

Effects of Agricultural Education on Subsistence Farmers' Crop Production in Ogba/Egbema/Ndoni Local Government Area Rivers State.

By

N.S.Amadi and OSIA N.P.

Department of Vocational and Technology Education

Rivers State University,

Port Harcourt, Nigeria

Email. nkemosia@yahoo.com

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Abstract

The study examined "Effects of Agricultural Education on Subsistence Farmers' Crop Production in Ogba/Egbema/Ndoni Local Government Area of Rivers State". The objectives were to determine the impacts of agricultural education on crop production; ascertain the influence of agricultural education on crop farmers' adoption of innovation and determine the factors that hinder agricultural education from making maximum effect on subsistence farmers in Ogba/Egbema/Ndoni L.G.A. The study adopted a descriptive survey design. A simple random sampling technique was used to select sixty-two (62) female farmers and forty (40) male farmers in Ogba/Egbema/Ndoni L.G.A, resulting to a total sample size of one hundred and two (102) crop farmers. Data was collected using a well structured questionnaire designed in Likert 5 point rating scale of agreement. Data was analyzed using mean standard deviation with acceptance means value of ≥ 3.00 while z-test was used to test the hypothesis at 0.05% level of significance. Findings from the study revealed that agricultural education enhances crop farmers' productivity, exposes farmers to agricultural technology, agricultural education increases local food availability among others. Also, creates awareness of improved crop varieties before they are adopted, provides adequate information concerning new innovation, adoption of innovation depends fully on the level of interaction between the change agents and the farmers amongst others. Lastly, the study found that, failure of first trials, lack of resources to obtain the new innovation, affixed with ancient method of farming and others are factors that hinder agricultural education from making maximum impact on crop farmers adoption in the study area. The study therefore recommends that government and NGOs should encourage agricultural education and its extension officers to carryout effective and adequate agricultural programme to develop farmers' decision making skills, regular extension visits should be extended to rural farmers and adequate awareness should be created to improve farmers' inputs.

Keywords; Effect. Agricultural, Education, Farmers, Subsistence, Crop, Production.

Introduction

Agricultural Education is a type of vocational education designed to develop knowledge, skills and constructive attitudes in farmers to improve his quality and sustainable food production that will be sufficient for domestic

and export use. Vocational education in Agriculture contributes to the development of farmers on the ability to solve problem efficiently especially one relating to the farmer's farm. It a vocational platform where farmers acquire relevant knowledge and updated development in agriculture; gives room for their interaction with partners in agro business and other relevant institutions, at the same time assists them to develop their own technical organizational and managerial skills and practice (Christopols, 2010).

In the formal context, Edwards (2008) described agricultural education is the teaching of agriculture, natural resources, and land management through hands on experience and guidance to prepare students for level jobs or for further education to prepare them for advanced agricultural jobs. Amadi and Lazarus (2017) also have it that Agricultural education is generally focused on producing seasoned skilled manpower that will shape and develop agricultural industries around the world.

A large number of rural population are into farming hence educational programmes aimed at increasing their skills in different agro-allied disciplines and equipping them with the tools they need to combat hunger and poverty in their communities, would surely make a remarkable difference in the rural economy. Indeed, successful agricultural education and programmes stand to benefit both the farmers and the entire populace through food sufficiency and security. As noted by Jena (2015), farmer education programme will;

- a. Increase local food availability
- b. Increase sustainability of agricultural practices
- c. Increase farmers income

A survey conducted by World Bank to ascertain the impact of farmers education and their agricultural efficiency in low income countries found that farmers with basic education were 8.77 more productive than farmers with no education attainment (Gasperini, 2000). It suggests from the finding of World Bank that the educational level of farmers have positive impact on their productivity. In a related development a study conducted in Napal on the effects of education on agriculture disclosed that education enhances agricultural productivity, primarily by improving farmer's decision-making ability and secondarily by enhancing their technical efficiency. Justine (2010) observed that an innovation to be adopted must pass through process of

adoption which involves awareness, interest, evaluation, trial and then adoption, and these are done through agricultural education

Through agricultural education, farmers acquire knowledge and literacy that helps them apply new techniques in farming, administer fertilizer effectively and being able to manage pests and diseases easily, which could positively impact crop yield. According to Appleton & Balihuta, (2006) agricultural literacy enables farmers to understand instruction on inputs such as chemical fertilizers and pesticides among others. A study conducted in Nepal, India by Pudasari (2003) discovered that agricultural education facilitates farmers' productivity significantly by improving their ability to make decision concerning the selection and the combination of inputs for better output. According to the study, there are basically three major ways which agricultural education enhances farmer's productivity; improvement in farmer's ability to obtain, understand and utilize new input, and improvement in overall managerial ability. Moreover in the study of Asadullah and Rahman (2012) it was found that agricultural education has positive impacts on farmers' rice yield due to the skills of literacy and numeracy that gives farmers better understanding of agricultural issues..According to Adams (2001) rural farmers' adoption of innovations was found to be dependent on the level of interaction between the change agents and the farmers.

