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Effect of Socio-economic Factors on Cassava Production in Benue State, Nigeria

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ABSTRACT
The study assessed the effect of socio-economic factors on cassava production in Benue State. Multi stage random sampling techniques was employed to elicit data for the study. Two zones of the State namely, Zones B and C were randomly selected, two blocks and three circles were randomly selected. Finally, five farmers were also randomly selected and a total of 120 farmers were used as the sample size. Primary data were used and data analysis involved both descriptive and inferential statistics. It was revealed that 72.50% of the respondents were males, 80.00 % were married, 44.17% of the respondents had farm sizes between 1.0-2.9 ha and majority (75.00%) of the farmers belonged to community association. Two-third (75.00%) of the farmers planted both improved and local cassava varieties. The regression result showed that age, education, marital status, membership of association, fertilizer use, weed control method and farm size were significant to cassava production. Some of the major constraints to cassava production were also revealed to be high cost of inputs (agro chemicals), financial constraints, high cost of labour and low access to planting materials. It is therefore, recommended that agricultural inputs (agro-chemicals) be made available at affordable price for the farmers use, since it showed as major constraints to cassava production output which rank first in the area.
Keywords: Farmers, Cassava, Production and Benue State

INTRODUCTION

Nigeria produces more than 45 million metric tons (MT) of cassava, thus emerging as the World's largest producer. The Nigerian cassava system, characterized by small-scale farmers that cultivate less than 2 hectares of cassava (average of 0.5 ha), is subsistent in nature, primarily cultivated for the traditional food market and not oriented to the industrial market. The average production figures per hectare in Nigeria were 10.5 MT/ha in the early 1970s, 11.5 MT/ha in the 1980s, 10.5 MT/ha by the end of 1980s and 11.5 MT/ha in the 1990s and up to 17.3 MT/ha in 2004 (FAO STAT, 2005). Cassava is used mainly for two main purposes in Nigeria: 90% as human food and only 5-10% as secondary industrial material (used mostly as animal feed). Other common cassava products for human foods are Lafun and Fufu/Akpu. Cassava has the potential to increase farm incomes, reduce poverty level of the rural and urban people and help close the food gap, Onyemauwa, (2010). Previous related studies from (Odoemenem and Otanwa, 2011; Oni, 2016) pointed out some socio-economic factors influencing production of cassava in the study area, this study therefore tends to find current relationship between socio-economic factors and cassava production. Hence, the study

to assess the effect of socio-economic factors on cassava production in Benue State. Specifically, the objectives of this study are to describe the socio-economic characteristics of the respondents in the study area, determine effect of socio-economic factors on cassava production and constraints to cassava production.

METHODOLOGY

The study was carried out in Benue State, Nigeria. Benue state lies between latitude 6° 25'N and 8° 8'N of the equator and between longitude 7° 47'E and 10° 00'E of the Greenwich meridian. The state has a total land area of 30,800 square km (National Bureau of Statistics, 2012). Multi stage random sampling technique was employed in data collection. Two zones of the State, namely Zones B and C were randomly selected. Two blocks were randomly selected making it four blocks from the zones; Makurdi and Gwer East from Zone B while Okpokwu and Otukpo from Zone C. Three circles were randomly selected from each of the blocks, making it 24 circles and finally, five farmers were also randomly selected and a total of 120 farmers served the sample size. Data were analyzed using descriptive such as frequency and percentages while inferential statistics used is multiple regression model. The model is implicitly stated as:

$$Y= (X_1, X_2, X_3.....X_{13}+u \quad (1)$$

Where,
Y = Output yield (kg)
X_1 = Sex (male = 1, female = 0)
X_2 = Marital status (married= 1, single= 0
X_3 = Age (years)
X_4 = Educational level (years of schooling)
X_5 = Household size (number persons)
X_6 = Extension contact (yes =1, no =0)
X_7 = Farming experience (years)
X_8 = Membership of association (yes =1, no =0)
X_9 = Monthly income (₦)
X_{10} = Cassava variety type (improved variety=1, local variety= 2, both varieties = 3)
X_{11} = Fertilizer use (organic fertilizer = 1, inorganic fertilizer = 2, both organic and inorganic =3)
X_{12} = Weed control method used (manual weeding =1, herbicide = 2, both manual and herbicide=3)
X_{13} = Farm size (hectare)
u = Error term

RESULTS AND DISCUSSION

Socio-economic characteristics of the respondents

The result from Table 1 revealed that 72.50% % of the respondents were males while 27.50 % were females. The result showed that there were more male than female cassava producers in the study area. A large proportion of the respondents (80.00 %) were married. About 27.50% of the farmers fell between the ages of 40 and 49 years, while 25.00% of the farmers were between 50-59 years. Most of the farmers (52.50%) had secondary education. Education has always been known to play a positive role crop production activities farmers (Sheikh, *et al.* 2006). The result showed that majority of the farmers (75.00%) belonged to community association. Belonging to community association will enable food crop farmers to practice better land management and obtain high productivity from the farm. About 52.50% of the farmers had monthly income of between ₦30,000 – ₦49,000. This result showed that they were resource poor farmers. The result revealed that most of the farmers (55.00%) had between 6 and 10 household members. The implication is that large households' size will involve more hands in farming activities. Therefore, household size is a necessity for the size of the farm and increase in cassava farming. Majority of the farmers (75.00%) planted both improved and local cassava varieties. It implied that the farmers accepted improved cassava variety and still retained their indigenous variety. Most of the farmers (37.50%) had farming experience of 10-19 years.

