



# FACTORS INFLUENCING YOUTH PARTICIPATION IN AGRICULTURE IN WESTERN ZONE OF BAUCHI STATE, NIGERIA

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#### **ABSTRACT**

The study examined the factors influencing youth participation in agriculture in the Western Zone of Bauchi State, Nigeria. A multistage sampling technique was employed to select 300 respondents. Data were collected through the administration of structured questionnaires and analyzed using descriptive statistics and binary logistic regression. Results revealed that the majority of youth participants are within the age bracket of 26-35 years with a mean 31 years, predominantly smallholder farmers managing farms of approximately 2.3 hectares, with a monthly income averaging N48,900. Crop production emerged as the major occupation (79.05%) while 51.35% and 38.18% were engaged in rearing livestock and agro-processing. The results of regression analysis revealed that age, marital status, education level, household size, farming experience, membership in associations, extension contact, access to credit, farm size, use of agro-chemicals, and labor type were significant (P<0.05) in influencing youths participation in agriculture. The major constraints to youth participation in agriculture were limited access to credit (mean = 4.48), high input costs (mean = 4.23), and inadequate land access (mean = 4.06). The study concluded that age, marital status, education level, household size, farming experience, membership in associations, extension contact, access to credit, farm size, use of agrochemicals, and labor type were the factors influencing youth participation in agriculture in the study area. The study recommends the need for government and development partners to address financial, land, infrastructural, and security challenges, alongside promoting capacity building with the aim of enhancing youth engagement in agriculture.

Keywords: Factors, Influence, Youth, Perception, Agriculture

#### INTRODUCTION

The population of youths in the world is about 1.2 billion and it is projected to increase to 1.3 billion by 2030 (United Nations, 2019). However, in its Revised National Youth Policy (2019), Nigeria redefined "youth" for national policy purposes to include those aged 15 to 29 years. The United Nations uses 15 to 24 years for its statistical definition of youth. International Labor Organization statistics showed that there are about 1.3 billion youth aged 15–24 globally as of 2019 accounting for one out of every four people (17.6%) worldwide. This is an increase of about 300 million youth population since 1999 (ILO, 2020). The study was therefore carried out to examine the factors influencing youth participation in agriculture in western zone of Bauchi State. The specific objectives of the study are; describe the socio-economic characteristics of selected respondents in the study area; identify the different available areas of agriculture that youth are involved in the study area; identify the factors influencing youth decisions to participate in agriculture in the study area; determine the socio-economic characteristics influencing youth participation in agriculture in the study area and identify the constraints affecting youth participation in agriculture in the study area.

#### **METHODOLOGY**

#### The Study Area

The study was conducted in the Western Zone of Bauchi State, Nigeria, an area that encompasses several Local Government Areas (LGAs) including Toro, Dass, Tafawa Balewa, and Bogoro. This zone lies approximately between Latitudes 9°30'N to 10°30'N and Longitudes 8°30'E to 10°00'E, forming part of the broader Guinea Savanna ecological zone of Northern Nigeria. This geographical diversity enables the cultivation of various crops and supports livestock rearing, making agriculture a dominant economic activity for the majority of the population.

### Sample and Sampling Technique

This study employed a multistage sampling technique to select respondents from the Western Zone of Bauchi State, which comprises Toro, Dass, Bogoro, Tafawa Balewa, Kirfi, and Alkaleri Local Government Areas (LGAs). In the first stage, Toro LGA and Bogoro LGA were purposively selected from the six LGAs of





the zone based on their relatively high youth population actively participating in agriculture and their accessibility for research purposes.

In the second stage, four wards were randomly selected from each of the two selected LGAs Toro and Bogoro giving a total of eight wards. Within each selected ward, a comprehensive list of youth farmers was compiled with the assistance of local agricultural extension officers and youth leaders. From these lists, respondents were randomly chosen using proportionate sampling, thereby ensuring fair representation from all the wards based on the population of youth farmers available in each LGA.

