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ANALYSIS OF FACTORS INFLUENCING ADOPTION OF OKRA PRODUCTION TECHNOLOGIES AMONG FARMERS IN ENUGU STATE, NIGERIA

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ABSTRACT
Socio-economic factors influencing adoption of okra technology packages in Enugu State, Nigeria was studied and analyzed in 2012. Purposive and multistage random sampling techniques were used in selecting communities, villages and Okra farmers. The sample size was 90 okra farmers (45Awgu and 45 Aninri Okra famers). Data for the study was analyzed with descriptive statistics and multiple regression (Linear) models. The result indicates that Okra farming was dominated by females (51%). The mean household size for both farmers was 8 years (Awgu Okra farmers) and 7 years (Aninri Okra farmers) with farming experience of 27.41years and 28.56 years for Awgu and Aninri Okra farmers respectively. Awgu Okra farmers had mean farm sizes of 1.05 hectares as against 1.07 hectares for Aninri Okra farmers. The mean annual farm income for Awgu farmers was 129,543 NGN and 131,540.00N for Aninri farmers, while both farmer groups were visited by extension workers 5 times in a month. The result also showed that the farmers in the two LGA's adopted all okra technology packages such as site selection/land preparation, variety grown, planting dates, spacing, weeding techniques, method and rate of fertilizer application, methods of pests and disease control and farmers choices on time of harvesting and preservation. The Linear regression estimates of the determinants of farmer's adoption showed that coefficients of farm income, farm size and extension contacts were positively signed in both LGA's, while education and farming experience were positive and household size negative in Agwu LGA as gender and age were negative in Aninri LGA. Non access to credit, pest and disease infestation and poor extension services were problems affecting okra production in the study. Policies aimed at encouraging farmers' access to credit, extension education, formation of farmer group and provisions of rural infrastructure were advocated for increased okra production.

Keywords: adoption, determinants, okra, technologies, farmers

INTRODUCTION
Okra (*Abelmoschus esculentus* [L.] Moench) is among the most commonly grown vegetables throughout Nigeria. Okra cultivation and production has been widely practiced because of its importance to the economic development and can be found in almost every market in Nigeria. For a year round of consumption of okra, the fruits are sliced and sun dried or frozen (Alimi, 2004). Varieties vary by plant height, size of fruit, colour, early or late maturing (Udoh and Akpan, 2005). In Nigeria okra is grown basically in all states of the federation both as rain fed and irrigated crops because of the highlighted values. They contain valuable food ingredients, which can be successfully utilized to build up and repair the body (Bakhru, 2003; Edet and Etim, 2007). Okra is widely grown by farmers as a vegetable in the LGA. Okra is the most important fruit vegetable crop and source of calorie (4550 cal/kg) for human consumption. It ranks first before other vegetable crops (Babatunde, 2007). There are two distinct seasons for okra production in Nigeria, the peak and the lean seasons. During the lean (dry) season, okra fruit are produced in low quantities, scarce and expensive to get. In the

peak (wet) season, it is produced in large quantities much more than what the local populace can consume (Farinde *et al*., 2006). In Nigeria today, most of small and subsistence farmers represent the basic agricultural resource of the country and as such are the appropriate target and concern for extension. Access of farmers to timely and relevant information will improve their agricultural production, processing and marketing. These improvements will translate into higher income and better living standards for farmers (Ogunbameru, 2001).In order to ensure proper dissemination of improved agricultural technologies, the National Horticultural Institute (NIHORT) was established by the Federal Government of Nigeria to solve problems of providing fruits and vegetables which are very important in the diet of the people. Among the vegetables in NIHORT mandate is okra. The common improved varieties disseminated to farmers are LD – 68 and NH 47 – 4 (NIHORT, 2004). Notably, is dissemination of improved okra production technologies to farmers include; site selection/land preparation, variety grown, planting dates, spacing, weeding techniques, method and rate of fertilizer application, methods of pests and disease control and farmers choices on time of harvesting and preservation (NIHORT, 2004). Cheap and effective irrigation technologies are needed for dry season okra producers. Proper processing, preservation, marketing and utilisation of okra is necessary to arrest the wastage being experienced during the peak season. Such efforts should involve the development of appropriate technologies for processing and preserving okra to produce products of high market value.

