NIGERIAN AGRICULTURAL JOURNAL
ISSN: 0300-368X
Volume 51 Number 1, April 2020 Pg. 96-100
Available online at: http://www.ajol.info/index.php/naj

EXTENSION SERVICE DELIVERY AND USE OF IMPROVED CASSAVA TECHNOLOGIES AMONG FARMERS IN ENUGU STATE NIGERIA

Odoemelam, L. E., Onu S. E. and Obungwu, E

Department of Agricultural Extension and Rural Development,
Michael Okpara University of Agriculture, Umudike
Corresponding Authors' email: lovinasteve@gmail.com

Abstract
The study provided empirical evidence on the effect of extension service delivery on use of improved cassava technologies among farmers in Enugu State Nigeria. The data for this study were collected from primary sources through the use of structured questionnaire and personal observation. Data collected were analysed with the use of simple descriptive and inferential statistics. Results show that about 38% of the respondents had high awareness level, 48.1% medium while only 14% had low awareness level of agricultural technologies disseminated. The result revealed a grand mean of 2.53 indicating that the respondents utilized the agricultural technologies disseminated to them by the extension agents in the study area. Regression result revealed that the coefficient of extension service delivery was significant at 5% probability level and positive implying that extension service delivery has significant effect on the use of improved cassava technologies among the cassava farmers in the study area. Constraints militating against the use of the technologies disseminated showed that the farmers encountered several constraints in the use of technologies disseminated by the extension agents. The study shows that farmers in the study area were aware and used most improved cassava production technologies disseminated by the extension agents. The study therefore, calls for policies aimed at the need for efficient extension services to be rendered by competent extension agents who should be made to under-go continuous training and re-training programmes. Extension agents should improve on their efforts in organizing training programmes, workshops, and agricultural shows in order to sensitize the farmers on the need for enhanced use of improved cassava technologies.

Keywords: Extension services, dissemination, technologies, and utilization

Introduction

Agriculture occupies a key position in the Nigerian economy judging by its critical role in providing food security, provision of employment, revenue generation and provision of raw materials (Ajala, 2013). Nigeria has well-developed agricultural technologies capable of boosting farmers output and enhancing economic development. In order to ensure effectiveness of the research system, a number of institutional and government agencies have been established to ensure that farmers get to know and adopt improved agricultural technologies that are relevant to their needs and situations. These agencies facilitate the dissemination of improved agricultural technologies through various methods. The role of agricultural extension agents is very critical in improving agricultural development in Nigeria. It does this by facilitating the education of farmers to improve their skills, knowledge and attitudes as related to agricultural development (Odoemelam, 2015). They transmit the results of research institutes on how to solve the problem of agriculture to farmers and encourage the application of these and other improved technical knowledge on agriculture. They transmit the research constraints of farmers to research institutions for solution and utilize field demonstrations, farmers visits, audio visual and other methods to disseminate technologies to farmers (Ekumankama, and Anyawu, 2018).

Extension may be equally defined as extending of, or a service or system. which extends the educational advantages of an institution to persons unable to avail themselves of them in a normal manner (Swanson and Rajalahti 2010). Extension is an educational process with the purpose of bringing about desirable changes in people's behaviour (knowledge, skills, and attitude) which will contribute to better farm and better family living (Njoku, 2016). Extension is regarded by most

people as a government instrument to promote techniques for improved agricultural production, geared either to national food or export crops production, or to improve farm incomes (Swanson and Rajalahti 2010). In its broad sense agricultural extension is regarded as an important instrument to support farmer's efforts in agricultural development. It can be a powerful tool for personal development, especially for the rural poor by helping to improve farming and farm yield (Charlie, 2011).Agricultural extension is the application of scientific research and new knowledge to agricultural practices through farmer education. The field of 'extension' now encompasses a wider range of communication and learning activities organized for rural people by resource persons from different disciplines, including; agriculture, agricultural marketing, health, and business studies (Swanson and Rajalahti 2010).

The whole extension process is dependent upon the extension agent, who is the critical element in all extension activities. If the extension agent is not able to respond to a given situation and function effectively, it does not matter how imaginative the extension approach is or how impressive the supply of inputs and resources for extension work. Indeed, the effectiveness of the extension agent can often determine the success or failure of an extension program. The extension agent has to work with people in a variety of different ways such as; group contact, individual contact and mass contact. (Jasmon, Azizan, and Azahari, 2013). It is often an intimate relationship, and one which demands much tact and resourcefulness. The agent inevitably works with people whose circumstances are different from his/her own. He/She is an educated, trained professional working with farmers, many of whom have little formal education and lead a way of life which may be quite different from his/hers.

