



**YOUTH PARTICIPATION AND PRODUCTIVITY IN ARABLE FARMING IN IBADAN/IBARAPA AGRICULTURAL ZONE, OYO STATE, NIGERIA**

**OYEBANJO, O.<sup>1\*</sup> DADA, O.M.<sup>2</sup> AND ILORI, A.R.<sup>2</sup>**

<sup>1</sup>Department of Agricultural Economics and Farm Management, <sup>2</sup>Department of Agricultural Extension and Rural Sociology, Olabisi Onabanjo University, Ago-Iwoye, Nigeria

**ABSTRACT**

There is chronic youth unemployment in Nigeria while participation in agriculture continues to decline. The aging farmers could not deliver the expected productivity to meet the food needs of the growing population. The aim of this study was to examine the factors affecting youth participation and productivity in arable farming. A multistage sampling procedure was used to select 300 youth using structured questionnaire. Data were analyzed using descriptive statistics, Double-hurdle model and Cobb-Dougllass production function. The results showed that average age of the youth was 24.5 years, 59.0% had, at most, secondary education, 35.7% were married, average household size was 2 persons while 32.3% participated in farming. Majority (67.0%) cultivated <1.0 ha, 63.9% had <5 years of farming experience while 54.6% was not contacted by extension agent. Youths' decision to participate in arable farming was significantly influenced by age (3.259), marital status (0.784), education (1.455) and motivation source (0.430) at  $p < 0.01$  with farm size (0.977) at  $p < 0.10$ . Farm productivity was enhanced by seed (17.471), fertilizer (4.158), youthful age (0.553) and education (1.899) at  $p < 0.01$ . Therefore, public and private stakeholders in agriculture should ensure adequate supply of modern inputs in order to enhance participation and increased farm productivity among the youth.

**Keywords:** Decision, Farming, Participation, Productivity, Youth

**\*Correspondence:** oyebanjo.olumayowa@oouagoiwoye.edu.ng, 08055372189

**INTRODUCTION**

There is chronic unemployment of youth who constituted about 60.0% of the Nigerian population. The national unemployment rate increased from 33.3% in 2020 to 37.7% in 2022 [1]. About 49.7% (17.6 million) youth were both unemployed and underemployed in Nigeria [2]. Meanwhile, the average age of arable crop farmers, for instance, in the Southwest was 51.3 years. Thus, the farmers were relatively old and could retire in another few years [3]. The issue of unemployment has created a wide range of social ills among many youths who are involved in crime and violence, sexual abuses, impoverishment and low self-esteem. Empowering the youths through agricultural development programme will grant them more opportunities to be self-employed and become entrepreneurs with potential to generate high income [4]. World Bank [5] reported that the population growth rate is increasing faster than food production in Nigeria. Hence, youth participation in agriculture should be promoted through agricultural innovations and infrastructural development to ensure increased food production. Unfortunately, many youths in Nigeria are leaving the rural for the urban area based on economic, social and personal factors. Breitenbach [6] also observed mass unemployment and lack of sustainable livelihood activities among

youth. He warned that this problem will get worse with growth in population.

Jibowo [7] described the characteristics of youths as valuable asset, which would enhance agricultural extension and rural development if utilized effectively. They have faster reaction time, greater physical strength, social prosperity and prompt adoption of innovation that can promote agriculture [8]. According to Issa *et al.* [9], involvement of youths in agricultural production has suffered naturally in recent years especially in Nigerian rural areas despite the efforts made by successive government. Muhammed *et al.* [10] attributed the set back to the inability of the Federal Government to integrate youths into the numerous agricultural programmes over the years. Meanwhile, Lynckset *al* [11] pointed out that a country that will attain economic stability must have a vibrant agricultural sector and the youths must be encouraged to imbibe farming as a noble profession. Sanginga and Mbabu [12] declared that Nigerian rural areas lack all it takes in terms of infrastructure to raise the standard of living of people and make life comfortable for them.