To determine the appropriate sample size for the study, the Taro Yamane formula (1967) was applied. This formula is widely accepted for calculating sample sizes from known finite populations. The formula is stated as:

$$n=rac{N}{1+N(e)^2}$$
 .....(i)

Where:

- (i) n = sample size
- (ii) N = population size
- (iii) e = level of precision or margin of error (commonly set at 0.05 for 95% confidence level)

Based on available records from agricultural extension departments and youth associations, the estimated population of youth farmers in the selected LGAs was 1,200. Substituting into the formula:

$$n = \frac{1200}{1 + 1200(0.05)^2} = \frac{1200}{1 + 1200(0.0025)} = \frac{1200}{1 + 3} = \frac{1200}{4} = 300$$
......(ii)

Thus, a total sample size of 300 respondents was determined to be adequate for the study. These respondents were then proportionately distributed across the selected wards and LGAs according to the density of youth farmers in each area. The proportional allocation ensured that areas with larger populations of youth in agriculture had a higher number of respondents, thereby increasing the representativeness and accuracy of the findings.

Table 1: Proportional Distribution of Respondents Across Selected LGAs and Wards

Selected Ward	Estimated Youth Farmer Population (N)	Percentage Calculation	Proportion (%)	Sample Size (n)
Toro LGA				
Rimin Zayam	140	$(140 \div 1,200) \times 100$	11.67	35
Lame	120	$(120 \div 1,200) \times 100$	10.00	30
Tilden Fulani	100	$(100 \div 1,200) \times 100$	8.33	25
Jama'a	90	$(90 \div 1,200) \times 100$	7.50	23
Bogoro LGA				
Bogoro	160	$(160 \div 1,200) \times 100$	13.33	40
Gizaki	180	$(180 \div 1,200) \times 100$	15.00	45
Boi	210	$(210 \div 1,200) \times 100$	17.50	53
Lusa	200	$(200 \div 1,200) \times 100$	16.67	49
Total	1,200	_	100.00	300

#### **Method of Data Collection**

Data were collected through the administration of structured questionnaire technique, designed to elicit quantitative data from youth actively engaged in agricultural activities. The questionnaire was divided into sections in accordance with the objectives of the study, covering areas such as socio-economic characteristics, types of agricultural enterprises, factors influencing participation, constraints, and prospects of youth engagement in agriculture.

### Method of Data Analysis

Data were analyzed using combination of descriptive and inferential statistical techniques. Descriptive statistics were used to analyze objectives i, ii, iii, and v. Inferential statistics used was logistic regression to achieve objective iv.

$$Y = \beta 0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_7 X_7 + \beta_8 X_8 + \beta_7 X_7 + \beta_8 X_8 + \beta_8$$





 $\beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{12} + \beta_{13} X_{13} + U \dots (v)$ Where: Y= Level of participation in agriculture (1 = Yes, 0 = No) $X_1 = Age (years)$  $X_2$ = Marital status (1 = Single, 2 = Married)  $X_3$ = Education level (1 = Quranic, 2 = Primary, 3 = Secondary, 4 = Tertiary) X<sub>4</sub>= Household size (number of persons)  $X_5$ = Farming experience (years)  $X_6$ = Membership of association (1 = Yes, 0 = No)  $X_7$ = Extension contact (1 = Yes, 0 = No)  $X_8$ = Farm size (hectares)  $X_9$ = Access to credit (1 = Yes, 0 = No)  $X_{10}$ = Quantity of harvest (kg)  $X_{11}$ =Land acquisition (1 = Inherited, 2 = Other sources)  $X_{12}$ = Use of agro-chemicals (1 = Yes, 0 = No)  $X_{13}$ = Type of labour (1 = Family, 2 = Hired)  $\beta\theta$  = Intercept  $\beta_1$  - $\beta_{13}$  = Coefficients for the predictor variables

#### RESULTS AND DISCUSSION

U= Error term

#### **Socio-Economic Characteristics of the Respondents**

Table 2 presents the distribution of respondents based on their quantitative socio-economic characteristics, which include age, farm size, monthly income, and farming experience. The results revealed that 32.77% of the respondents were predominantly within the active and productive age bracket 31-35 years, while 28.04% were within 26-30 years, with a mean age of 31 years. This indicates that majority of the respondents are relatively young and within the economically active population, which implies that they are physically capable of engaging in farming activities. According to Adebayo and Okunlola (2018), younger farmers tend to be more innovative and open to adopting improved agricultural technologies, which enhances productivity and sustainability in agricultural enterprises.