Appropriate and adequate technological development would prevent post harvest losses; sustain increase production, increased income and improved standard of living for the okra producers, processors and marketers. It is assumed that farmers make adoption decision based upon utility consideration and comparing various technologies that are available, farmers will adopt a technology if its utility exceeds the utility of others (Louis, 1999). This is contrary to the perception of some researchers who perceive technology adoption as the exact coping or imitation of how the innovation had been used previously in a different setting (Rogers, 2003). When a technology is introduced in a given area, the choices available to farmers are not just adoption or rejection as many researchers think, but farmers' choices whether to adopt an entire package of a recommended technology. Unamma, (2004) posited that farmer decision to adopt innovations are determined by age, farm size, extension contact, level of formal education and farm income. Nwaobiala and Ogbonna, (2014) in their study found a relationship between adoption of okra production technologies and socio-economic characteristics of okra farmers to include; household size, farmers' educational level, farm income, farming experience, farm size and extension contacts. Many improved crop technology packages has been developed and disseminated to farmers in the study area, but their levels of adoption and related socio-economic factors in adopting these packages by okra farmers are not well documented. However, there is a dearth of information and research gap in this area of study. In view of this scenario, this paper attempts to analyze socio-economic factors influencing adoption of okra production technologies by farmers in Enugu State, Nigeria. Specifically, this paper; described selected mean and percentage socio-economic characteristics of okra farmers in Awgu and Aninri LGA's of Enugu States, ascertained levels of adoption of okra technologies among farmers in Awgu and Aninri LGA's of Enugu States. determined the factors that affect the adoption of okra production technologies in Awgu and Aninri LGA's of Enugu States and identified the problems militating against okra production in the study areas.

Hypotheses

H_O: Adoption of okra recommended technologies by farmers is influenced by gender, age, household size, education, occupation, farm income, farming experience, farm size and extension contact.

METHODOLOGY

This study was carried out in Enugu state, with its capital at Enugu. Enugu State is one of the states in the eastern part of Nigeria. The state shares borders with Abia State and Imo State to the south, Ebonyi State to the east, Benue State to the northeast, Kogi State to the northwest and Anambra State to the west. The 17 Local Government Areas in Enugu State are Aninri, Awgu, Enugu East, Enugu North, Enugu South, Ezeagu, Igbo Etiti, Igbo Eze North, Igbo Eze South, Isi Uzo, Nkanu East, Nkanu West, Nsukka, Oji River, Udenu, Udi, Uzo Uwani. The rainy season lasts approximately from April till October and is accompanied by heavy humidity and strong rain falls. The south western winds bring heat and humidity in the night and moderately hot but still humid weather during the day. Heaviest rainfall occurs between June and July, with around 360 mm in July. In the absence of rain, weather is clear and cool, around 30^0C; during the day and 22^0Cin the night. The annual rainfall in Enugu State is between 1.5 and 2 metres. The dry season is usually hotter than the rainy period and lasts between November and April. The lowest rainfall of about 16 mm is normal in February. Nights become chilly and temperatures may even drop below the 20 degrees Celsius, coming back to an average 32° C during the day with occasional peaks above the 36° C during the day. Economically, the state is predominantly rural and agrarian, with a substantial proportion of its working population engaged in farming, although trading (18.8%) and services (12.9%) are also important (Williams 2008).

Purposive and multistage random sampling techniques were used in the selection of LGA's, communities, villages and okra farmers. Purposively, Awgu and Aninri Local Government Areas of Enugu State were chosen because they are the major okra producing areas in the state and south eastern states. Multistage random sampling technique was used to select the communities, villages and Okra farmers. First, three (3) communities each L. G. A. namely Awgu, Mgbidi and Mmaku were randomly selected from **Awgu LGA**, while Ndegbor, Nnewne and Oduma from **Aninri LGA**, making a total six communities. From the Six (6) selected communities, three (3) villages were randomly selected which gave a total of 18 villages. Finally, five (5) farmers each were randomly selected from the selected villages that gave a grand sample size of 90 Okra farmers. A structured questionnaire was used in soliciting information from the farmers. Objectives 1 and 5 were realized with descriptive statistics such as frequency counts, percentages and mean scores, objective 2 was derived with adoption scale analysis, while multiple regression model captured objective 3. The cost and returns in okra production was achieved with gross margin and Benefit Cost Ratio Analysis.

