EFFECTS OF AGRICULTURAL EXTENSION EDUCATION ON CASSAVA PRODUCTION IN ORLU AGRICULTURAL ZONE OF IMO STATE, NIGERIA.

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Abstract
In recent times, researchers have been able to come up with improved varieties and better planting methods which are disseminated to farmers through extension education, but the effect of this education on cassava production in Orlu zone is scarcely felt. A field survey on the effects of agricultural extension education on cassava production in Orlu agricultural zone of Imo state, Nigeria was carried out. Data were collected from 105 randomly selected cassava farmers using questionnaire. The data was analysed using descriptive statistics and likert type scale. The result indicated that most of the cassava farmers in the area (67.00%) were male, married (95.00%), literate (88.97%), average household size of 8 persons and have farming as their major occupation (80.95%). The respondents indicated awareness of technical knowledge ($\bar{x}$ = 1.7), individual or group farm and home visit ($\bar{x} = 1.9$), training on agricultural technology ($\bar{x} = 1.6$), technical knowledge on processing and marketing ($\bar{x} = 1.8$), farm input distribution ($\bar{x} = 1.8$) and agricultural credit acquisition ($\bar{x} = 1.6$). All the farmers plant improved crop variety only 4.76% still plant the local variety. Majority (71.43% and 80.00%) planted those improved varieties because it is easily available and in line with traditional practices. Using a discriminating index of 2.0 and above for high rate of understanding, the results showed that the farmers understood the extension education given to them on cassava production packages. Based on the Chi square result, the null hypothesis that extension education have not brought about any significant increased output of cassava farmers was rejected. The study thus concludes that the farmers however have achieved optimum production because of their adoption of innovation gained on extension education in cassava production. This study recommends among others that demonstration farm should be sited at strategic places and should be used during extension education to enable the farmers understand better.
Keywords: Extension education, Cassava production, Agriculture

Introduction

The provision of adequate food to feed the world's growing population, particularly in the developing world is the greater challenge of our time. Although food production has been in the increase in Africa, it simply has not kept pace with population growth because for some decades now, Africa has been experiencing a great population explosion (Oyo, 2006). In bid to realize the dream of food production sufficiency, much agricultural revitalization has been done in the seventies such include- National Food Production Programme (NAFPP) launched in 2006: the Operation Feed the Nation (OFN) launched in the same year. The Agricultural Development Programme (ADP) launched in 1975 and the Green Revolution launched in 1979 to mention but a few (Nwaiwu, 2016).

According to Oyo (2006), the basis strategy of the NAFPP to increase food production was improved seed for wider distribution among the farming population. However, by 1985, the programme became virtually incapacitated due to some reason. ADP is a World Bank Assissted Programme set up in conjunction with Federal and State government with the aim of improving production by increasing the output of farmers. Its basic objectives are to:

a. provide farm inputs to farmers at village level.
b. encourage the utilization of such inputs by providing appropriate credit extension and marketing services to farmers; and
c. provide technical and management training to Nigerian agricultural administrators and experts.

In order to attain these objectives, each ADP has among other operational features, the following:

I. an efficient extension and manpower training system supported by adoptive research with a view to making extension services easily available to farmers (Idachaba, 2002).
II. an input and credit delivery system through defined farm services centre within the reach of farmers.
III. a massive programme of rural feeder road construction intended to open the project area to enhance areas cultivated, and facilitated the delivery of farm inputs to farm and efficient evaluation of farm produce from the hinterland.

The green revolution was a special purpose programme designed to increase food production through the supply of improved seeds and other planting materials (Aderionola, 2003).

Notable among such improved planting materials are the varieties of cassava developed by the International Institute for Tropical Agriculture (IITA). The improved varieties of cassava include the tropical manihot species (TMS) which was reported to have higher yield per hectarage higher resistance to droughts, pests and diseases and ability to suppress weed growth through the formation of thick foliage canopies (Akibode, 2010). The TMS varieties are TMS 60506, TMS 30572, TMS 4(2)1426 and TMS 30555.