Okeowo, *et al.* [13] pointed out that unemployed youth lack interest in farming and continue to develop negative view of agriculture due to lack of information about the various opportunities in the agricultural industry. Echebiri [14] affirmed that inconsistency and poor programme implementation,

lack of transparency among government officials and public servants, poor targeting mechanisms and failure to focus directly on unemployed youths are the major reasons for the failure of agricultural development programmes in Nigeria. The major constraints hindering youth participation in agriculture include inadequate credit facility, lack of agricultural insurance, poor returns to agricultural investment, lack of basic knowledge in farming and scarcity of modern farm inputs and machinery particularly tractor. Oladipo *et al.* [15] added that inadequate working capital, high cost of labour, inadequate farm inputs and limited access to credit were the constraints against effective youth participation in farming. The findings of Onemolease and Alakpa [16] also emphasized the importance of extension services in the adoption of agricultural technologies by the youths. Hence, it was concluded that the visible constraints in gaining access to land, credit, training, information and new technologies by the youths should be removed urgently [17].

Therefore, the specific objectives of the study are to:

- i. Describe the socioeconomic characteristics of the respondent youths in the area,
- ii. Examine the factors affecting youth participation decision and intensity of capital investment in arable crop farming, and
- iii. Estimate the determinants of farm productivity among the youth farmers, and
- iv. Identify the sources of youth motivation into farming.

## MATERIALS AND METHODS

### Study area

The study was carried out in Ibadan/Ibarapa Agricultural Zone which is one of the four Agricultural Extension Zones designated to boost arable crops and livestock production in Oyo State, Nigeria. The geographical area is approximately 2,496 km<sup>2</sup>, the natural vegetation was originally rainforest but this has been mostly transformed into derived savanna as a result of burning practices by farmers particularly during dry season [18]. The climate corresponds to a vegetation pattern and it is favourable for agricultural activities particularly arable and cash crop production. Oyo State hosts a number of agricultural research institutes including International Institute of Tropical Agriculture (IITA), Institute of Agricultural Research and Training (IAR &T) and Cocoa Research Institute of Nigeria (CRIN) which were initiated to boost food production in the Southwest of Nigeria, at large.

### Ethical clearance

Ethical clearance was not required for this study.

### Data collection and sampling technique

Primary data were collected from youths in the study area using structured questionnaire which was administered through personal contact. The respondents were selected through a three-stage sampling procedure. In the first stage, two (2) agricultural blocks namely: Ibarapa North and Egbeda were purposively selected from the Ibadan/ Ibarapa Agricultural zone being predominant areas of arable crop production. The second stage involved the selection of ten (10) rural communities from each of the Agricultural block while a sample of 15 to 17 respondents was subsequently selected by snowball sampling from each community based on their sizes. In all, data from complete three hundred (300) questionnaires were analyzed after screening.

### Data analysis

The socioeconomic characteristics of the youths and their farming systems were analyzed using descriptive statistics mainly the measures of central tendency. The independent double-hurdle model (DHM) developed by Cragg [19] was adapted in the regression analysis comprising of Tobit model which allowed two-step decision to overcome two hurdles. The first hurdle was the estimation of factors that influenced youth decision to participate in farming activities. The dichotomous dependent variable was measured using the value of 1 or 0, where 1 implies the decision to participate and 0, if otherwise. The second hurdle determined the factors affecting the actual amount of capital investment by the youth farmers. This was measured by man-day of labour spent in farming activities during production season. Following Genanew and Alemu [20], the two equations in the double hurdle model were specified as:

$$d_i^* = z_i\alpha + u_i$$

$$y_i^{**} = x_i\beta + v_i$$

where  $d_i^*$  denotes latent participation, it has a value of zero (0) when youth decide not to participate in farming and 1, if otherwise. Meanwhile,  $y_i^{**}$  denotes the intensity of farming,  $z_i$  is a vector of explanatory variables in the equation for participation while  $x_i$  is a vector of explanatory variables in the equation for intensity of participation and  $\beta$  is a vector of parameters.

The corresponding error terms  $u_i$  and  $v_i$  in the two respective equations are distributed as;

$$u_i \sim N(0, 1)$$

$$v_i \sim N(0, 1)$$

The first hurdle is then represented by:

$$\begin{aligned} d_i^* &= 1 & \text{if } d_i^* > 0 \\ d_i^* &= 0 & \text{if } d_i^* \leq 0 \end{aligned}$$

The second hurdle is given by:

$$y_i^* = \max(y_i^{**}, 0)$$

The observed variable  $y_i$  is determined by:  
 $y_i = d_i y_i^*$

The log-likelihood function for the double hurdle model was given as;

$$\text{Log } L = \sum_0 \ln[1 - \Phi(z'_i \alpha) \Phi(\frac{x_i \beta}{\sigma})] + \sum_+ \ln[\Phi(z'_i \alpha) \frac{1}{\sigma} \phi(\frac{y_i - x_i \beta}{\sigma})]$$

