertiary education while 20.3% have primary certificate. This implies that majority of the respondents were literate as they attained one form of education or the other which could enhance their ability to adopt improved technologies in groundnut production. This is in line with Ahmed *et al.*, (2020) who noted that majority of the groundnut farmers in Nasarawa state were literate. The high literacy rate among groundnut farmers in Nasarawa State can be attributed to government initiatives to improve education in rural areas, increased awareness of the importance of education among farming communities and availability of adult education programs and vocational training.

The analysis of house hold size revealed that about (41.5%) of the respondents have household size between 7 to 10 people. The average number of household size was 7 which imply that the respondents have considerable large family size. Large family sizes are often valued in traditional Nigerian cultures and ural areas may have limited access to family planning resources, contributing to larger family sizes.

The findings on the major occupation revealed that 90.7% of the respondents were farmers while 2.5% were engaged in trade, teaching among other type of occupation. This is clear that majority of the people were farmers in the area. This conforms to the assertion of Abdullahi *et al.*, (2023) that majority of the rural dwellers in Nasarawa State are farmers.

Many of the respondents (52.5%) had farm size of 6 hectares and above. The mean farm size of 5.57 hectares was recorded which imply that the farmers have relatively large farm size under the study area. The relatively large farm size among the respondents can be attributed to the fact that groundnut farming is a major economic activity in the study area, and many farmers have invested heavily in acquiring and cultivating large tracts of land to increase their productivity and income.

ISSN No. 2454-6186 | DOI: 10.47772/IJRISS | Volume IX Issue III March 2025

The farming experience which is the vital component in agricultural productivity from the results of analysis showed that (5.0%) had farming experience of between 1 to 3 years, 13.6% had farming experience of between 4 to 7 years while majority (81.4%) had farming experience of between 8years and above. The mean response of the farming experience was 23.25. This could be interpreted that most of the farmers had been on farming occupation for about 23years now. It could be understood that majority are born into farming and they continued in the occupation.

The annual income as revealed by the study indicates that about (6.8%) of the respondents earn less than N100,000.00 in a year, 33.9% being the majority earns between N100,000 to N500,000 in a year while the rest (25.4%) earns N501,000 and above. However, the mean responses showed that the farmers in the area earned average amount of N163098.64 in a year.

Groundnut farmers were asked to determine the source of their credit loan and the result revealed that cooperatives was 6.8%, family and friends 33.9%, Government 33.9% and NGO 25.4%. This is to say that majority of the farmers depend on government, family circles and friends for credit or loan. They have little idea about cooperatives which would have facilitated their loan application.

Access to credit to credit was generally low as the result of the analysis revealed that majority 66% of the farmers had no access to credit facilities while the rest (34%) who solely depend on government and friends/family for one. This calls for expansion of knowledge on loan opportunity to boost production.

Table 1: Socioeconomic Characteristics of the Respondents

Socioeconomic characteristics	**Frequency**	**Percentage**	**Mean score**
Sex			
Male	65	55	
Female	53	45	
Total	118	100	
Age (years)			
15-25	15	12.7	
26 – 35	59	50.0	
36 – 45	34	28.8	38.01
Above 45	10	8.5	
Total	118	100.0	
Marital Status			
Single	25	21.2	
Married	74	62.7	
Widowed	13	11.0	
Divorced	3	2.5	
Widower	3	2.5	
Total	118	100.0	
Highest level of education primary school			
Tertiary	14	11.8	
Secondary school	80	67.9	
Primary	24	20.3	
Total	118	100	
Household size			
1 to 3	8	6.8	
4 to 6	27	22.9	7.17
7 to 9	49	41.5	
Above 10	34	28.8	
Total	118	100.0	
Major occupation			
Trade	3	2.5	