Farmer cannot do well in terms of productivity when they do not have the basic knowledge in agricultural production. It then becomes a thing of necessity that farmers should be taught in the field on techniques and skills in farming. Habito, (2003) in a study of the development of an adult farmer education program, reported that tremendous technological lag has hampered the efforts to enhance the development of agriculture. This lag, he observed was reflected in the widespread low average yields of crops and the recurrent shortages in staple food despite generally favourable conditions of soil and climate.

As a means to rectify the situation, he recommended the following:

1. A reorientation of the philosophy, objectives and guiding principles of the agricultural education program with a view to giving a heavy emphasis to the vocational agriculture education of adult farmers;

2. Institution of adult farmer instruction in all farming communities as an integral part of the community school's educational program;
3. A content in-service-training of agricultural teachers towards effective adult education.

Crop farmers; undoubtedly face a lot of challenges in their cultivation process which ranges from low yield, pest and diseases, poor weather, nutritional imbalance poor sanitation and health. These factors come together to affect the socio-economic and philological state of the farmer Deekor and Nnodim (2006) stated that one major functions of agricultural education is to provide adequate information concerning new innovation which will help the farmers to solve their problems through adoption. Yet majority of the subsistence crop farmers do not find agricultural education needful for their cultivation process. Silva and Broekel (2015) opined that lack of resources to adopt new innovation, compatibility, complexity of new innovation and environment are major barriers to adopt new innovations of agriculture by subsistence farmers. Stunding&Zilberman, (1999) has it that, socio-psychological traits of farmers such as their age, educational attainment, income, family size, tenure status, credit use, value system, and beliefs are positively related to adoption. In other words, farmers with without the factors mentioned are likely to have problems of adopting new innovation. Similar to technology adoption, the characteristics of technologies, such as relative advantage, complexity, divisibility, and compatibility affect their diffusion (OECD, 2001).

Purpose of the study

The main purpose of the study was to determine the effects of agricultural education on subsistence farmers' crop production in Ogba/Egbema/Ndoni Local Government Area Rivers State. In specific terms, the study sought to

1. Examine the impact of Agricultural Education in Crop Production in Ogba/Egbema/Ndoni LGA.
2. Ascertain the influence of agricultural education on farmers' adoption of innovation in crop production in Ogba/Egbema/Ndoni LGA
3. Determine the factors that hinder agricultural education from making maximum effect on subsistence farmers in Ogba/Egbema/Ndoni L.G.A?

Research Questions

1. What are the impacts of Agricultural Education in Crop Production in Ogba/Egbema/Ndoni L.G.A?
2. What are the influences of agricultural education on farmers' adoption of innovation in crop production in Ogba/Egbema/Ndoni L.G.A?
3. What are the factors that hinder agricultural education from making maximum effect on subsistence farmers in Ogba/Egbema/Ndoni L.G.A?

Hypotheses

Hypothesis 1: There is no significant different in mean response of female and male crop farmers on impact of agricultural education on farmers' crop yield in Ogba/Egbema/Ndoni

Hypothesis 2: There is no significant different in mean response of female and male crop farmers on influence of agric education on farmers' adoption of innovation in crop production.

Hypothesis 3: There is no significant difference in the mean response of male and female farmers on the factors that hinder agricultural education from making maximum effect on subsistence farmers.

Methodology

The study was carried out in Rivers State. The state is bounded on the South by the Atlantic Ocean, by the North Imo and Abia State, by the East Akwa-Ibom and by the West Bayelsa and Delta state. This region was chosen as there are large areas in the state where majority are rural farmers on a subsistence level. The study used a descriptive survey study to seek the opinion of the farmers on the impact of agricultural education on farmers' crop production in Ogab/Egbema/Ndoni Local Government Area. The population of the study comprise of all crop farmers in Ogba/Egbema/Ndoni Local Government Area in Rivers State. A random sampling technique was used where 62 rural female crop farmers were chosen and 40 male farmers were randomly selected making a total of one hundred and two respondents as the sample size. A structured questionnaire designed in Likert-point rating scale of agreement and a complementary interview was used for the illiterate farmers' data collection. Data gathered were analyzed using mean and standard deviation with acceptance score of ≥ 3.00 while the hypotheses were tested using z-test at 0.05% level of significance.