The probability of  $y_i = 0$  is specified as;

$$P(y_i = 0) = \Phi(-z_i \alpha)$$

The density of  $y_i$  which must be positive is given under the intensity of participation of zero mean and variance  $\sigma$  as;

$$f(\frac{y_i}{\sigma} > 0) = \frac{\{1/\sigma \phi(\frac{y_i - x_i \beta}{\sigma})\}}{\phi(\Phi(-x_i \beta))}$$

The double hurdle equations were analyzed using the same set of explanatory variables as;

- $X_1$  = Age of youth farmer (years),
- $X_2$  = Sex (1, if male; 0, otherwise),
- $X_3$  = Marital status (1, if married; 0, otherwise),
- $X_4$  = Educational status (year of schooling)
- $X_5$  = Source of motivation into farming (1, if agricultural development programme; 0, otherwise),
- $X_6$  = Amount of credit obtained (₦),
- $X_7$  = Farm size cultivated by youth (ha),
- $X_8$  = Land ownership (proportion of hectares owned by youth divided by total farm size cultivated),
- $X_9$  = Extension contact (number)
- $\mu$  = Stochastic error term

### Productivity of the youth farmers

The factors affecting productivity among the youth's farms were estimated using linear and Double-log forms of the Cobb-Douglass production function as follows;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \dots + \beta_{10} X_{10} + \mu \quad (\text{Linear equation})$$

$$\ln Y = \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \beta_3 \ln X_3 + \beta_4 \ln X_4 + \beta_5 \ln X_5 + \dots + \beta_{10} \ln X_{10} + \mu \quad (\text{Double-log equation})$$

where;

- $Y$  = Farm output per hectare (kg/ha)
- $X_1$  = Age of youth farmers (years)
- $X_2$  = Gender of youth (1 = male; 0 = otherwise)
- $X_3$  = Farm labour per hectare (man-day/ha)
- $X_4$  = Seed cultivated per hectare (kg/ha)
- $X_5$  = Fertilizer applied per hectare (kg/ha)
- $X_6$  = Chemical applied per hectare (litre/ha)
- $X_7$  = Educational status (year)
- $X_8$  = Farming experience (year)
- $X_9$  = Amount of credit obtained (₦)
- $X_{10}$  = Number of extensions contact per year

## RESULTS AND DISCUSSION

### Socioeconomic characteristics of the youth

The socio-economic characteristics of the youth could affect their decision to participate in farming. The results in Table 1 revealed that 56.0% of the respondents were  $\leq 30$  years old while 44.0% were above 30 years old meaning that they were young and active to adopt modern farming systems. This conforms to the report of Adebisi *et al.* [21] who found that the mean age of rural youth in cassava farming in Oyo State, Nigeria was 27.9 years. About 55.7% of them were male while 59.0% had a minimum of secondary education implying that they had the knowledge to make better decisions. This result corroborates the finding of Alabi *et al.* [22] which revealed that males have the tendency to participate more in agricultural programme that is energy demanding than females. Majority (64.3%) was single and may not have serious financial obligations while the average household size was 2 persons with about 25.7% of them having up to four (4) family members. The moderate household size could be attributed to their youthful age. A lower proportion of 32.3% participated in farming while 67.7% were engaged in non-farm activities including motorcycle riding as a means of transportation (31.0%), artisans (20.7%) while a few 5.7% were civil servants. The low participation in farming by the youth could be due to drudgery. However, 69.3% of them were participants of cooperative society. Cooperative membership could promote access of youth to credit facilities for commercial farming.

**Table 1:** Distribution of youth by their socio-economic characteristics (n = 300)

Characteristics	Class	Frequency	Percentage %	Mean ( $\bar{X}$ )
Age	< 20	77	25.7	24.45
	21-30	91	30.3	
	Above 30	132	44.0	
Sex	Male	167	55.7	44.3
	Female	133	44.3	
Formal education (years)	None	56	18.7	24.7
	Primary	67	22.3	
	Secondary	103	34.3	
	Tertiary	74	24.7	