Groundnut Farming	107	90.7	
Teaching	5	4.2	
Others	3	2.5	
Total	118	100	
Farm Size			
< 2 hectares	18	15.3	
3 - 5	38	32.2	5.57
Above 6	62	52.5	
Total	118	100	
Farming Experience (years)			
1 to 3	6	5.0	
4 to 7	16	13.6	13.25
Above 8	96	81.4	
Total	118	100	
Annual Income (Naira)			
less than 100,000	8	6.8	
100,000 to 300,000	40	33.9	163098.64
301,000 to 500,000	40	33.9	
501,000 and above	30	25.4	
Total	118	100.0	
Source of Credit			
Cooperatives	8	6.8	
Family and friends	40	33.9	
government	40	33.9	
NGO	30	25.4	
Total	118	100.0	
Access to Credit			
Yes	40	34	
No	78	66	
Total	118	100.0	

Source: Field Survey, 2023

Source of Information on Improved Practices for Groundnut Production to Farmers

The identification of sources providing information for enhanced groundnut farming practices in the study area aligns with a broader discourse on agricultural information dissemination. The result showed a range from 1.9 to 3.0 in mean values, which mirror the dynamic preferences of farmers in their information-seeking behavior. Notably, the least favorable perception was associated with farming magazines or publications as shown in table 2. The trend is similar to the findings of Smith *et al.*, (2017) who called for a shift from traditional print media to more interactive and dynamic channels among farmers. The mean values for items 9 and 10, representing "Government agencies distributing helpful materials" and "Professional networks offering valuable resources," respectively, hovering around the acceptance benchmark of 2.5, echo the sentiments of Kamau *et al.*, (2020) regarding the need for distinct approaches to cater to diverse communication preferences within the agricultural community.

Moreover, the positive reception of agricultural extension service and workshops/seminars as shown in table 2 agreed with the submission of Kamau *et al*., (2020) emphasizing the effectiveness of direct engagement and participatory learning in disseminating agricultural information. This is indicative of the enduring significance of these traditional methods in tandem with contemporary trends. The perceived effectiveness of online resources and social media platform is in line with the work Akter *et al*., (2022), who highlight the growing role of digital platforms in disseminating agricultural knowledge. The positive reception of these sources in the study suggests that farmers are adapting to digital advancements, emphasizing the need for stakeholders to leverage online platforms for targeted and impactful information dissemination.

Dissemination of relevant information on improved practices in groundnut production is vital for sustainable agriculture to ensure that farmers' evolving needs are met in a rapidly changing agricultural information landscape.

Table 2: Source of Information on Improved Practices for Groundnut Production

S/N	Information on Improved Practices	Mean (M)	Standard deviation (SD)	Remark	Bench mark= 2.5
1.	Agricultural extension services provide valuable information.	2.7	2.5	Accepted	
2.	Workshops and seminars are effective sources of information.	2.7	2.8	Accepted	
3.	Online resources (websites, forums, etc.) are helpful.	2.3	1.8	Accepted	
4.	Local agricultural fairs/events are informative.	2.5	0.7	Accepted	
5.	Fellow farmers share useful practices.	2.5	2.8	Accepted	
6.	Farming magazines or publications are beneficial.	2.1	2.8	Rejected	
7.	Radio and television programs offer useful insights.	2.5	4.2	Accepted	
8.	Social media platforms provide relevant information.	2.5	2.8	Accepted	
9.	Government agencies distribute helpful materials.	2.4	1.9	Rejected	
10.	Professional networks offer valuable resources.	2.4	1.9	Rejected	

Source: Field Survey, 2023

Level of Gender Awareness and Adoption of Improved Practices for Groundnut Production

The evaluation of gender awareness and the adoption of improved practices for groundnut production in the study area presents a nuanced perspective on the attitudes and behaviors of farmers. The high percentage of respondents indicating awareness of improved groundnut production practices (78.0%) reflects a commendable level of knowledge dissemination or extension efforts in the community. This conformed with the findings of Akhtar *et al.*, (2022) who emphasize the pivotal role of awareness in driving the adoption of modern agricultural practices. The recognition of improved techniques lays a foundational understanding essential for subsequent adoption efforts.

While awareness is a crucial first step, the study delves into the practical implementation of improved practices. The percentage of respondents actively implementing these practices (55.1%) suggests a moderate uptake. The result also agreed with the observations of Tadele et al. (2020), who note that despite awareness, the transition from awareness to action often involves various factors, including resource availability and behavioral change. The findings prompt further investigation into the barriers hindering active implementation, paving the way for targeted interventions to enhance adoption rates.