Extension is too often mainly seen as a vehicle for spreading scientific and technical progress and technology transfer. In the real sense however, dissemination of knowledge is not a one way channel from scientists to producers. Farmers own knowledge must be collected, analyzed and capitalized on, propagated and disseminated (Njoku, 2016). However, there are numerous problems constraining agricultural extension services. Most of the farmers are not well educated, making it difficult for them to comprehend all the ideas being communicated to them. Even after communicating the ideas, some of the farmers cannot translate the ideas to practice. The extension agents have their own challenges; low extension agents to farmer's ratio, and live far away from the farmers. Nwaobiala, (2015) noted that there are enough packages on the technological shelf and the missing link is an effective agricultural system to disseminate available technologies. Therefore, this study assessed the effect of extension service delivery on use of improved cassava production technologies in Enugu State, Nigeria.

Methodology

The study was conducted in Enugu State. Enugu is one of the States in South-East Nigeria, created in 1991 from part of the old Anambra State. Its capital and largest city is Enugu, from which the State derives its name. The principal cities in the State are Enugu, Ngwo, Agbani, and Awgu with a population of 3,267,837 people (NPC 2006). Enugu State is made up of seventeen (17) Local Government Areas and is divided into three agricultural zones namely: Enugu zone – comprising Enugu-East, Enugu-North, Ezeagu, Igbo-Etiti and Udi Local Government Areas; Awgu zone – made up of Awgu, Aninri, Enugu South, Nkanu-East, Nkanu-West and Oji-River Local Government Areas; Nsukka zone-Igbo-Eze North, Igbo-Eze South, Isi-Uzo, Nsukka, Udenu and Uzo-Uwani Local Government Areas (ADP, 2010). A Multistage sampling procedure was employed in the selection of cassava farmers for the study. Sampling frame was collected from Enugu State Agricultural Development Programme which consists of all cassava farmers in Enugu State. The first stage involved the selection of 5 agricultural blocks from the State. At the second stage, 8 cells were randomly selected from each of the agricultural blocks selected. The third stage involved the proportionate sampling of 10 percent of the population of registered ADP cassava farmers in each of the selected cell, giving a total of one hundred and sixty farmers (160). The data for this study were collected from primary sources through the use of structured questionnaire and personal observation. Awareness of the farmers on improved cassava technologies was described by the use of frequency and percentages. Level of use of the technologies disseminated to the farmers was estimated using a 4-point Likert type scale of, Very often (4), Often (3), Sometimes (2) and Never (1), with a benchmark mean of 2.50. Technologies with mean score of above 2.5 were adjudged as "high utilization", while technologies with mean scores below 2.50 were adjudged as "low utilization". Effect of extension services delivery on use of improved cassava technologies was analyzed using simple linear regression model. Constraints militating against the use of improved cassava improved production technologies were described by the use of a 4-point Likert type scale of Strongly agree (4), Agree (3), Disagree (2) and Strongly Disagree (1) with a mean of 2.50. Variables with mean score of above 2.5 were adjudged as "constraints", while technologies with mean scores below 2.50 were adjudged as "not constraints".

The likert mean scale used in this study is specified thus:

$$X = \frac{\sum fn}{N} \quad \ldots\ldots\ldots\ldots\ldots (1)$$

Where,

$\sum$ = summation

f = frequency

n = assigned scores to response category

N = number of respondents

x = Arithmetic mean

The mean (x) is computed by multiplying the frequency (f) of the responses under each category by assigned value and dividing the sum ($\sum$) of the product by (N) number of respondents to the particular indicator as shown.

The simple linear regression model was used to estimate the effect of extension service delivery system on the use of improved cassava technologies among the farmers in the study are. The model is implicitly expressed thus:

$Y = f(X) + e$ ..... (2)

Where,

Y = use of improved cassava technologies (measured with mean sores)

X = extension service delivery (measured with mean scores)

e = error term.

Results and Discussion

Awareness of the improved cassava production technologies disseminated by the extension agents:

Data collected on awareness of improved cassava production technologies disseminated by the extension agents to the farmers were described by the use of frequency and percentages and presented in Table 1.