Marital status	Single	193	64.3	2.28
	Married	68	22.7	
	Separated	7	2.3	
	Divorced	32	10.7	
Household size	1-3	223	74.3	2.28
	3-4	57	19.0	
	Above 4	20	6.7	
Livelihood sources	Farming	97	32.3	
	Artisan	62	20.7	
	Civil servant	17	5.7	
	Trading	31	10.3	
	Transportation	93	31.0	
Cooperative membership	None	92	30.7	
	Member	208	69.3	

Field survey 2022

### The youths' farming systems

The farming systems practiced by the youth are presented in Table 2. Majority (67.0%) cultivated less than 1.0 ha while 33.0% cultivated  $\geq 3.0$  ha. This means that the youth farmers were smallholders. About 53.6% of the youth inherited family land, 37.1% either borrowed or rented while only 9.3% were able to purchase their farmland. This implies that largest proportion of the farmland was under family control and this could hinder farm mechanisation among the youth. This finding is in line with [23] who reported that the youth were operating on small scale farms ranging between 1.0 and 4.0 hectares and the majority (73.3%) acquired their farm land through

inheritance. However, 63.9% of the youth had  $\leq 5$  years of farming experience while 36.1% had been cultivating arable crops for up to 10 years. An average youth farmer cultivated 11.72 kg of seed and 56.7% did not apply fertiliser probably due to scarcity or unaffordable price.

Furthermore, 66.0 % applied between 5.0-10.0 litres of herbicide while 21.6% did not use chemical probably due to low literacy level to understand the application instructions. An average of 1.16 litres of pesticide was used indicating little or no evidence of pests and disease. Otherwise, the input cost was not affordable. However, 54.6% of the youth farmer did not benefit from extension service, 45.4% were visited by the extension workers up to 5 times in a year. Hence, this implies that there was low level of extension services in the area.

**Table 2:** Distribution of youth by their farming systems (n=97)

Characteristics	Class	Frequency	Percentage %	Mean ( $\bar{X}$ )
Farm size (ha)	<1.0	65	67.0	
	1- <3	24	24.7	1.54
	Above 3	8	8.3	
Farming Experience (year)	< 5	62	63.9	
	5-10	28	28.9	5.70
	Above 10	7	7.2	
Seed (maize equivalence in kg)	< 10	19	19.6	
	10 - < 20	47	48.4	11.72
	Above 20	31	32.0	
Fertiliser (kg)	No application	55	56.7	
	< 100	28	28.9	31.90
	100 - < 200	10	10.3	
	Above 200	4	4.1	
Herbicide (litre)	No application	21	21.6	
	< 5	12	12.4	
	5 - < 10	61	62.9	5.33
	Above 10	3	3.1	
Pesticide (litre)	No application	64	66.0	
	< 5	26	26.8	1.16
	Above 5	7	7.2	
Mode of Land Acquisition	Inherited/ family land	52	53.6	
	Borrowed land	13	13.4	
	Rented/ leased land	23	23.7	
	Purchased	9	9.3	

Extension visits per year	No visitation	53	54.6	
	1 – 5 times	29	29.9	
	Above 5 times	15	15.5	

Field survey 2022

### Determinants of youth participation in arable farming

The independent double-hurdle model (DHM) comprising of Tobit model was adapted in estimating the factors influencing participation decision, in the first hurdle while the second hurdle determined the factors affecting the intensity of participation (man-day of labour) in farming among the youth. The estimates of the model presented in Table 3 show that the model parameters i.e. log-likelihood and Chi-square values and probability estimates were significant at  $p < 0.01$ . The estimates of the first hurdle show that age (3.259) significantly influenced participation decision among youth at  $p < 0.01$ . Thus, their decision to participate in arable farming increases with age. Marital status (0.784) had a significant ( $p < 0.01$ ) positive relationship with participation in farming possibly due to increasing food requirement of the household members. Formal education (1.455) significantly promoted involvement of youth in arable farming at  $p < 0.01$ . This could be attributed to their knowledge and understanding in adopting modern farm practices. This corroborates the result of [24] which revealed that education had significant effect on cassava production among youth. The coefficient of source of motivation (0.430) into farming is positive and significantly different from zero at  $p < 0.01$ . This implies that agricultural

programme enhanced the participation decision of the youth into arable farming. Meanwhile, cooperative and farmers' associations could also be used to support the youth and attract them into farming. Farm size (0.977) significantly promoted youth participation decision into farming at  $p < 0.10$ . This indicates that ownership of adequate hectares of land would enhance their decision to engage in arable farming.