RESULT AND DISCUSSION

Research Question 1: What are the impacts of Agricultural Education on Crop yields in Ogba/Egbema/Ndoni LGA?

Table 1; Mean Response of Female and Male Crop Farmers on impacts of Agricultural Education in Crop Production in Ogba/Egbema/Ndoni LGA.

S/N	Statements	Female n = 62			Male n = 40		
		\bar{X}	SD ₁	Decision	\bar{X}_2	SD ₂	Decision
1.	Enhances farmers productivity	3.85	0.60	Agreed	3.63	1.06	Agreed
2.	Exposes farmers to Agricultural Technology	4.00	0.77	Agreed	3.73	1.08	Agreed
3.	It enhances farmers livelihood	3.63	0.52	Agreed	3.48	0.88	Agreed
4.	It helps farmers adopt modernized farming techniques	3.40	0.87	Agreed	3.88	0.62	Agreed
5.	Increases local food availability	3.19	0.76	Agreed	3.10	1.01	Agreed
6.	Increases farmers' income	4.19	0.94	Agreed	4.43	0.71	Agreed
7.	Increases sustainability of agricultural practice	3.63	1.21	Agreed	4.43	0.71	Agreed
8.	Ability to take decision concerning the selection of input	4.05	1.31	Agreed	3.98	0.07	Agreed
9.	Ability to obtain, understand and utilize new input and improvement in overall managerial ability	3.89	1.07	Agreed	3.38	1.75	Agreed
10.	Improves farmers knowledge to adopt and implement basic instruction on agricultural production	4.32	1.19	Agreed	3.90	1.12	Agreed
11.	Increases food security	3.98	0.49	Agreed	3.45	0.52	Agreed
12.	Improves the cultivation of disease free crop	3.50	1.24	Agreed	3.25	1.04	Agreed
13.	popularizes varieties of crop species	4.00	1.60	Agreed	3.93	1.22	Agreed
14.	Enhances farmers' knowledge in crop production	3.66	1.76	Agreed	3.63	1.04	Agreed
	Grand Mean	3.81	1.02		3.73	0.92	

Table 1 presents respondents mean responses on the impact of Agricultural Education in Crop Production in Ogba/Egbema/Ndoni L.G.A. Based on the mean decision rule, the study shows the agreement of the respondents with the presented items; agricultural education enhances crop farmers' productivity (3.85 & 3.63), exposes farmers to agricultural technology, (4.00 & 3.73), agricultural education enhances farmers' livelihood (3.63 &

3.48), helps farmers adopt modernized farming techniques with ease (3.40 & 3.88). Also, agricultural education increases local food availability (3.19 & 3.10), agricultural education increases farmers' income (4.19 & 4.43), and increases farmers' sustainability of agricultural practices (3.63 & 4.43). Furthermore, Agricultural education helps in the; ability to take decision concerning the selection of farm input (4.05 & 3.98); ability to obtain, understand and utilize new input and improvement in overall managerial ability (3.89 & 3.38), Improvement of farmers knowledge to adopt and implement basic instruction on agricultural production (4.32 & 3.90), and increase food security (3.98 & 3.45). Moreso, the respondents agreed that agricultural education improve the cultivation of disease free crop species (3.50 & 3.25), popularizes varieties of crop species (4.00 & 3.93) and enhances farmers knowledge in crop production (3.66 & 3.69). This finding is consistent with Adesoji (2009) who reported that agricultural education support and encourages crop farmers to enhance their productivity. It is also in conformity with Iwo (2012) who opined that agricultural education helps the farmers to apply new techniques of farming, administer fertilizers effectively. Leonard (2014) also supported by noting that farmer's education programme will increase farmers' income and sustainability of agricultural practices.

Research Question 2: What are the influences of agricultural education on farmers' adoption of innovation in crop production in Ogba/Egbema/Ndoni L.G.A?

Table 2: Mean Response of female and male crop farmers on influence of agricultural education on farmers' adoption of innovation in crop production in Ogba/Egbema/Ndoni LGA.