Model Specifications and Theoretical Framework

The adoption of recommended okra technology packages by Okra farmers were determined using adoption score analysis (mean score). This is in accordance with Nwaobiala, (2013). It was achieved using 7 point likert Scale (Unaware =0; Aware = 1; Interest = 2; Evaluation = 3; Trial = 4; Accept= 5; Reject = 6). Farmers with adoption score of 3.0 and above were regarded as having reached average score of technology, that is, they are at evaluation stage, while farmers with adoption score of less than 3.0 where either at unaware, aware and interest stages. The multiple regression studies involve the nature of relationship between a dependent variable and two or more explanatory variables. The techniques produce estimates

of the standard error of multiple regression and coefficients of multiple determinants. In implicit form, the statement that a particular variable of interest (Y) is associated with a set of the other variables (X_I) is given as:

$Y_i = f(X_1, X_2 ...X_S)$..... (1)
Where y_i is the dependent variable and X_I.....X_2 is a set of k variables
The coefficients of multiple determination measures the relative amount of variation in the dependent variable (Y_i) explained by the regression relationship between Y and the explanatory variables (X_1). The F- Statistics tests the significance of the coefficients of the explanatory variables as a group. It tests the null hypothesis of no evidence of significant statistical regression relationship between Y_i and the X_i s as against the alternative hypothesis of evidence of significant statistical relationship. The critical F- value has an n and n-k-1 degrees of freedom, where n is the number of respondents and k is the number of explanatory variables. The standard error of regression coefficients is the measure of error about the regression coefficients. The nature of the relationship between an outcome variable (Y_i) and a set of explanatory variables (X_1) can be modelled using different functional forms. The four commonly used algebraic (functional) forms are: linear, semi- log, exponential and Cobb Douglas. The four functional multiple regression models were employed to select the one that has provided the best fit. The choice of best functional form was based on the magnitude of the R^2 value, number of significant variables, size and sign of regression coefficients as they conform to *a priori expectation.* The four functional forms were specified implicitly as follows;

Linear Function
$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + ei$
Semi – log function
$Y = L_nb_0 + b_1L_oX_1 + b_2L_oX_2 + b_3L_oX_3 + b_4L_oX_4 + b_5L_oX_5 + b_6L_oX_6 + b_7L_oX_7 + b_8L_oX_8 + b_9L_oX_9 + ei$
Exponential function
$LnY = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + ei$
Cobb Douglas Function $LnY = L_nb_0 + b_1L_nX_1 + b_2L_nX_2 + b_3L_nX_3 + b_4L_nX_4 + b_5L_nX_5 + b_6L_nX_6 + b_7L_nX_7 + b_8L_nX_8 + b_9L_nX_9 + ei$

Y= Percentage adoption scores
X_1 = Gender (male = 1, female = 0)
X_2 = Age in years
X_3 = Household Size (number)
X_4 = Education (years spent in school)
X_5 = Occupation (1= farming, 0 = otherwise)
X_6 = Farm income (in NGN)
X_7 = Farming Experience in Years
X_8 = Farm Size in Hectares
X_9 = Extension Contact (number of times in a month)
ei = error term

RESULTS AND DISCUSSION

Socio economic Characteristics of Okra Farmers in Enugu State, Nigeria

Data on Table 1 shows that a good proportion (51%) of the Okra farmers in Aninri LGA were Females while fairly good proportion (49%) in Awgu LGA were males. This implies that okra farming is dominated by female farmers. This result is not surprising because most of

the bulk food produced in Nigeria was by women. This supports the findings of Ironkwe *et al*., (2008). Awugu Okra farmers had mean household size of 8 persons while their counterparts had 7 persons. Large household size is a cheaper means of providing farm labour and reducing labour costs (Nwaobiala *et al*., 2009). The mean farming experience for Awgu Okra farmers was 27.41 years while Aninri Okra farmers had 28.56 years. Farm size of Awgu farmers was 1.05 hectares and 1.07 hectares for Aninri Okra farmers. 1dike (2008) affirmed that majority of small scale farmers in Nigeria cultivate on farm sizes below 2.0 hectares of farmland. Educational levels of both farmer groups was 10 years, indicating that majority of the farmers did not attend secondary school. Generally education is thought to create a favourable mental attitude for acceptance of new practices especially of information-intensive and management intensive practices (Tokula *et al.,* 2009 and Onyenweaku *et al.,* 2010). The mean annual farm income of Awgu Okra farmers was 129,543.22 NGN while Aninri Okra farmers had 131,540.00 NGN. The mean extension contacts for both farmer groups were 5 times in a month. Nwaobiala and Nwaneri (2012) opined that proper adoption of technologies is dependent on frequency of visits by the extension agent