Furthermore, the positive outcomes witnessed by a substantial percentage of respondents (78.0%) from using improved practices echo the sentiments of Oguniyi *et al.*, (2019), who highlight the importance of tangible benefits in reinforcing positive behaviors. The willingness of farmers to invest time and resources (73.7%) and actively seek information (76.3%) underscores a proactive engagement with the adoption process. This concurred with the findings of Oyediran et al., (2023) who found that farmer empowerment and agency played a significant role in the adoption of new agricultural practices, with 71.4% of respondents indicating willingness to try new methods and 68.5% regularly attending workshops or training sessions.

The result illuminates a comprehensive picture of gender awareness and the adoption of improved groundnut production practices. The findings, contextualized within the broader agricultural literature, underscore the importance of not only disseminating knowledge but also addressing the multifaceted factors influencing the active implementation of improved techniques. This insight is invaluable for stakeholders, including extension services and policymakers, in tailoring interventions that promote a more widespread and sustainable adoption of modern groundnut farming practices.

Table 3. The levels of Gender Awareness and adoption of improved practices for groundnut

No.	Statements	frequency (Yes)	Percentage (%)
1	I am aware of improved groundnut production practices.	92	78.0
2	I actively implement improved practices in groundnut production.	65	55.1
3	I believe adopting improved practices is essential for success.	71	60.2
4	I am confident in my knowledge of improved techniques.	87	73.7
5	I have seen positive outcomes from using improved practices.	92	78.0
6	I encourage others to adopt improved practices.	67	56.8
7	I am willing to invest time and resources in adopting changes.	87	73.7
8	I actively seek out information on improved techniques.	90	76.3
9	I regularly attend workshops or training on groundnut farming.	78	66.1
10	I am open to trying new methods for groundnut production.	78	66.1

Field survey, 2023

The Effect of Socio-Economic Variables on Awareness and Adoption of Improved Agricultural Practices in Groundnut Production

The influence of socio-economic variables on respondents' awareness and adoption of improved agricultural practices in groundnut production is shown in table 4. The reported findings provide valuable insights into the interplay between socio-economic factors and agricultural behaviors.

Access to financial resources emerges as a critical factor, with a substantial 78.0% of respondents affirming sufficient financial resources for farming. This resonates with the work of Oyewole *et al*., (2022) emphasizing the pivotal role of financial resources in driving the adoption of improved agricultural practices. Adequate financial backing provides farmers with the necessary means to invest in new techniques, technologies, and inputs, fostering a conducive environment for the adoption of modern farming practices.

The respondents' perception of government support is notable, with 73.7% acknowledging positive impacts from government policies and 76.3% being aware of available agricultural programs. These findings agreed with the observations of Oyewole *et al*., (2022), highlighting the significance of supportive government policies in influencing farmers' decisions to adopt improved practices. Government initiatives and policies that align with farmers' needs can serve as catalysts for widespread adoption, addressing socio-economic constraints and promoting sustainable agricultural development.

Moreover, the impact of social networks on farming practices is evident, with 66.1% indicating that their social network provides valuable advice. The findings underscore the intricate relationship between socio-economic variables and the awareness and adoption of improved agricultural practices in groundnut production. Financial resources, government support, and social networks emerge as influential factors, highlighting the need for holistic strategies that consider the broader socio-economic context. This insight contributes to the ongoing discourse on sustainable agricultural development, offering a foundation for policymakers and stakeholders to tailor interventions that address the specific socio-economic dynamics within the study area.