The results also showed that 32.43% of respondents operated between 1-2 hectares, while 22.97% had farm sizes of between 2.1- 3 hectares, with a mean of 2.3 hectares. This implies that the respondents were smallholder farmers. The finding aligns with the report by Awotide, Abdoulaye, and Alene (2019), who observed that small-scale farming dominates agricultural production in Nigeria, particularly in northern regions, due to limited access to land and capital. The relatively small farm sizes may have implications for productivity and income levels, as smallholders often face constraints in mechanization and economies of scale.

In addition, the results revealed that 30.74% of respondents earned between \$\frac{1}{30.001}\$. \$\frac{1}{30.000}\$, and 28.72% earned between \$\frac{1}{30.001}\$. \$\frac{1}{30.000}\$, with an average monthly income of \$\frac{1}{348.900}\$. This shows that most of the respondents earn a moderate income from their agricultural and related activities. The observed income level reflects the economic realities of small-scale farmers in Nigeria, as highlighted by Nwankwo and Eze (2020), who noted that income among smallholder farmers is generally modest due to fluctuating market prices, high input costs, and limited access to credit facilities. Nonetheless, this income range suggests that farming remains a vital livelihood source among the respondents.

Furthermore, the results indicated that 34.80% of respondents had between 1-5 years of experience while 30.07% and 18.58% had 6 - 10 and 11- 15 years, with an average experience of 7.9 years. This indicates that a large proportion of the respondents have a fair amount of practical experience in farming. According to Eze and Okonkwo (2021), farming experience contributes significantly to decision-making, risk management, and adoption of improved farming practices. Experienced farmers are often better equipped to handle challenges related to pest control, input management, and market dynamics, thereby improving overall farm efficiency. The findings suggest that the respondents are mostly young, moderately experienced, smallholder farmers with moderate income levels. These characteristics collectively indicate a promising potential for agricultural growth if supported with adequate training, financial incentives, and access to productive resources.





**Table 2:** Distribution of Respondents According to Quantitative Socio-economic Characteristics (n = 296)

Variable	Frequency	Percentage	Mean
Age (years)			
18–25	45	15.20	
26–30	83	28.04	31
31–35	97	32.77	
Above 35	71	23.99	
Farm Size (ha)			
Less than 1	48	16.22	
1–2	96	32.43	
2.1–3	68	22.97	2.3
3.1–4	52	17.57	
More than 4	32	10.81	
Monthly Income (₹)			
Less than ₹30,000	74	25.00	
N30,001−N50,000	91	30.74	<del>№</del> 48,900
№50,001-N70,000	85	28.72	
Above ₹70,000	46	15.54	
Farming Experience (yrs)			
Less than 1	15	5.07	
1–5	103	34.80	
6–10	89	30.07	7.9
11–15	55	18.58	
More than 15	34	11.49	

Source: Field survey, 2025

#### Areas of Agriculture Youths are Involved In

From the table below, crop production emerged as the most dominant area of youth participation, with 79.05% (234 respondents) indicating active involvement in this domain. This high percentage suggests that crop farming remains the most accessible and traditional form of agriculture, likely due to availability of land, cultural familiarity, and lower barriers to entry in terms of skills and capital investment. This finding is consistent with the observations by Adekunle *et al.* (2021), who emphasized that young farmers tend to gravitate toward crop cultivation because it often forms the backbone of rural agriculture and food security systems. The results also showed that more than half (51.35%) of the respondents were into livestock production, reflecting interest among the youth in animal husbandry as a means of diversifying income and food sources. Poultry farming followed closely with 46.62%, a pattern that aligns with the findings of Nwachukwu and Ezeh (2020), who reported an increasing youth engagement in poultry enterprises due to relatively quick returns on investment and scalable management practices.