Table 1: Socio-economic characteristics of the respondents n= 120

Options	Frequency	Percentages
Sex		
Male	87	72.50
Female	33	27.50
Marital status		
Married	96	80.00
Singe	24	20.00
Age		
20-29	15	12.50
30-39	18	15.00
40-49	33	27.50
50-59	30	25.00
60-69	24	20.00
Educational level		
Non formal education	9	7.50
Primary	15	12.50
Secondary	63	52.50
Tertiary	33	27.50
Household size		
1-5	35	29.20
6-10	66	55.00
11-15	13	10.80
Above 20	6	5.00
Extension contact		
Yes	30	25.00
No	90	75.00
Farming experience		
1-9	30	25.00
10-19	45	37.50
20-29	23	19.17
30 and above	22	18.33
Membership of association		
Yes	90	75.00
No	30	25.00
Monthly income		
10,000-29,000	48	40.00
30,000-49,000	63	52.50
50,000-69,000	6	5.00
70,000-89,000	3	2.50
Cassava variety type planted		
Improved cassava	24	20.00
Local cassava	6	5.00
Both improved and local	90	75.00
Fertilizer used		
Organic fertilizer	10	8.33
Inorganic fertilizer	77	64.17
Both organic and inorganic	33	27.50
Weed control method used		
1st &2nd Manual weeding	6	5.00
Herbicide application	6	5.00
Both manual weeding and herbicide	108	90.00
Farm size		
1-2.9ha	53	44.17
3- 4.9ha	34	28.33
5-6.9ha	21	17.50
Above 7ha	12	10.00

Source: Field survey, 2019

The result indicated that the farmers had longer years of experience in cassava farming. The result revealed that 75.00% of the respondents indicated that they had no contact with extension agents during the period under review. Greater proportion of the farmers (64.17%) used inorganic fertilizer in their cassava farm to increase the cassava output. Majority 90.00% of the farmers controlled weed in their cassava farm with both manual weeding and herbicide application in the study area. This showed good farm management practice in cassava farming, which would influence cassava yield. The result also showed that 44.17% of the respondents had farm sizes between 1-2.9 ha while 28.33% had between 3-4.9 ha of farm size. This implied that the farmers do cassava production in a large scale. This finding is in contrast with Okoye *et al.* (2004), that more than two third of the farmers in the rural population live on small farms less than two hectares, characterized by low technology, the use of family labour and subsistence orientation.

Effect of Socio-economic Factors on Cassava Production

The results in Table 2 revealed multiple regression analysis of the effect of socio-economic factors on cassava production in Benue State. The R^2 indicated that 93.77% variability in cassava production was explained by the independent variables. F ratio was also highly significant at 1%, indicating goodness of fit.

The result depicts that marital status was significant at 5% and positively related to cassava production in the study area. Age showed significant at 1% but negative, this implied that the lower the age, the higher the production of cassava. The finding is in conformity with the *a priori* expectation and agrees with Hartley (2003), who says that respondents within productive age are likely to adopt innovations better because they are still active and dynamic than the ones who are of age. Educational attainment was found to be significant at 1% level and is positively related to cassava production. This implied that increase in the level of education will lead to corresponding increase in cassava production output. It meant that as farmers acquired more formal education, farming technology knowledge, skills and attitude toward farming tend to influence output. This finding agrees to *a priori* expectation and agrees with finding of Ume, *et al.* (2013), who reported that education helped to facilitate production as it makes one to be more objective in evaluating innovation, which will influence his or her output. Membership of community based-organization was found to be significant at 1% level and positively related to cassava production. It implied that being membership to farmers' association or community association will likely help in adoption of technologies. This conforms to *a priori* expectation and agrees with Odoemelam, *et al.* (2016), who stated that farmers who were not member of associations were expected to have lower probabilities of conservation technologies which may influence cassava output. Fertilizer use and weed control method used showed significant and positive to cassava production output at 5% levels respectively. This implied that the more fertilizer used and weed controlled in cassava farm, the greater the cassava output. Farm size was also significant and positively influenced cassava production at 1% level. This result revealed that increase in farm size, increases the involvement of the farmers in production of cassava. This agrees with Ironkwe (2010) who noted that increased farm size had a production effect.