The results of the second hurdle model shows that the significant factors determining the intensity of arable farming among the youth were fertilizer (1321.957) which has the highest coefficient followed by chemical (947.515), education (247.466) and farm size (25.796) at  $p < 0.01$  and  $p < 0.05$  respectively. Perhaps, fertilizer increased the farm yield, chemical reduced cost of labour and pest attacks while education promoted the intensity of farming probably through skills and knowledge to apply modern inputs. The source of motivation (-388.152) and marital status (-69.460) significantly ( $p < 0.01$ ) reduced the intensity of capital investment in farming among the youth possibly due to failure of past agricultural development programme which influenced households more into non-farm activities. The proportion of land owned by the youth and their contact with extension service significantly promoted the intensity of arable farming at  $p < 0.05$  and  $p < 0.01$  respectively.

**Table 3:** Estimates of Double Hurdle Model for decision and intensity of youth participation

Variable	First hurdle (decision to engage in farming)			Second hurdle (intensity of participation in farming)			
	Odd ratio	Std Error	Z	Coefficient	Robust Err	Std	Marginal effect
Constant	0.531	0.6334	-0.522	-1902.229**	914.054	-	-
Age	3.259***	0.0332	-2.572	844.110	214.713		202.688
Sex	5.449	0.3915	1.358	875.668	219.470		210.267
Marital status	0.784***	1.5505	6.738	-69.460***	58.728		-16.705
Education	1.455***	0.9874	3.808	247.466***	189.154		59.404
Source of motivation	0.430***	1.6886	5.388	-388.152***	188.515		-93.239
Amount of credit	1.485	0.3943	0.478	-520.372	187.651		-124.992
Farm size	0.977*	0.4110	1.698	25.796***	20.134		6.171
Proportion of land ownership	1.166	0.6334	-0.522	947.515**	189.552		227.521
Extension contact	5.956	0.0005	0.248	1321.957***	206.797		317.443
Log-Likelihood	-196.462			Log-likelihood	-1209.140		
Pseudo R <sup>2</sup>	0.2578			Pseudo R <sup>2</sup>	0.04216		
Prob. > $\chi^2$	0.0000			F(9, 441)	23.17		
Wald X <sup>2</sup>	105.34.			Prob > F	0.000		

Field survey 2022, significant \*\*\* $p < 0.01$ , \*\* $p < 0.05$  and \* $p < 0.10$

### Factors affecting productivity of arable crops among youth farmers

The estimates of farm productivity among the youth were presented in Table 4. The double-log was selected as lead equation based on the value of adjusted  $R^2$  which shows that the explanatory variables in the model were responsible for 57.1% of the variation in farm productivity among the youth. F-value (14.672) is significant at  $p < 0.01$ . Seed (17.471) had the highest significant contribution to arable crop productivity at  $p < 0.01$  possibly due to the use of improved varieties. The coefficient of fertilizer (4.158) shows that the significant contribution of fertilizer to farm productivity was high followed by extension contact at  $p < 0.05$  and  $p < 0.01$  respectively.

Therefore, the use of additional 1.0 kg of fertiliser would increase the output by 4.158 kg. This conforms to the finding of Anyiam *et al.* [25] which stated that productivity of farm land was significantly determined by type of soil and quantity of fertilizer used. Hence, application of modern inputs should be complimented with the use of adequate quantity of fertiliser and number of extensions contact with the youth farmers. The coefficient of age (0.553) and education (1.899) were both positive and significant at  $p < 0.01$ . Perhaps, an increase in age and education by one year led to increased farm productivity may be as a result of commitment or increasing knowledge of the farm setting.

**Table 4:** Determinants of productivity among youth farmers

Explanatory variable	Linear			Double-log		
	Coefficient	S. Error	t-value	Coefficient	S. Error	t-value
(Constant)	17.839**	7.549	2.363	11.006***	1.313	8.382
Age	0.002*	0.001	1.815	0.553***	0.170	3.256
Sex	1.712	2.048	0.836	0.577	0.348	1.658
Hired Labour	0.319	1.036	0.308	0.12	0.132	0.906
Seed	0.729***	0.115	6.348	17.471***	2.526	6.917
Fertilizer	0.046	0.023	2.025	4.158**	1.818	2.287
Chemicals	1.569	1.935	0.811	-4.524	-3.748	1.207
Education	0.232*	0.121	1.921	1.899***	0.371	5.112
Farming experience	2.84*	1.488	1.909	0.49	1.650	0.297
Loan	-0.411	0.746	-0.551	-0.519	1.196	-0.434
Extension contact	0.177*	0.108	1.638	1.943***	0.723	2.688
F –value	3.246**			14.672***		
Goodness of fit ( $R^2$ )	0.475			0.606		
Adjusted $R^2$	0.321			0.571		