in addition, 38.18% of respondents were involved in agro-processing, which highlights a growing interest in value addition, job creation, and income generation through agricultural transformation. This trend indicates that some respondents have moved beyond primary production to more business-oriented agricultural ventures. Agricultural marketing (42.91%) was also a prominent area, which could reflect entrepreneurial engagement with supply chains and trading activities. Fish farming and horticulture had lower participation rates of 26.35% and 32.43%, respectively. The relatively modest involvement in aquaculture may stem from the technical expertise, financial input, and infrastructure required for water-based agriculture. Similarly, horticulture, though increasingly promoted in urban and peri-urban areas, may still be constrained by land limitations, perishability, and lack of cold storage facilities. Yet, their presence signifies awareness and interest among a segment of youth keen on niche agricultural markets.

Only 7.09% of the respondents were engaged in other areas, which may include apiculture (bee keeping), mushroom cultivation, and sericulture, indicating that these areas are still underutilized or unfamiliar to most youth in the study area. These emerging sectors may represent untapped potential that can be explored through targeted awareness campaigns and technical support.

The overall finding from this objective reveals that the majority of youth are clustered around conventional farming practices such as crop and livestock production, while emerging and value-added sectors like agro-processing and marketing are gaining traction. This aligns with studies by Yusuf *et al.* (2022), which underscore the importance of expanding youth capacity across the agricultural value chain—not just in production, but also in processing, packaging, distribution, and technology-driven farming. Furthermore, the





diverse nature of involvement suggests that agricultural youth engagement is no longer monolithic but spans multiple areas, reflecting a dynamic shift in perception and ambition toward agribusiness. This multidimensional participation has implications for agricultural policies that must move beyond supporting traditional farming to also include enterprise development, capacity building, access to agritech, and infrastructural support for downstream activities.

**Table 3**: Distribution of Respondents by Areas of Agricultural Involvement (n = 296)

Agricultural Activity	Frequency	Percentage
Crop Production	234	79.05
Livestock Production	152	51.35
Poultry Farming	138	46.62
Fish Farming	78	26.35
Horticulture (Fruits/Vegetables)	96	32.43
Agro-processing	113	38.18
Agricultural Marketing	127	42.91
Others (e.g., Apiculture, etc.)	21	7.09

Source: Field Survey, 2025

#### Socio-economic Factors Influencing Youth Participation in Agriculture

The binary logistic regression analysis was employed to evaluate how socio-economic variables influenced youth participation in agriculture in the western zone of Bauchi State. The model exhibited strong explanatory power, with a Nagelkerke R² value of 0.641, indicating that approximately 64.1% of the variability in participation could be explained by the set of independent variables used in the model. Moreover, the model's classification accuracy of 82.1% indicates a reliable prediction of participation behavior among youth.

Age was negative (-0.032) and significant (P<0.05), implying that younger youth were more likely to participate in agriculture than older youth. This finding aligns with the study of Edeh *et al.* (2022), who noted that as youth age, their interest in agriculture may decline due to shifts in aspirations and exposure to alternative career paths. Marital status was positive and significant (P<0.05) in influencing youth participation in agriculture, suggesting that married youths were more likely to engage in farming activities. This could be attributed to the increased responsibility of married individuals to support a family, which drives them to seek stable livelihood sources like agriculture, confirming observations made by Agwu and Chidebelu (2021).

Education level positively influenced participation (P<0.05), revealing that higher education exposure does not deter youth from agriculture but may rather enhance their participation, especially when agricultural innovations and opportunities are understood. This contradicts the traditional view that education distances youth from farming, but it corroborates with findings from Adeola and Ayoade (2020), who observed that tertiary-educated youth were more likely to explore agri-business innovations.