In Orlu zone, the huge costs involved in the process of production of cassava and cassava-based products have drastically reduced their availability (Onwuonu, 2000). This is a matter for deep and urgent concern because since its introduction in the 16th century, cassava has become the second most important staple food after rice and plays a major role in alleviating food crisis (Nwekeand Spencer, 2013). Cassava is traditionally a subsistence crop and major source of dietary energy in Nigeria.

Traditionally, cassava tubers are processed by various methods into different product used in diverse ways. In Orlu zone, cassava adaptability to wide range of climatic and adephic condition, including tolerance to drought pest and diseases relative to other crops confers a comparative advantage on cassava over other crops (Nwaiwu*et al*., 2015). Indeed, in Orlu zone of Imo State where cassava is grown extensively, severe famine seldom occurs. Cassava is widely acceptable as food for humans in various forms in Orluzone, hence, it has a wide choice for cultivation by many farmers in the area. However, the full realization of those potentials will to a large extent depend on acquisition of proper extension educationmanagement techniques and the use of improved varieties of the crops extended to them.

Objectives of the Study

The major objective of the study was to assess the effects of extension education on cassava production in Orlu Agricultural zone of Imo state. The specific objectives are to:

- identify the socio-economic characteristics of cassava farmers in the study area.
- investigate the level of awareness of extension education in the area
- identify varieties of cassava planted by the farmers and what determines their choice
- identify the rate of understanding of cassava production education disseminated to farmers; and
- compare the output of those who participate in extension education (contact farmers) and those who did not (non contact farmers).

Hypothesis

The following null hypothesis will be tested for the study

- Extension education have not brought about any significant increase in output of cassava

Methodology

This study was carried out in Orlu Agricultural Zone of Imo State. The zone consists of seven communities. The dormant vegetation is tropical (Igbokwe*et al*., 2013) with mean annual rainfall of 2,443mm (NCRI, 2004). The area is characterized by a tropical wet climate (April to October), and dry climate (November to March). The major occupation of the people is farming. The major food crops of the area include cassava, maize and yam intercropped while oil palm is the major tree crop with raffles palm in some locations. The farmers are mostly subsistent.

Simple random sampling technique was adopted for the survey. Ten registered farmers and five unregistered farmers were randomly selected from each of the seven chosen villages in these local government areas giving a total of 105 farmers' respondents. The data were collected using a set of structured questionnaire forms which was administered to the farmers.

The data obtainedwereanalysed using descriptive statistics such as mean, mode and percentages. A 2-point Likert scale was also used and the point scales were stated as:

2= Aware1= Unaware

However, a base score of 1.5 was determined using arithmetic mean. In this case, the mean from each extension education was judged as follows:

$\bar{X} \geq$ Basescore = Aware$\bar{X} \leq$ Basescore = Unaware, The hypothesis was tested using Chi square

Results and Discussion

Socio-economic Characteristics of Respondents

Table 1 shows that majority (67%) of the respondents were male farmers. This is an indication that cassava farming is dominated by male farmers in the area. This implies that the expected manpower needed for farm work is greatly available since the respondents are mostly men and this will reduce the cost of hired labour as well. The table also shows the mean age of the respondents as 45.1 years, this is good as age influences the amount of physical effort being expended in any economic activity.

The table also showed that majority of the respondents fall within the age level of 51-60 years. This implies that most of the respondents is elderly and matured and would be ready to receive any kind of education to expand production and maximize profit as well. Looking at the table also, it can be seen that almost all the respondents (90.47%)has formal

education while only 4.76% attended tertiary institution, thus they can read and write. It can also be seen from the table that most of the respondents have a household size of 5-10, this makes it easy for the family to apply innovation taught by the extension/change agent, hence they have a large family to feed. It was also discovered from the table that almost all the respondents (80.95%) were full time farmers, while the remaining (19.5%) had other things doing in addition to farming. This indicates that the people of the area are predominantly farmers and will accept extension education to boost yield.