Table 1: Mean and Percentage Distribution of Selected Socio-economic Characteristics of Okra Farmers in Awgu and Aninri LGA of Enugu States, Nigeria

Variables	**AWGU LGA (45 Okra Farmers)**	**ANINRI LGA (45 Okra Farmers)**
	Mean	**Mean**
Gender	Males (49%)	Females (51%)
Household Size (number)	8	7
Farming Experience (years)	27.41	28.56
Farm Size (hectares)	1,05	1.07
Education (years)	10.00	10.00
Annual Farm Income (N)	129, 543.22	131, 540.00
Extension Contacts (number of times in a month)	5	5

Source: *Field Survey Data, 2012*

Levels of Adoption of Okra Technology Packages among Farmers in Enugu State, Nigeria

Data on Table 2 shows the levels farmers' adoption of okra technology packages in Awgu and Aninri LGA's. The Table shows that a moderate proportion (35.35%) of okra farmers in Awgu LGA with a mean adoption score of 3.90 and 26.67% with mean adoption score of 3.72 indicated that site selection/land preparation and variety of okra grown were accepted and adopted. Also 31.11 percent of the okra farmers planting dates (M= 3.32), 26.67% plant spacing (M=3.5.8) and 37.78% weeding techniques (M=3.91). Furthermore, 32.22 percent, 28.89 percent and 33.33 percent of the respondents adopted methods and rate of fertilizer application (M= 3.31), pest and disease control (M=3.78) and farmers choice on time of okra harvest and okra processing (M=4.11) Since the mean adoption scores of these packages were above 3.0, it shows that the technologies were fully adopted by the okra farmers in the study area. In Aninri LGA, a fairly good proportion (40%) of okra farmers and a moderate proportion (31.11%) with mean scores of 4.04 and 3.97 adopted site selection/land preparation and variety of okra grown technology packages respectively. Also, 33.33% 0f okra farmers with mean adoption score of 3.80 adopted planting dates, while 26.67 percent with adoption mean scores of 3.71, 3.51 and 26.67 adopted technology packages such as plant spacing, weeding techniques and pest and disease control respectively. Finally, a fairly

moderate proportion 24.44% and moderate proportion (35.55%) of okra farmers adopted methods and rate of fertilizer application (M= 3.44) and farmers choice on time of okra harvest and okra processing (M= 3.71) respectively. Since the mean adoption scores of these packages in Awgu (3.75) and Aninri (3.74) LGA's were above 3.0, it shows that the technologies were fully adopted by the okra farmers in the study areas.

Table 2: Levels of adoption of okra technology packages by farmers in Enugu State, Nigeria

	AWGU LGA									ANINRI LGA								
TEP	**Unaware**	**Aware**	**Interest**	**Evaluation**	**Trial**	**Accept**	**Reject**	**Total**	**Aadoption score**	**Unaware**	**Aware**	**Interest**	**Evaluation**	**Trial**	**Accept**	**Reject**	**Total**	**Adoption Score**
1	1 (0)	2 (2.22)	6 (6.67)	24 (17.78)	56 (31.11)	80 (35.55)	6 (2.22)	175	**3.90**	2 (4.44)	2 (4.44)	2 (4.44)	12 (8.89)	60 (33.33)	90 (40)	12 (4.44)	182	**4.04**
2	0 (0)	2 (4.44)	14 (15.55)	30 (22.22)	44 (24.44)	60 (26.67)	18 (6.67)	168	**3.72**	4 (4.44)	2 (4.44)	12 (6.67)	15 (11.11)	52 (28.89)	70 (31.11)	24 (8.89)	169	**3.97**
3	1 (2.22)	3 (6.67)	6 (6.67)	27 (20)	56 (31.11)	70 (31.11)	6 (2.22)	169	**3.75**	2 (4.44)	2 (4.44)	4 (4.44)	24 (17.78)	60 (33.33)	75 (33.33)	6 (2.22)	171	**3.80**
4	2 (4.44)	3 (6.67)	14 (15.55)	24 (17.78)	40 (22.22)	60 (28.67)	18 (6.67)	161	**3.58**	0 (0)	3 (6.67)	12 (13/33)	30 (22.22)	26 (24.44)	60 (6.67)	18 (6.67)	167	**3.71**
5	0 (0)	3 (6.67)	6 (6.67)	30 (22.22)	40 (22.22)	85 (37.78)	12 (4.44)	172	**3.91**	1 (2.22)	5 (11.11)	10 (11.11)	30 (22.22)	40 (22.22)	60 (26.67)	12 (4.44)	158	**3.51**
6	1 (2.22)	4 (8.89)	18 (20)	30 (22.22)	40 (22.22)	50 (22.22)	1 (2.22)	148	**3.31**	2 (4.44)	3 (6.67)	12 (3.33)	33 (24.44)	44 (24.44)	55 (24.44)	6 (2.22)	155	**3.44**
7	1 (2.22)	1 (2.22)	8 (8.89)	36 (26.67)	48 (26.67)	65 (28.89)	12 (4.44)	170	**3.78**	0 (0)	3 (6.67)	8 (8.89)	36 (26.67)	49 (22.22)	60 (26.67)	24 (8.89)	171	**3.80**
8	0 (0)	3 (6.67)	6 (6.67)	30 (22.22)	56 (31.11)	75 (33.33)	6 (2.22)	185	**4.11**	0 (0)	2 (4.44)	4 (4.44)	6 (4.44)	64 (35.55)	80 (35.55)	12 (4.44)	167	**3.71**
Total Mean Adoption Scores									**30.06**									**29.98**
Mean ($\overline{X}$)									**3.75**									**3.74**