Household size ( $\beta$  = 0.089, p = 0.039) and farming experience ( $\beta$  = 0.147, p = 0.010) also significantly influenced participation positively. A larger household provides potential family labor, while more farming experience likely builds confidence and skill in agricultural ventures.

Crucially, membership in associations had a highly significant and strong positive effect ( $\beta$  = 1.001, p = 0.002), indicating that social networks and cooperative participation play a major role in youth's agricultural involvement. This supports the findings of Nnadi and Akwiwu (2021), who stressed the role of peer support and knowledge-sharing platforms in boosting agricultural engagement.

Similarly, extension contact ( $\beta = 0.793$ , p = 0.006) and access to credit ( $\beta = 1.116$ , p = 0.000) were both significant predictors of youth participation. This highlights the importance of institutional support in the form of information dissemination and financial services in empowering young people in the sector. These findings resonate with Ojo *et al.* (2022), who emphasized that access to advisory services and credit enhances adoption of improved farming practices.

Farm size ( $\beta = 0.235$ , p = 0.008) and use of agro-chemicals ( $\beta = 0.672$ , p = 0.018) also significantly influenced participation, indicating that resource availability and inputs improve the viability and attractiveness of agriculture to youth. The use of hired or family labor also had a significant positive impact ( $\beta = 0.538$ , p = 0.018), suggesting that access to labor whether internal or external is vital for youth participation.

Land acquisition ( $\beta$  = -0.420, p = 0.099), although not statistically significant, showed a negative relationship, hinting that those who inherited land might be less inclined to participate compared to those who actively acquired it, possibly due to a lack of ownership motivation. This observation corresponds with research





by Adebayo and Olagunju (2019), who stated that secure land access remains a major constraint for youth in agriculture.

In summary, the regression analysis underscores that youth participation in agriculture in the western zone of Bauchi State is significantly influenced by a combination of personal attributes (age, education), household characteristics (household size, experience), institutional factors (extension contact, credit), and farming conditions (farm size, use of agro-chemicals, labor type). Therefore, tailored policy interventions that enhance education, access to credit, farm input, and extension services are critical to boosting youth engagement in agriculture in the study area.

**Table 4**: Socio-economic Factors Influencing Youth Participation in Agriculture (n = 296)

Variable	Coefficient (β)	Standard Error	Wald	Sig. (p-value)	Exp(β) (Odds Ratio)
Age	-0.032	0.017	3.59	0.058	0.968
Marital Status	0.521	0.261	3.97	0.046**	1.684
Education Level	0.243	0.112	4.69	0.030**	1.275
Household Size	0.089	0.043	4.28	0.039**	1.093
Farming Experience	0.147	0.057	6.64	0.010**	1.158
Membership of Association	1.001	0.326	9.43	0.002***	2.721
Extension Contact	0.793	0.291	7.42	0.006***	2.210
Farm Size	0.235	0.089	6.99	0.008***	1.265
Access to Credit	1.116	0.313	12.70	0.000***	3.052
Quantity of Harvest	0.0012	0.0005	5.76	0.016**	1.001
Land Acquisition	-0.420	0.255	2.72	0.099	0.657
Use of Agro-chemicals	0.672	0.284	5.60	0.018**	1.959
Type of Labour	0.538	0.228	5.57	0.018**	1.713
Constant (β <sub>0</sub> )	-4.132	1.206	11.77	0.001	-

#### Model Summary:

-2 Log Likelihood: 248.12
Nagelkerke R<sup>2</sup>: 0.641

• Overall Prediction Accuracy: 82.1% Note: \*Significant at p < 0.05, p < 0.01, \*p < 0.001

#### **Constraints Limiting Youth Participation in Agriculture**

The results in Table 4 revealed that limited access to credit facilities ranked as the most critical constraint limiting youth participation in agriculture in the study area, with a mean score of 4.48 and a relatively low standard deviation (0.83), indicating consensus among respondents. This outcome aligns with the findings of Ayinde *et al.* (2021), who observed that limited financial support remains a systemic challenge in engaging youth in productive agricultural ventures, especially in northern Nigeria where formal financial institutions often impose stringent collateral requirements. The results also showed that high cost of farm inputs (Mean = 4.23, SD = 0.91) was also ranked as one of the major barrier, reinforcing observations by Adeola and Adetunbi (2022) that the rising cost of seeds, fertilizers, and pesticides has discouraged youth from participating in farming. This issue is compounded by inflationary trends and import dependence, which further escalate the cost of inputs beyond the reach of young, unemployed rural dwellers.