Table 4: The effect of Socio-Economic variables on awareness and Adoption of Improved Agricultural Practices in Groundnut Production

No.	Statements	Frequency (Yes)	percentage (%)
1	I have access to sufficient financial resources for farming.	92	78.0
2	My level of education positively impacts my farming practices.	67	56.8
3	Government policies support my farming activities.	87	73.7
4	I am aware of available government agricultural programs.	90	76.3
5	Access to modern farming equipment enhances my productivity.	78	66.1
6	My farming operation receives support from local communities.	10	8.5
7	My access to markets positively affects my farming outcomes.	90	76.3
8	Availability of credit facilities enhances my farming activities.	7	6
9	My farming practices align with environmental sustainability.	78	66.1
10	My social network provides valuable advice on farming.	10	8.5

Source: Field survey, 2023

Effect of Socio-Economic Characteristics of Respondents on their Adaptation Strategies to Climate Change

Logistic regression was used to test the effect of respondents' socioeconomic characteristics on types of adaptation strategies used, and the result obtained is presented in Table 5. Out of the eight explanatory variables in the model, only three were statistically significant; farm size, educational level and farm experience of the respondents. Farm size had a positive coefficient (0.102) and was significant (0.079) at 10% level of probability. By implication, it means the larger the farm size, the more likely to adapt to climate change with enhanced groundnut production. This is because groundnut farmers with larger the farm will mostly likely explore adaptation to agricultural innovations for better productivity because they may not be willing to loss.

Educational level of the respondents had a positive coefficient (0.138) and was significant (0.091) at 10% level of probability. Possession of formal education therefore increases the likelihood that the respondents will adapt to climate changes. This is because the respondents are knowledgeable enough and knows the benefits and potentials accrued to the adaptation. Farming experience also had a positive coefficient (0.104) and was significant (0.004) at 1% level of probability. This implies that the more experienced farmers are in groundnut production in the study area, the more likely they are to adapt to climatic changes coping strategies over time. This could be because experienced farmers over the years have known the advantages of adapting to changes in enhancing groundnut production in the study area.

The coefficient of determination R for the regression is 0.893, indicating that the variables tested accounted for 89.3% of the variations in the dependent variable. The remaining 11.7% is attributed to the error term. The chi-square (X^2) value of the logistic regression model was 84.519 and was significant at 1% level of probability. This implies that respondents socioeconomic characteristic have significant effect on their level of adaptation to improved agricultural practices in the area.

Table 5: Logistic regression showing the effect of respondents' socioeconomic characteristics on their level of adaptation of improve agricultural practices in groundnut production in the study area

Economic characteristics	B	S.E	Wald	Sig.	Exp. (B)
Sex	-0.114	0.161	0.504	0.478	0.892
Age	5.302	3.141	2.849	0.524	0.005
household size	0.232	0.733	0.101	0.751	1.262
marital status	1.394	1.820	0.586	0.444	4.030
level of education	0.138	0.216	0.406	0.091***	0.872
annual income	0.020	0.000	4.447	0.335	1.000

farm experience	0.104	0.235	0.197	0.004*	1.110
farm size	0.102	0.148	0.472	0.079***	1.107
extension contact	-0.390	2.279	0.029	0.864	0.677
Constant	-4.656	4.256	14.584	0.000	190.425
cox and Snell R^2	0.652				
chi square	84.512				
Nagelkerke	.893				
2 loglikelihood	20.256[a]				

Note: * and *** indicates significant at 1% and 10% level of probability respectively

Source: Computed from field survey, 2023

Constraints Militating against Adoption of Improved Groundnut Production Practices by Farmers

The survey, encompassing responses from 118 participants, illuminated several critical constraints hindering the widespread adoption of improved groundnut production practices among farmers in the study area (table 6). The findings underscored significant challenges, notably the substantial concerns regarding the "Cost of Adoption" (mean: 2.95) and "Access to Credit" (mean: 3.05). Farmers' financial limitations and the importance of tailored credit facilities were underscored, aligning with the insights from agricultural scholar Adebayo *et al*., (2018), who emphasized the economic hurdles faced by farmers in adopting new technologies. Similarly, Ibrahim's (2020) perspective on the critical role of financial support aligns with the identified challenge of access to credit. Additionally, the mean for "Climate Change Impact" (3.07) highlighted the growing concern over the effects of climate change on agricultural practices, echoing the emphasis on resilient farming practices advocated by Adebayo *et al*., (2018) and Adekunle *et al.*, (2022)