Table 1:Distribution of personal characteristics of cassava farmers

Variables	Percentage(n=105)	Mean
Gender		
Male	67.0	
Female	33.0	
Marital Status		
Married	95.00	
Single	3.00	
Widowed	2.00	
Age of Cassava farmers (Years)		
<30	17	
31-40	27	
41-50	14	
51-60	29	45.1
61 and above	13	
Educational Status		
None	11.03	
Primary	52.64	
Secondary	30.07	
Tertiary	6-26	
Household size		
2-5	29	
5-10	38	8.10
11-15	19	
15 and above	14	
Major Occupations		
Farming	80.95	
Others	19.05	

Source: Field Survey, 2015

Awareness of Extension Education/ Packages

Using a discriminating index of ≥1.5 for awareness and <1.5 for unaware, Table 2 showed that farmers in the area were aware of extension education/ packages disseminated to them such as technical knowledge on improved cassava varieties and other farm inputs ($\bar{x} = 1.7$), individual/group farm and home visits by extension agents ($\bar{x} = 1.9$), farmers training on agricultural technologies ($\bar{x} = 1.6$), technical knowledge on processing and marketing of agricultural produce ($\bar{x} = 1.8$), farm input distribution by extension agents ($\bar{x} = 1.8$) and agricultural credit acquisition ($\bar{x} = 1.6$). It was found that farmers were unaware of other extension packages such as provision of credit extension and marketing services to farmers ($\bar{x} = 1.1$), farmers' field school ($\bar{x} = 1.0$), on-farm adoption research ($\bar{x} = 1.0$) and exhibition programme on agricultural products ($\bar{x} = 1.0$). Lack of knowledge of farmers field school and on-farm adoption research may affect the rate of understanding of the extension education on the farmers as the practical aspect of the teaching may be lacking.

Table 2: Distribution of respondents by the awareness of extension education/ packages

	Extension education/ packages	Aware	Unaware	Mean	Remark
A	Technical knowledge on improved cassava varieties and other farm inputs.	72 (68.57%)	33 (31.43%)	1.7	A
B	Provision of credit extension and marketing services to farmers	13 (12.38%)	92 (87.62%)	1.1	U
C	Individual or group farm and home visits	92 (87.62%)	13 (12.38%)	1.9	A
D	Farmers' training on agricultural technology	61 (58.10%)	44 (41.90%)	1.6	A
E	Farmers' field school	0 (0.00%)	105 (100.0)	1.0	U
F	On-farm adoption research	9 (8.55%)	96 (91.43%)	1.1	U
G	Exhibition programme on agricultural production	0 (0.00%)	105 (100.0)	1.0	U
H	Technical knowledge on processing and marketing of agricultural produce	87 (82.86%)	18 (17.14)	1.8	A
I	Farm input distribution	79 (75.24)	26 (24.76)	1.8	A
J	Agricultural credit acquisition	58 (55.24)	47 (44.76)	1.6	A

Source: Field Survey data, 2015

Base source = 1.5; $\bar{x} \geq 1.5$ = Aware (A); $\bar{x} < 1.5$ = Unaware (U)

Cassava Varieties Planted

Table 3 showed the multiple response and distribution of respondents basedon the varieties of cassava planted. Majority the respondents planted TMS 30572 (73.33), TMS 30555 (77.74%), TMS 98/05010 (50.24%) and NRO 7/0220 (52.24%). This is an indication that most farmers in the area are responding to the teaching of the extension agents by adopting these improved varieties. Only very few farmers (4.76%) still plant the local variety.