Table 1: Awareness of the improved cassava production technologies disseminated by the extension agents

Level	Scores	Frequency	Percentage
High	10 – 12	61	38.1
Medium	3 – 12	77	48.1
Low	Below 3	22	14.0

Source: Field survey, 2019

From the results in Table 1, about 38% of the respondents had high awareness level, 48.1% medium, while only 14% had low. The finding is at variance with Muntaka (2010) who indicated that level of awareness of associated technologies were high among cassava farmers in Nigeria. In spite of the rigorous efforts of the extension agents towards dissemination of the improved technologies, farmer's level of awareness was observed to be at the medium level. This is a pointer to the need to arouse the interest of the farmers through media mix that can be useful when interacting with farmers. This is in line with Ndibe (2014) noted that media-mix are useful for awareness creation.

Extent of use of the technology disseminated to the farmers

The data elicited on the extent of use of improved cassava technologies disseminated to farmers in the study area is presented in Table 2.

Table 2: Mean rating of the respondent's extent of use of the technology disseminated

Cassava Production Technologies	$\sum fx$	Mean
Choice of land	438	2.74
Fertilizer application	462	2.88
Fertilizer rate	484	3.03
Herbicide application	467	2.9
Land preparation	482	3.01
Pesticide application	348	2.2
Planting spacing	366	2.3
Planting technique	284	1.8
Planting time	480	3.0
Recommended varieties	245	1.5
Time of harvesting	432	2.7
Weeding technique	378	2.4
Grand mean		2.53
Benchmark mean		2.50

Source: Field survey, 2019

The result revealed a grand mean of 2.53 implying that the respondents utilized the agricultural technologies disseminated to them by the extension agents to a high extent in the study area. From the findings, recommended technologies utilized by farmers were: fertilizer rate (3.03), land preparation (3.01), planting time (3.0), herbicide application (2.9), fertilizer application (2.88), choice of land (2.74), and time of harvesting (2.7). However, other technologies listed were not utilized and this may be because the inabilities of extension agents to use relevant sources of information to reach rural farmers in the study area. There has always been this concern on the inability of agricultural extension systems to cope efficiently with agricultural development and rural problems in general. Ekumankama *et al*., (2018) observed that most of the extension staff employed were trained some years ago and hence, the need to retrain them to enhance their efficiency of dissemination of technologies. Therefore, workers' capacities need to be continuously enhanced, to package the information gotten on new technologies appropriately to the farmers. This present state therefore generates a demand for the continued training of agricultural extension and rural development workers. This is so convincing that most agencies and institutions now invest large sum of money and time in staff training

as it becomes an initiative consequence of development (Aida, 2013).

Effect of extension service delivery on use of improved cassava technologies among farmers

The result in Table 3 shows the regression estimate of the effect of extension service delivery on the use of improved cassava technologies among farmers in the study area.

Table 3: Regression estimate of the effect of extension service delivery on use of improved cassava technologies among farmers in the study area

Parameters	Coefficient	Standard error	t-value
Constant	11.4203	0.577	2.953***
Extension service delivery	0.328	0.048	2.752**
R-square	0.732		
R-adjusted	0.698		
F-ratio	18.634***		

Source: Computed from Field Survey Data 2019; ** = significant at 5% and * = significant at 1%**

The R-square value of 0.732 indicates that about 73.2% of the variation in the dependent was accounted for by the independent variable, while others were due to error. The F-test was significant at 1% level, indicating that the model used was good. The coefficient of extension service delivery was significant at 5% probability level and positive. The result implied that an increase in extension service delivery will lead to a corresponding increase in the use of improved cassava technologies among farmers in the study area. This result is in tandem with the findings of Udoh, (2015), who noted that extension service delivery is a veritable tool to enhance adoption of improved production technologies in Nigeria. This claim is plausible because, the major role of extension agents is to disseminate improved agricultural innovation/ practices from technology development agencies (Research Institutes) to end users (Farmers) in order to enhance agricultural production and productivity. More so, Ekumankama and Anyanwu (2018), described this as the vehicle through which improved innovations are extended to farmers to enhance agricultural production.

Constraints militating against the use of improved cassava production technologies disseminated by the extension agents

Findings on Table 4 show the constraints militating against the use the technologies disseminated to farmers in the study area.