Source: *Field Survey Data, 2012*

Decision Rule:
Below 1.0= Unaware
1.0 – 1.49 = Aware
1.50 – 1.99 = Interest
2.0 – 2.49 = Evaluation
2.50 – 2.99 = Trial
3.0 and Above = Adoption
Values in Parentheses are Percentages

Where,
TEP = Technology Packages

Okra Technology Packages:
1. Site selection/ Land preparation
2. Type of variety Grown
3. Planting dates
4. Planting Spacing
5. Weed control techniques
6. Methods and Rates of Fertilizer Application
7. Pest and Diseases Control
8. Farmers Choices on time of Okra Harvesting and Preservation

The socio-economic factors which formed the independent variables include gender, age, household size, occupation, education, farming experience farm size and extension contacts. The linear regression model was chosen as lead equation based on its conformity with econometric and significant criteria such as the magnitude of R^2, F-ratio number of significant variables and agreement with *a priori expectation*. The R^2 value of 0.8627, indicate a 86.27% variability in adoption of okra production technologies is explained by the independent variables. The F-value (24.42) was highly significant at 1.0% level of probability indicating a goodness of fit of the regression.

The result in Table 3(a) reveals that the coefficient for household size (-346.744) was negatively signed and significant at 5.00% level of probability. This implies that any increase in household size will lead to a corresponding decrease in adoption of okra technologies. This is in contrast with *a priori expectation*, probably because most of okra produced was consumed by large households in the study area. Bauchi *et al.*, (2008) asserted that large household size is an important input for unpaid labour.

The coefficient for education (115.6016) was positively signed and significant at 5.00% level of probability. This implies that an increase in education will result to a corresponding increase in adoption of okra technologies by farmers, which is in agreement with *a priori expectation*. This finding is in consonance with Okoronkwo and Ume (2013), who opined that education increases productivity and enhances the farmers' ability to understand and evaluate new production techniques. The coefficient for farm income (890.5975) was positively signed and significant at 10.00% level of probability. Thus implies that increase in farm income will lead to a corresponding in adoption of okra technologies. This is in agreement with *a priori expectation*. Pooling of resources together by the farmers to bear the risk involved in technology adoption for increased okra productivity enhances adoption.

The coefficient of farming experience (22.61883) was positively signed and significant at 5.00% level of probability. This implies that any increase in farming experience will lead to a corresponding increase in adoption of okra technologies. This is in agreement with a *priori expectation*. This is probably because farmers who have been in okra production must have observed risks involved in the business and management of resources thus knowing how to overcome them. Farming experience has shown to enhance the adoption of technologies thereby increasing profit (Nwaobiala, 2013).