Table 3:Distribution of respondents based on cassava varieties planted

Varieties	Frequency	% Distribution
TMS 30572	77	73.33
TMS30555	89	77.74
TMS 60506	6	5.71
ITTA-TMS-IBA 070539	17	16.19
TMS 98/05010	62	50.05
NRS 7184	51	48.57
TMS 98/0581	4	13.33
IITA-TMS-IBA 070593	4	3.81
UMU CASS 44, 45 and 46	2	1.90
NRO 7/0220	55	52.24
Local Variety	5	4.76

Multiple response

Source: Field Survey data, 2015

Reasons for Choice of Varieties Planted

Table 4 shows the multiple response and distribution of respondents based on their reason for the choice of cassava varieties planted. The table showed that the major reasons for the choice of cassava varieties planted by the farmers were because it is easy to get the cuttings (71.43%), it gives good and quality garri and fufu (58.10%) and due to the fact that it is in line with the traditional and cultural practices (80.00%). The farmers adopt those practices that are in line with their culture and norms. These findings are in line with the work of Nwaiwu (2016) that farmers adopt those technologies which is in line with their culture. Also, availability of the improved varieties as disseminated by the extension agents makes adoption/ assimilation of the teaching easier.

Table 4:Reasons for the choice of varieties planted

	Reasons	Frequency	%Distribution
i	Easier to get the cuttings	75	71.43
ii	Gives average output without fertilizer	14	13.33
iii	Low water content	6	5.71
iv	Gives good and quality garri or fufu	61	58.10
v	In line with traditional/ cultural practices	84	80.00

Multiple response

Source: Field Survey data, 2015

Respondents Rate of Understanding of Extension Education on Cassava Production Disseminated

Table 5 showed the distribution of the respondents by the rate of understanding of the extension education disseminated using a discriminating index of 2.0 and above for high and < 2.0 for low. The respondents generally accepted a high rate of understanding ontechnical knowledge of improved cassava varieties ($\bar{x} = 2.7$), utilization of agrochemical ($\bar{x} = 2.4$), cassava spacing distance ($\bar{x} = 2.5$), cropping systems in cassava production ($\bar{x} = 2.2$) and cassava processing and marketing ($\bar{x} = 2.6$).

Based on this result, the rate of understanding of extension education on cassava production can be said to be high as most of the packages taught to them were quite understood. No wonder Awa (2002) ascertained that extension workers serve as bridge between the researchers and the farmers.

Table 5:Distribution of respondents by rate of understanding of extension education on cassava production disseminated.

	Rate of understanding of education on	High	Low	Didn't understand	Mean	Remarks
1	Technical knowledge of improved cassava varieties	84 (80.00)	15 (14.28)	6 (5.71)	2.7	A
2	Utilization of agrochemicals	66 (62.86)	20 (19.04)	19 (18.09)	2.4	A
3	Cassava spacing distance	71 (67.62)	21 (20.00)	13 (12.38)	2.5	A
4	Cropping systems in cassava production	52 (49.52)	32 (30.47)	21 (20.00)	2.2	A
5	Methods of seedbed preparation	14 (13.33)	15 (14.28)	76	1.4	R
6	Cassava processing and marketing	69 (65.71)	30	6 (72.38)	2.6	A
7	Cassava stem multiplication	2 (1.90)	66 (62.85)	37 (35.23)	1.6	R
8	Technical knowledge of cassava based products	8 (7.62)	7 (6.66)	90 (85.71)	1.2	R

Source: Field Survey data, 2015

A= Accept, R=Reject

Cassava output of contact and non contact farmers

Table 6 showed the cassava output of contact and non-contact farmers. Choosing 35 contact and 35 non-contact farmers, the mean cassava output of contact and non-contactfarmers were 21.6 tons and 12.4 tons respectively. It was discovered that the cassava output of farmers who participated in extension programmes increased by 42.59% in relation to non-contact farmers which decreased by 74.19%. This is an indication that extension education had a great impact on the output of farmers who participated. The high rate of adoption shows that extension education is indeed having a significant effect on the farmers in the study area.