In relation to the "Lack of Awareness" (mean: 2.91) and "Lack of Training" (mean: 2.97), the survey resonated with Okonkwo's (2019) research, emphasizing the importance of education and outreach programs. This aligns with the identified need for strategic awareness campaigns and investments in knowledge dissemination to bridge the knowledge gap among farmers. Furthermore, the perceived constraint of "Scarcity of High-Quality Seeds" (mean: 3.01) corresponds to Okechukwu *et al.*, (2022)

In summary, the survey results spotlight key challenges in groundnut farming adoption, emphasizing financial constraints, knowledge gaps, and the need for supportive policies. The alignment of these findings with the perspectives of Adebayo *et al*., (2018) underscores the complexity of these issues and emphasizes the multifaceted strategies required to address the challenges hindering the sustainable adoption of improved groundnut production practices in the study area.

Table 6: Constraints Militating against Adoption of Improved Groundnut Production Practices by Farmers.

No.	**Question**	**SA**	**A**	**D**	**SD**	**Mean**	Remark
1	Cost of adoption	40 (33.9%)	50 (42.4%)	10 (8.5%)	18 (15.3%)	2.95	Accepted
2	Lack of awareness	35 (29.7%)	55 (46.6%)	8 (6.8%)	20 (16.9%)	2.91	Accepted
3	Access to credit	45 (38.1%)	40 (33.9%)	15 (12.7%)	18 (15.3%)	3.05	Accepted
4	Lack of training	38 (32.2%)	48 (40.7%)	12 (10.2%)	20 (16.9%)	2.97	Accepted
5	Scarcity of highquality seeds	42 (35.6%)	46 (39.0%)	10 (8.5%)	20 (16.9%)	3.01	Accepted
6	Traditional beliefs and practices	30 (25.4%)	60 (50.8%)	8 (6.8%)	20 (16.9%)	2.88	Accepted
7	Lack of supportive policies	36 (30.5%)	52 (44.1%)	10 (8.5%)	20 (16.9%)	2.94	Accepted
8	Insufficient infrastructure	40 (33.9%)	50 (42.4%)	12 (10.2%)	16 (13.6%)	2.96	Accepted
9	Climate change impact	50 (42.4%)	35 (29.7%)	15 (12.7%)	18 (15.3%)	3.07	Accepted
10	Lack of collaboration	38 (32.2%)	50 (42.4%)	12 (10.2%)	18 (15.3%)	2.97	Accepted

Source: Field Survey, 2023

CONCLUSION AND RECOMMENDATIONS

The study identified low access to credit as greater percentage of the respondents had no access to credit facilities, thus depending mostly on friends and relations. Generally, the majority of the respondents in the study area were literate, as they had attended some form of education, with a good household size having a positive impact on groundnut production. The study also concluded that the visible challenge of climate change impacts on groundnut production in the study area, scarcity of quality seeds, lack of training, and information sources provide an understanding of the intricacies within the farming community. The study's outcomes showed a significant relationship between the independent variables and the dependent variable, including the error terms, contributing to the discourse on sustainable and inclusive agricultural development in adopting improved practices and highlighting the necessity for tailored interventions in groundnut production. Based on the findings of the study, it is recommended that, a targeted strategy for disseminating information on improved practices on groundnut production should put in place to compliments the existing ones considering the identified sources such as agricultural extension services and online resources in the study area. Policies that foster gender inclusivity in agricultural practices, ensuring equal opportunities and participation should be implemented by the government and Non-Governmental Organizations, provision of financial support and access to credit facilities to farmers to overcome financial barriers hindering the adoption of improved practices should be provided by the Bank of Agriculture, Central Bank of Nigeria, Commercial Banks and other financial institutions while Capacity-building programs, particularly for farmers with lower educational backgrounds, to enhance their understanding and implementation of modern agricultural techniques should be encouraged for sustainable agricultural development.

ACKNOWLEDGMENT

The authors are grateful to respondents for willful participation in data gathering for the research.

Declaration of Conflicting Interests

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author received no financial support for the research, authorship, and/or publication of this article.

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