Table 4: Constraints militating against the use of improved cassava production technologies disseminated by the extension agents

Constraints	$\sum fx$	Mean
High cost of fertilizer	424	2.65
High cost of agro chemicals	406	2.54
Poor market network	388	2.42
Poor rural infrastructure	484	3.0
Poor extension contact	344	2.1
Unavailability of improved planting materials	424	2.65
High cost of transportation	484	3.02
High cost of labour	340	2.1
Changes in climate	440	2.7
Inadequate planting techniques	466	2.9
Lack of modern processing facilities	480	3.0
Lack of funds	360	2.3
Inadequate farm land	348	2.2
Poor storage facilities	480	3.0
Grand mean		**2.83**
Benchmark mean		**2.50**

Source: Field survey, 2019

The grand mean score (2.83) indicate that the variables listed were actually their constraining factors in the use of these technologies. Among the important constraints militating against the use of improved cassava technologies include: inadequate planting techniques (2.9), high cost of transportation (3.02), lack of modern processing facilities, poor storage facilities, and poor rural infrastructure (3.0 each).The findings follows the study of Ajani and Onwubuya (2013), who stated that lack of storage facilities and lack of market information were identified as major constraints to the use of improved casava production technologies in Enugu State, Nigeria.

Conclusion

The study provided empirical evidence on the effect of extension service delivery on the use of improved cassava technologies among farmers in Enugu State

Nigeria. Farmers in the study area were aware and used many improved cassava production technologies disseminated by the extension agents. Use of improved cassava production technologies by farmers' remains is important to scale up agricultural production and sustainable food security in Nigeria. The study therefore, call for policies aimed at need for governments at all levels to be highly involved in providing subsidies on fertilizer and agro chemicals to assist the farmers to increase cassava production and productivity. Efficient extension services should be rendered by competent extension agents who undergo continuous training and re-training programmes.

Extension agents should improve on their efforts in organizing training programmes, workshops, and agricultural shows to sensitize the farmers on the need for increased use of improved technologies. Participatory approach in information dissemination is also encouraged.

References

Ajala H. T (2015). Capacity Building Needs of Farmers for Sustainable Poverty Reduction in Niger State. Nigeria. *Journal of Agricultural Extension.* 4(3): 66 – 73.

Ajani, E. N. and Onwubuya, C. A. (2013). Analysis of use of improved cassava production technologies among farmers in Anambra State, Nigeria. *Wildpecker Journal of Agricultural Research*. 21(12): 035 – 341.

Charlie, P.S. (2011). Agricultural Extension: A time for change linkage knowledge to policy and action for food and livelihoods in Nairobi. First Kenyan Press. Pp 23-25

Ekumankama, O. O. and Anyawu, U. S. (2018). Comparative Analysis of Job Performance of Field Extension Workers in Abia and AkwaIbom States, Nigeria. *European Journal of Physical and Agricultural Science*. 6(2): 26-34.

Jasmon, A.S., Azizan, A. and Azahari, I. (2013). Roles of Extension Agents Towards Agricultural Practices in Malaysia. *International Journals on Advanced Science Engineering Information Technology*. 3(1).

Muntaka, M. (2010). Analysis of Job Performance of Agricultural Extension Supervisors in Katsina State, (in) Niels, J. S (ed) Entrepreneurship Development Process: Prospect and Challenges. Pp 39-43.

Ndibe, B. C. (2014). Effect of employees training on organizational performance in Soft Drinks Bottling Companies in Enugu State, Nigeria. Unpublished MSc thesis of the Faculty of Business Administration University of Nigeria Enugu Campus. 133p.

Njoku, J. K. (2016). Effectiveness of Radio-agricultural Farmer Programme in Technology Transfer among Rural Farmers in Imo State, Nigeria. *Net Journal of Agricultural Science*. 4(2): 22-28.

Nwaobiala, C.U. (2015). Strengthening Agricultural Extension Delivery Through Institutional Approach in Nigeria. *Contemporary Issues in Agricidtural Extension and Rural Development* (Nwachukwu ed). Department of Agricultural Extension and Rural Development, Michael Okpara University of Agriculture, Umudike. CREMB publishers, Umuahia. Pp 122-134.

Odoemelam, L.E. (2015). Agricultural Extension Support for Developing Entrepreneurial Capacity in Nigeria. *Business Development Management* (eds.) Onuekwusi, G. O and Okezie, C. A.. Meybiles Nig. Publishers. Pp.196-201.

Swanson B.E. and Rajalahti, R. (2010) Strengthening Agricultural Extension and Advisory Systems: Procedures for Assessing, Transforming, and Evaluating Extension Systems. Agriculture and Rural Development Discussion Paper 45. Note: Most of the definitions provided in this glossary are derived from the ones provided on pages 176-186 of this publication. Available at: http://siteresources.worldbank.org/INTARD/Resources/Stren_combined_web.pdf.

Udoh, A.J (2015). Agricultural Innovations: Extension Approaches in Theory and Practice for Food Security and Rural Development (ed) MacBens & Sons publishers. Uyo. AKS. P. 27.