The coefficient of farm size (275.5042) was positively signed and significant at 5.00% level of probability. This implies that any increase in farm size will lead to a corresponding increase in adoption of okra technologies. This is expected and in accordance with *a priori expectation.* Increase in farm size will lead to increase in output there by bringing about more revenue and profit to the farmer (Ezeh, 2006). The coefficient for extension contact (1247.732) was positively signed and highly significant at 1.00% level of probability. This implies that any increase in frequency of extension contacts will bring about increase in adoption of okra technologies. This is in agreement with *priori expectation*. Extension is the major medium for agricultural innovations dissemination to farmers from the research. This finding is in line with Bonabana Wabbi, 2002, who asserts that good extension programmes and contacts are key aspects in

technology dissemination and adoption. The null hypothesis of no socioeconomic factors influencing adoption of okra technologies is hereby rejected.

Table 3(a): Regression Estimates of Determinants of Adoption in Okra Production Technologies in Awgu LGA of Enugu State, Nigeria.

Variables	Linear +	Exponential	Cobb Douglas	Semi log
Constant	392.4759	9.03281	-0.27767	-207101.8
	(0.16)	(76.60***)	(-0.27)	(-9.51***)
Gender	-64.5435	0.00076	-0.0178	-333.4949
	(-0.09)	(0.02)	(-0.34)	(0.29)
Age	18.4774	0.00058	0.0062	385.9749
	(0.70)	(0.49)	(0.10)	(0.28)
Household size	-346.744	-0.0158	-0.0658	-1493.896
	(-2.36**)	(-2.31**)	(-1.87*	(-1.98*)
Education	115.6016	0.0095	0.0151	146.6606
	(1.30*)	(0.39)	(0.44)	(0.20)
Occupation	-386.2686	-0.1244	-0.0191	-463.7513
	(0.91)	(-0.63)	(-0.80)	(-0.91)
Farm income	890.5975	-0.0406	-0.0321	-757.105
	(2.84*)	(-1.78*)	(-1.20*)	(-1.31*)
Farming experience	22.61883	-0.0004	-0.0772	-934.0299
	(2.34**)	(0.12)	(0.60)	(-0.891)
Farm size	275.5042	0.04031	0.0489	1066.47
	(2.45**)	(2.31**)	(1.89*)	(1.92*)
Extension Contact	1247.732	0.000055	1.0609	23660.44
	(12.98***)	(12.35***)	(11.11***)	(11.54***)
R^2	0.8627	0.8544	0.8497	0.8451
F Value	24.42***	21.88***	18.25***	19.95***

Source: *Field Survey, 2012*.
*, ** and *** is significant at 10.00%, 5.00% and 1.00% level of probability.
Figures in parentheses are t-values
+ = lead equation

FACTORS INFLUENCCING ADOPTION OF OKRA PRODUCTION TECHNOLOGIES

The socio-economic factors which formed the independent variables include gender, age, household size, education, occupation, education, farming experience, farm size and extension contact. The linear regression model was chosen as lead equation based on its conformity with econometric and significant criteria such as the magnitude of R^2, F ratio, number of significant variables and agreement with *a priori expectation.* The R^2 value of 0.8072, indicate 80.72% variability in the adoption of okra production technologies explained by the independent variables. The F-value (15.27) was highly significant at 1.0% level of probability indicating a goodness of fit of the regression.

The result in Table 3(b) shows that the coefficient of gender (-1247.646) was negatively signed and significant at 5.0% level of probability. This implies that the female farmers adopted okra technologies than their male counterparts in the study area. Gender stereotyping across sex line indicate that okra is majorly cultivated by women in the study area; women have been found to be productive in agricultural production thereby adding value to their products for increased profit (Nwaobiala *et al*., 2009).

The coefficient of age (-44.36614) was negatively signed and significant at 5.00% level of probability. This implies that any increase in age will lead to a corresponding decrease in adoption of okra technologies in the study area. This is against *a priori expectation* probably because okra production is dominated by okra farmers who are young, strong and still agile. Age of the farmers can have profound effect on the technology adoption of farmer thereby increasing his production and thus profit (Onyenweaku *et al*., 2010). The coefficient of Farm income (954.037) was positive and significant at 1.00% level of probability. This implies that increase in farm income will lead to a corresponding in increase adoption of okra technologies. This result is in consonance with the findings of Unamma (2004) and Chinaka *et al.,* (2007) where they found a positive relationship between farm income and adoption. The coefficient of farm size (1102.782) was positively signed and significant at 5.0% level of probability. This implies that any increase in farm size will lead to increase in output resulting to increased profit. This is in accordance with *a priori expectation*. The coefficient of Extension Contact (1.0662) was positively signed and highly significant at 1.00% level of probability. This implies that any increase in extension contact will lead to a corresponding increase in adoption of okra technologies in Aninri LGA. This is in consonance *a priori expectation*. The null hypothesis of no socioeconomic factors influencing adoption of okra technologies is hereby rejected.