Field survey 2022, significant \*\*\* $p < 0.01$ , \*\* $p < 0.05$  and \* $p < 0.10$

### Reasons for youth participation in farming

Table 5 shows the reasons that motivated the respondents to participate in arable farming. The results show that inherited occupation was the major reason (70.1%) followed by lack of white-collar job (61.9%). About 57.7% of the youth was encouraged

into farming by farm land which was available to them. Meanwhile, motivation through agricultural development programme was low at 22.7% showing inadequate support from government to attract the youth into agriculture.

**Table 5:** Sources of motivation into farming (n = 97)

Source of motivation	Frequency	Percentage %	Rank
Availability of tractor and modern inputs	52	53.6	4 <sup>th</sup>
Agricultural education/ Extension training	13	13.7	8 <sup>th</sup>
Inherited occupation	68	70.1	1 <sup>st</sup>
To secure food for family	32	33.0	6 <sup>th</sup>
Lack of white-collar job	60	61.9	2 <sup>nd</sup>
Access to farm land	56	57.7	3 <sup>rd</sup>
Secondary job engagement	11	11.3	9 <sup>th</sup>
Government support programme	22	22.7	7 <sup>th</sup>
Access to loan	35	36.1	5 <sup>th</sup>

Field survey, 2022

## CONCLUSION AND RECOMMENDATION

The findings revealed that participation of youth in arable farming was low (32.3%). Youth participation decision was promoted significantly by increasing age, likelihood of being married and formal education which enhanced adoption of modern farm practices. Fertilizer, chemical, education, proportion of land ownership and contact of youth with extension services significantly influenced their decision to participate in farming. The significant reduction in intensity of participation by source of motivation (-388.152) and marital status (-69.460) at  $p < 0.01$  implies low level of government support to attract the youth into agriculture. This probably led to the past failure of agricultural development programme and more engagement of households in non-farm activities. The physical inputs and some characteristics namely: seed, fertilizer, chemical, education and extension contact significantly enhanced participation decision, the intensity of participation and farm productivity among the youth.

Therefore, land laws should be enforced by government to acquire adequate land for intensive farming among the youth. Public and private stakeholders should ensure timely distribution of adequate modern farm inputs at affordable rate while extension services should be promoted to enhance farm productivity.