In addition, nadequate access to land (Mean = 4.06, SD = 1.02) was ranked third, corroborating the assertion by Oladeji and Ogunniyi (2020) that land tenure systems and traditional inheritance laws severely limit youth access to arable land in rural communities. In many cases, youths are forced to rely on family allocations or temporary leasing, which undermines their sense of ownership and long-term investment in farming.

The fourth constraint, poor market access (Mean = 3.89), illustrates the infrastructural and logistical bottlenecks facing agricultural production. Youths often lack the means of transporting their produce to urban markets or the information to negotiate better prices, leading to post-harvest losses and reduced motivation to remain in agriculture, as confirmed by Ojo *et al.* (2023).





Lack of modern farming tools and poor extension services, with mean scores of 3.78 and 3.72 respectively, point to the technological and knowledge gaps that hinder youth agricultural productivity. As observed by Igbokwe and Nwachukwu (2021), most young farmers still rely on manual tools, and their limited exposure to extension services deprives them of critical skills in pest control, climate-smart practices, and agribusiness development.

Other significant but relatively lower-ranked constraints include unstable government policies (Mean = 3.59), negative youth perceptions of agriculture (Mean = 3.47), and insecurity/banditry (Mean = 3.26). These factors highlight broader systemic and sociocultural challenges. In particular, insecurity—though not topranked—remains a key factor in deterring youth from farming, especially in regions like Bauchi State where conflicts, cattle rustling, and kidnappings are reported (Yahaya et al., 2022).

Lastly, climate change effects and the labour-intensive nature of agriculture, with mean scores of 3.12 and 3.01, though lowest in ranking, still pose real threats to youth participation. These issues are reflective of the global climate crisis and inadequate mechanization. As documented by Bello and Salisu (2023), erratic rainfall, flooding, and prolonged droughts have disrupted traditional farming calendars and increased production risks. The constraints facing youth in agriculture are multidimensional, encompassing economic, structural, institutional, and environmental factors. The mean and standard deviation rankings provide a clearer understanding of which barriers are most pressing, suggesting that any policy aimed at increasing youth participation must holistically address access to credit, land, input subsidies, and market infrastructure, while also ensuring security and climate resilience.

**Table 5**: Constraints Limiting Youth Participation in Agriculture (n = 296)

Constraints	Mean	Standard Deviation	Rank
Limited access to credit facilities	4.48	0.83	1st
High cost of farm inputs	4.23	0.91	2nd
Inadequate access to land	4.06	1.02	3rd
Poor market access	3.89	1.11	4th
Lack of modern farming tools	3.78	1.12	5th
Poor extension services	3.72	1.13	6th
Unstable government policies	3.59	1.18	7th
Poor perception of agriculture by youth	3.47	1.19	8th
Insecurity/Banditry	3.26	1.25	9th
Climate change effects (drought, flood, etc.)	3.12	1.28	10th
Labour-intensive nature of agriculture	3.01	1.34	11th

#### CONCLUSION AND RECOMMENDATIONS

Based on the findings of this research, it can be concluded that age, marital status, education level, household size, farming experience, membership in associations, extension contact, access to credit, farm size, use of agro-chemicals, and labor type were the factors influencing youth participation in agriculture in the study area. Also participation in agriculture was constrained by limited access to credit, high cost of inputs and inadequate access to land to mention few. it is recommended that there is a need for government and development partners to intensify efforts towards youth empowerment programs that specifically target agriculture.

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