S/N	Items	Female n = 62			Male n = 40		
		\bar{X}	SD ₁	Decision	\bar{X}_2	SD ₂	Decision
1.	Agricultural education creates awareness of improved crop varieties before it's adopted.	3.79	1.79	Agreed	3.83	1.20	Agreed
2.	Agricultural education provide adequate information concerning new innovations	3.68	1.04	Agreed	3.78	1.19	Agreed
3.	Adoption of innovations depend fully on the level of interaction between the change agents and the farmers	3.39	0.84	Agreed	3.60	1.19	Agreed
4.	Agricultural education	3.24	0.95	Agreed	3.88	0.87	Agreed

	patiently proves the workability of new innovation to laggard farmers.						
5.	Agricultural education provides technical know-how on the new innovation.	3.94	1.04	Agreed	4.05	1.14	Agreed
6.	The speed in which an innovation is adopted depends on information sent out by the extension agents.	3.94	0.86	Agreed	4.18	0.76	Agreed
7.	Agricultural education agents demand penny from farmers before introducing new innovation.	1.04	0.53	Disagree	1.04	0.50	Disagreed
8.	Agricultural education provides farmers with opportunity to obtain improved varieties effortlessly	3.20	0.80	Agreed	3.24	0.66	Agreed
	Grand Mean	3.28	0.98		3.45	0.94	

Field study, 2018.

Table 2 shows the female and male farmers responses on the influence of agricultural education on farmers' adoption of innovation in crop production in Ogba/Egbema/Ndoni LGA. Based on the mean acceptance of value of 3.00, the farmers showed agreement that agricultural education creates awareness of improved crop varieties before they are adopted (3.73 & 3.83), provides adequate information concerning new innovation (3.68 & 3.78), adoption of innovation depends fully on the level of interaction between the change agents and the farmers (3.69 & 3.60). Moreover, farmers agreed that adoption of innovation is achievable through agricultural education (3.24 & 3.88), agricultural education provides knowledge of new technologies and their application (3.94 & 4.05), the speed in which an innovation is adopted depends on the information sent out by the extension agents (3.24 & 3.18). Lastly, farmers also supported that agricultural education provides farmers with opportunity to obtain improved varieties effortlessly (3.20 & 3.24), and agricultural extension officers' visit to farmers helps and encourages farmers to adopt new innovation (4.25 & 3.73). Whereas, the farmers disagreed that agricultural education agents demands penny from them before introducing new agricultural innovations. The findings obtained is in agreement with Deekor and Nnodim (2006) who stated that one major

function of agricultural education is to provide adequate information concerning new innovation which will help the farmers to solve problems through adoption. Also Crawford (2006) has it that the central aim of agricultural education has been to increase availability of seeds. This is also inline with Justina (2010) who observed that for innovation to be adopted awareness must be created. Adam (2001) supported the findings by stating that rural farmers' adoption of innovations was found to be dependents on the level of interaction between the change agents and the farmers. The study conforms with Diederer (2003) and Paul *et al* (2003) who stated in their respective research that the extent to which farmers utilize available technology and the speed by which they do so depends on the information given out by the extension agents.

Research Question 3: What are the factors that hinder agricultural education from making maximum effect on subsistence farmers in Ogba/Egbema/Ndoni L.G.A?

Table 3: Mean response of female and male farmers on the factors that hinders agricultural education from making maximum effect on subsistence farmers.

S/N	ITEMS	Female =62			Male=40		
		\bar{X}_1	SD ₁	Decision	\bar{X}_2	SD ₂	Decision
1	Fear of failure for trial for the first time.	3.67	0.87	Agreed	3.33	1.02	Agreed
2.	Affixed with the ancient medium of crop production	4.01	0.69	Agreed	3.90	0.74	Agreed
3.	Lack of substantial proves.	3.54	0.83	Agreed	3.43	1.09	Agreed
4.	Little or equivalency difference in the old and new innovation	3.44	0.64	Agreed	3.75	0.86	Agreed
5.	Lack of resources to obtain the new innovation	3.76	0.78	Agreed	3.88	0.69	Agreed
6.	Lack of interest in the new innovation because of its irrelevance to the area	3.62	0.66	Agreed	3.39	0.76	Agreed
7	Lack of appropriate interpretation of message to the unlearned farmers.	3.12	0.72	Agreed	3.18	0.73	Agreed

8.	The possible disadvantages of new innovation	3.34	0.92	Agreed	3.69	0.85	Agreed
9.	Inconsistency of agricultural education agents.	3.50	0.77	Agreed	3.46	0.68	Agreed
10.	Climatic/ environmental factors	3.22	0.81	Agreed	3.37	0.72	Agreed
Grand Mean and S.D		3.52	0.77		3.54	0.81	

Field Survey, 2018.