## REFERENCES

1. NATIONAL BUREAU OF STATISTICS (NBS, 2015 and 2022). Demographic Statistics Bulletin. A publication of Demographic Statistic Division, Abuja, Nigeria
2. MINISTRY OF BUDGET AND NATIONAL PLANNING (2017). Economic Recovery and Growth Plan 2017-2020. Federal Government of Nigeria, Abuja
3. OYEBANJO, O., OLOGBON, O.A.C., OSINOWO, O.H. & OGUNAIKE, M.G. (2022). Labour Production Efficiency among Arable Crop Farm Households in Southwest Nigeria. *FUW Trends in Science and Technology Journal*, **7**(2): 10731079.
4. AGU, M.N. (2013). Need to empower Nigerian children and youths through information technology. *International Journal of Soft Computing and Engineering*, **2**(6): 61-64.
5. WORLD BANK (2022). United Nations Statistical Division, Population and Vital Statistics Report, Washington, D.C, USA
6. BREITENBACK, M.C. (2017). A Model for Rural Youth Participation in Local Government: A South African Case Study. *Annals of Social Science*, **1**(1): 72-84.
7. JIBOWO, A.A. (2014). Rural Youths: A Vital but Untapped Human Resources. Proceedings of the NAERLS (National Agricultural Extension and Research Liason Services) National Rural Youths Workshop. An Invited Paper, June 6-8, 17-49.
8. SODIQUE, F.R. (2015). "Bee-honey production: A strategy for poverty alleviation among youths in Nigeria". *Annals of Child and Youth Studies*, **1**(1):113- 124.
9. ISSA, F.O., OBIOMA, O.D. & SALAU, R. (2014). Assessment of youth involvement in Agricultural Production: The case of Sabon-Gari LGA of Kaduna State, Nigeria. *International Journal of Agricultural Science Research and Technology in Extension and Education*, **7**(4): 163-171.
10. MUHAMMED, I., ISMAIL, A.B. & BIBI, U.M. (2015). An assessment of farmers-pastoralist conflict in Nigeria using GIS. *International Journal of Engineering Science Invention*, **4**(7): 23-33.
11. LYNCKS, J.S. LYNCKS, S.W.J. & KAGBU, J.H. (2013). Mobilizing Youth for Participation in Nigerian Agricultural Transformation Agenda: A grassroots' Approach. *Journal of Agricultural Extension*, **17**(2): 78-87.
12. SANGINGA, N. & MBABU, A. (2015). Root and tuber crops (Cassava, yam, Irish potato and sweet potato). In Proceedings of the Action plan for African Agricultural Transformation Conference, Dakar, Senegal. 21<sup>st</sup> – 23<sup>rd</sup> October: 20-24.
13. OKEOWO, T.A.A., AGUNBIADE, J.B. & ODEYEMI, L.A. (2014). An Assessment of the Level of Involvement of Farm Children in Farming Decision in Ikorodu Area of Lagos State In farm children and Agricultural Productivity in 21st Century
14. ECHEBIRI, N. (2015). Characteristics and determinants of urban youth unemployment in Umuahia, Nigeria. A paper presented at World Bank Conference on Share growth in Africa held at Accra Ghana.
15. OLADIPO, F.O., BOLARINWA., BUSARI, I.Z., BELLO, O.G., DAUDA, A.K., KAYODE, A.O. & KAREEM, O.W. (2018). Assessment of Constraints to Youth Farmers in Yam Production in Nasarawa State, Nigeria. *Annals of Child and Youth Studies*, **8**(1): 72-87.
16. ONEMOLEASE, E. & ALAKPA, S. (2013). Determinants of Adoption Decisions of Rural Youths in the Niger Delta Region of Nigeria. *Journal of Social Science*, **20**(1): 61-66.

17. BALOGUN, F.E. & AKINBILE, L.A. (2018). Participation of Rural Youth in Rubber Production in Edo and Ogun States, Nigeria. *Annals of Child and Youth Studies*, **8**(1): 105-118.
18. FAJUYIGBE, O., BALOGUN, V.F. & OBEMBE, O.M. (2007). Web-based Geographical Information System (GIS) for tourism in Oyo State, Nigeria. *Information Technology Journal*, **6**(5): 613 - 622.
19. CRAGG, J.G. (1971). Some Statistical Models for Limited Dependent Variables with Application to the Demand for Durable goods. *Econometrica*, 829-844.
20. GENANEW, B.W. & ALEMU, M. (2012). Investment in land conversation in the Ethiopian highlands: a household plot-level analysis of the roles of poverty, tenure security and market incentives. *International Journal of Economics and Finance*, **4**(6): 32-50.
21. ADEBISI, G.I.; OWOLADE, E.O. & JATTO, B.O. (2015). Factors Influencing RuralYouths Involvement in Cassava Production in Oyo State. *Journal of Agricultural Research and Development*, **5**(3): 128-136.
22. ALABI, O.S.; AJAYI, A.O. & AKINWALE, E.O. (2017). Agricultural Production Practices of Ex-Trainee of Leventis Foundation School of Agriculture, Iles, Osun State. *Moor Journal of Agricultural Research*, **18**: 107-120
23. OLADIPO, F.O.; BOLARIN, O; BUSARI, I.Z.; BELLO, G.; DAUDU, A.K.; KAYODE, A.O. & KAREEM, O.W. (2018). Assessment of Constraints to Youth farmers in Yam Production in Nasarawa State, Nigeria. *Annals of Child and Youth Studies*, **8**(1): 72-87.
24. AGWU, N.M.; ANYANWU, C.I. & KALU, .H. (2015). Factors Influencing Cassava Value Addition by Rural Agribusiness Entrepreneurs in Abia State, Nigeria. *Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development*, **5**(3): 3-7.
25. ANYIAM, K.H., IGWE, K.C. & HENRY-KOHA, A. (2019). Determinants of Productivity of Farmland in Imo, State. *Journal of Agriculture and Food sciences*, **17**(2): 74-85.