Table 2: Effect of Socio-economic Factors on Cassava Production

Variables	+Linear	Exponential	Double log	Semi log
Constant	0.431	0.800	0.000	10.000
	(-0.79)	(0.25)	(11.51)***	(8.24)***
Sex	0.350	0.851	0.533	0.639
	(0.72)	(0.19)	(0.63)	(0.47)
Marital status	0.023	0.084	0.383	0.765
	(2.31)**	(1.74)*	(0.88)	(0.30)
Age	0.011	0.701	0.735	0.034
	(-2.67)***	(-0.38)	(-1.02)	(-2.26)**
Educational level	0.014	0.043	0.232	0.517
	(2.49)***	(2.04)**	(1.20)	(0.65)
Household size	-0. 753	0.457	0.544	0.364
	(0. 31)	(-0.75)	(-0.61)	(0.91)
Extension contact	0.786	0.355	0.309	0.467
	(0.27)	(0.93)	(0.34)	(0.73)
Farming experience	0.973	0.819	-0.987	0.968
	(0.03)	(-0.23)	(0.02)	(-0.04)
Membership of association	0.013	0.596	0.304	0.011
	(2.52)***	(0.53)	(1.03)	(2.59)***
Monthly income	0.708	0.005	0.4620	0.182
	(0.38)	(2.86)***	(0.74)	(-1.35)
Cassava variety type	0.296	0.601	0.262	0.708
	(-1.05)	(-0.53)	(-1.13)	(0.38)
Fertilizer use	0.028	0.384	0.253	0.546
	(2.30)**	(0.87)	(1.15)	(0.61)
Weed control method used	0.028	0.251	0.238	0.000
	(2.37)**	(-1.15)	(1.19)	(3.85)***
Farm size	0.000	0.000	0.000	0.000
	(35.56)***	(19.12)***	(27.39)***	(20.08)***
R^2	0.9377	0.8211	0.9049	0.8379
Adjusted R^2	0.9294	0.7972	0.8922	0.8163
F ratio	0.000	0.000	0.000	0.000

Source: Field survey, 2019. **Note**: Figures in parenthesis represent t-ratios; *** = significant at 1% level and **= at 5% level, + = Lead Equation.

Constraints to Cassava Production in the Study Area

The result in Table 3 showed that high cost of farm inputs (agro-chemicals) (71.67%) was the major constraint to cassava production. This constraint ranked first in the factors influencing cassava production that would help in healthy growth and increased yield of cassava plant in the farm. Financial constraints (70.00%) ranked second, which would enable the farmers to prepare their farm land, buy for input materials and pay for labour. This agrees with Anyaegbunam, *et al.* (2011), who stated that credit facilities and accessibility are crucial for food crop farming because most farmers are subsistence based and poor resource in terms of capital outlay. High cost of labour came third (65.83%) while the fourth constraint to cassava production output was low assess to planting materials (50.83%). Lack of farm land (19.16%) ranked fifth among the constraints to cassava production. Most of the farmers were limited to small scale fragmented farm land owned by their parents or community. This agrees with Adegboye, *et al.* (2010), who observed that it is even more difficult for farmers to get a piece of land except through inheritance. Similarly, Okoye, *et al.* (2004) in their research revealed that more than two third of the rural population live on small farms less than two hectares, characterized by low technology, the use of family labour and subsistence orientation. Climate change (12.50%) ranked sixth, Pests and diseases (4.17%) ranked seventh while theft (1.67%) ranked eighth to the constraining factors. According to (Odjugo, 2010), Nigeria is one of the developing countries that as the planet warms, rainfall patterns shift and

extreme events such as drought, floods, and forest fire become more frequent, which result in poor and unpredictable yield, thereby making cassava farmers more vulnerable. The study revealed myriads of challenges that threaten cassava production and productivity in Benue state.

Table 3: Constrains to Cassava Production in the Study Area

Options	*Frequency	Percentages	Rank
High cost of farm inputs (agro-chemicals)	86	71.67	1st
Financial constraints	84	70.00	2nd
High cost of Labour	79	65.83	3rd
Low access to planting materials	61	50.83	4th
Lack of land	23	19.16	5th
Climate change	15	12.50	6th
Pests and diseases infestation	5	4.17	7th
Theft	2	1.67	8th

Source: Field survey, 2019. *Multiple responses recorded

CONCLUSION AND RECOMMENDATIONS

The study concluded that there were some socio-economic characteristics of cassava farmers influencing the cassava production as revealed in the regression analysis results such as age, education, marital status, membership of association, fertilizer use, weed control method and farm size. Some of the major constraints to cassava production were also revealed to be high cost of inputs (agro chemicals), financial constraints, high cost of labour and low access to planting materials. It is therefore, recommended that agricultural inputs (agro-chemicals) be made available at affordable price for the farmers use, since it showed as major constraints to cassava production output which rank first in the area.

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