Table 3(b): Regression Estimates of Determinants of Adoption of Okra Production Technologies in Aninri LGA of Enugu State, Nigeria

Variables	Linear +	Exponential	Cobb Douglas	Semi log
Constant	4460.5	9.22914	2.6952	-142039.4
	(1.90*)	(85.45***)	(2.26**)	(-5.56***)
Gender	-1247.646	-0.0532	0.04401	498.6689
	(-2.25**)	(2.08**)	(1.13*)	(1.19*)
Age	-44.36014	-0.0021	-0.1575	-3568.03
	(-2.75**)	(-1.78*)	(-1.79*)	(-1.87*)
Household size	105.565	0.00502	0.0557	1237.467
	(0.49)	(0.51)	(0.99)	(1.02*)
Education	-2.8513	-0.00168	-0.0354	-877.5236
	(0.05)	(0.07)	(-1.01*)	(-0.16)
Occupation	400.5387	0.02346	0.0452	901.3011
	(0.68)	(0.87)	(1.33*)	(1.22*)
Farm income	945.037	0.0443	-0.0265	-458.696
	(2.96***)	(1.88*)	(-0.80)	(-0.65)
Farming experience	-80.6688	-0.0032	-0.0305	-704.2131
	(-0.89)	(-0.79)	(-0.65)	(-0.67)
Farm size	1102 .782	0.0498	0.0748	1664.862
	(2.33**)	(2.23**)	(2.16**)	(2.23**)
Extension contact	1.0662	0.00004	0.8114	1827455
	(10.50***)	(9.89***)	(6.78***)	(7.00***)
R^2	0.8072	0.7364	0.7321	0.7502
F Value	15.27***	13.67***	6.99***	7.67***

Source: *Field Survey, 2012*

*** and *** is significant at 10.00%, 5.00% and 1.00% level of probability; Figures in parentheses are t-values

+ = lead equation

Problems of Okra Production in the Study Areas

The problems encountered by okra farmers are presented in Table 4. The farmers claimed that non accessibility of credit (94.44%) was a major problem. Okoye and Onyenweaku (2007) assert that availability of credit to farmers enhances production and in turn facilitates expansion of enterprise. Pest and diseases (65.55%) and poor extension services (62.22%) were identified as problems face in okra farming. Nwaobiala and Nwaneri (2012) affirm extending improved agricultural technologies to farmers is very crucial in increasing farm output. Unavailability of Farm inputs such as fertilizers and herbicides (61.11%) and high labour costs were identified by farmers as problems.

Table 4: Problems of Okra Farming in Awgu and Aninri LGA of Enugu State, Nigeria

Problems	Frequency	Percentage
Unavailability of farm inputs	55	61.11
High cost of Labour	48	53.33
Non Access to Credit	85	94.44
Pest and Disease Infestation	59	65.55
Marketing Problems	41	45.55
Poor Extension Services	56	62.22

Source: *Field Survey Data, 2012.*

*Multiple Responses Recorded

CONCLUSION AND RECOMMENDATIONS

The study has showed that farmers in the study areas adopted all the okra technology packages disseminated through extension. These include site selection/land preparation, variety grown, planting dates, spacing, weeding techniques, method and rate of fertilizer application, methods of pests and disease control and farmers choices on time of harvesting and preservation. The study also revealed the determinants of okra production technologies in Awgu LGA to include; household size, farmers' educational level, farm income, farming experience, farm size and extension contacts, while gender, age, farm income, farm size and extension contacts were determinants in Aninri LGA.. Non access to credit, pest and disease infestation, poor extension services, unavailability of farm inputs and high labour costs were major problems affecting okra farming in the study area. The following recommendations were drawn from the study;

1. Formation of cooperative societies will encourage farmers' access to credit and farm inputs such as fertilizers, herbicides and improved okra seeds at reduced costs.
2. Rural infrastructure such as electricity, water, recreational facilities and among others should be provided by government. This will curb youth rural-urban migration, thus helping in providing cheap farm labour needed in okra production.
3. Extension agents should increase the number of visit to farmers in order to facilitate the adoption of improved agricultural technologies.
4. Access to education for the Okra farmers is advocated to enhance the acceptance of any technology package transferred.

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