Table 6: Cassava output of contact and non-contact farmers

Farmers	Average output (tones)	%Performance
Contact farmers	21.6	74.19
Non-Contact farmers	12.4	42.59

Source: Field Survey data, 2015

Test of Hypothesis

Table 7 shows the summary of Chi square results on cassava output in the area. The analysis of data showed that the Chi square calculated was 212.614, while the Chi square tabulated was 128.804, therefore, the null hypothesis that extension services have not brought any significant increase in output of cassava farmers was rejected, The study however accepted the alternative hypothesis and concluded that extension services have brought about significant increase in output of cassava farmers.

Table 7:Test of Hypothesis

Items	Value
Mean Output	11.65 tons
Chi-Square calculated	212.614
Chi-Square tabulated	128.804
Observations	70

Source: Field Survey data, 2015

Conclusion and Recommendation

The cassava farmers in the area have succeeded to a large extent in harnessing some level of increased production. They have however not been able to achieve optimum production because of their inability to efficiently understand the full potentials on education disseminated to them on land, capital and management resources. The general lack of awareness among the farmers has contributed to the level of adoption of new production technologies. Thus, one can conclude that extension education on cassava production in Orlu Agricultural zone has a positive significant effect on the farmers. It is therefore recommended that demonstration farms should be made available and sited at strategic places to be used by the extension educators during teaching as farmers learn better through practical than theory and also extension officers should make sure that improved varieties should be made available at subsidized prices and at the right time of the year. The extension officers should make sure that improved varieties when available gets directly into the hands of the farmers and not sell it to middle men who will then use it as a profit making venture. Demonstration farms should be made available and sited at strategic places to be used by the extension educators during teaching as farmers learn better through practical than theory.

References

Aderionola, C.P (2003). "Processing potentials for cassava production growth in Africa". COSCA Working paper NO 11 IITA Ibadan Nigeria

Akibode, C.P. (2010). "Adoption of Improved Cassava Technology by Small Scale Farmers in Edo State".*Journal of Agricultural Science and Technology*vol 18 (2) pp 12-15.

Awa, N.E. (2002). "Extension Education and Communication in Agricultural Development" R. K. Samanta (Ed).*Development Communication for Agriculture.*Delhi B.R. Publishing Corporation pp158-169.

Idachaba F.S. (2002). "The Role of Agricultural Development Project in Nigeria's Agricultural Development Strategy". Akwa *Ibom State ADP Annual Report* pp 19-21.

Igbokwe, M.C.L.S.O. Ene and G.I. Nzewi (2013). "Review of Soil Fertility Investigation in Eastern State of Nigeria" *Federal Department of Agricultural Land Resources Technical Report* vol12 pp 180.

N.R.C.I.R (National Root Crops Research Institute) 2004.NRCRI Metrological station, Umudike, Umuahia, Abia State.

Nwaiwu J.C (2016). Dynamics of Rural Community Development.Unique for Real Publishers Owerri.Pp 77-91

Nwaiwu J.C (2016). Evaluation of perceived frequency of occurrence and level of seriousness of soil degradation by arable crop farmers in Imo State.*International Journal of Agriculture and Rural Development*vol 19 (1) pp2459-2464.

Nwaiwu Juan C, Onubuogu G. C and Chukwu A.O (2015). Empowering Small-Scale Farmers through the Adoption of Soil Degradation Technologies: A Case Study Of Arable Crop Farmers In Imo State, Nigeria. *2014 Cambridge Business and International Conference, UK*pp 79-84.

Nweke, F.I and D.S.C. Spencer (2013). "Future prospect for cassava yield in sub-saharan Africa". *Outlook on Agriculture* 24(i) pp35-42.

Onwuonu I.G. (2000). Institutional Factors Associated with Adoption of New Technology Among Farmers in Eastern Nigeria. *Journal of Agricultural Extension* (1):43-53.

Oyo, M.O (2006). "The technology adoption process in subsistence Agriculture".*The Nigerian Journal of Agricultural Extension*vol 11 (1), December 2006.