Table 3, shows the responses of both female and male subsistence crop farmers on the factors that hinder agricultural education from making maximum effect on subsistence farmers. Based on the acceptance mean value of 3.00, farmers agreed with all the enlisted items in the table as the some of the factors that hinders agricultural education from maximum impact on subsistence farmers. This finding is in line with Silva and Broekel (2015) who observed that lack of resources to adopt new innovation, compatibility, complexity of new innovation and environment are major barrier to adopt new innovations of agriculture. Stunding&Zilberman, (1999) also affirmed that Socio-psychological traits of farmers such as their age, educational attainment, income, family size, tenure status, credit use, value system, and beliefs are positively related to adoption. Similar to technology adoption, the characteristics of technologies, such as relative advantage, complexity, divisibility, and compatibility affect their diffusion (OECD, 2001)

Testing Hypotheses

Hypothesis 1: There is no significant different in mean response of female and male crop farmers on impact of agricultural education on farmers’ crop yield in Ogba/Egbama/Ndoni.

Table 4: Z-test analysis on mean response of male and female crop farmers on impact of agricultural education on farmers’ crop yield in Ogba/Egbama/Ndoni L.G.A.

Category	N	\bar{X}	SD	Sig. Level	Z-cal	Z-crit	Decision
Female	62	3.81	1.02	0.05	0.42	1.96	Accepted

Male	40	3.73	0.92
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Table 1 presents the z-test analysis on mean response of male and female crop farmers on impact of agricultural education on farmers’ crop yield in Ogba/Egbema/Ndoni L.G.A. the table shows that the z-cal value of 0.42 is less than that of z-critical value of 1.96. therefore, the hypothesis which states that there is no significant different in mean response of female and male crop farmers on impact of agricultural education on farmers’ crop yield in Ogba/Egbema/Ndoniwas accepted.

Hypothesis 2: There is no significant different in mean response of female and male crop farmers on influence of agric education on farmers’ adoption of innovation in crop production. **Table 5: Z-test analysis on the mean response of male and female crop farmers on influence of agricultural education on farmers’ adoption of innovation in crop production.**

Category	N	\bar{X}	SD	Sig. Level	Z-cal	Z-crit	Decision
Female	62	3.28	0.98	0.05	0.87	1.96	Accepted
Male	40	3.45	0.94				

Table 5 presents z-test analysis on mean response of male and female crop farmers on influence of agricultural education on farmers’ adoption of innovation in crop production. At an alpha level of significant 0.05 %, Z-cal value of 0.87 was obtained while the z-crit value of 1.96. The hypothesis which states that there is no significant difference in the mean response of male and female crop farmers on influence of agricultural education on farmers’ adoption of innovation in crop production thus accepted.

Hypothesis 3: There is no significant difference in the mean response of male and female farmers on the factors that hinder agricultural education from making maximum effect on subsistence farmers.

Table 6; Z-test analysis on the mean response of crop farmers on factors that hinder agricultural education from making maximum effect on subsistence farmers.

Category	N	\bar{X}	SD	Sig. Level	Z-cal	Z-crit	Decision
Female	62	3.52	0.77	0.05	0.13	1.96	Accepted
Male	40	3.54	0.81				

The table shows the z-test analysis of **mean response of crop farmers on** factors that hinder agricultural education from making maximum effect on subsistence farmers. **Since the z-calculated value of 0.13 obtained was less than the z-critical value of 1.96, therefore the hypothesis which states that** there is no significant difference in the mean response of male and female farmers on the factors that hinder agricultural education from making maximum effect on subsistence farmers was accepted.

Conclusion

This study concludes that agricultural educations instill significant confidence and belief in farmers. It helps farmers adopt modernized farming techniques with ease. Support and encourage farmers to enhance productivity, translates the findings of the research institutes to farmers through extension personnel, send the agricultural challenges of farmers to the research institutes. It also enhances the livelihood of farmers by transferring research based knowledge to the agricultural sectors, influences farmers to adopt new innovations and ensures improved productivity in all gamuts of agricultural practices.

It was also concluded that agricultural education helps in creating awareness of improved crop varieties before its adoption, it provides adequate information concerning the new innovation,also in case of laggard farmers, Agricultural education patiently proves the workability of new innovation through the use of proven individuals who might have adopted the new innovation among others.

Lastly, the study revealed that the factors hindering agricultural education from maximum impact on subsistence crop farmers include, the climatic and environmental factors, inconsistency of the extension agents, fear of first trials, lack of resources, fixation with ancient methods of crop cultivation among others.

Recommendations

1. Effective and adequate agricultural policies and programmes should be developed for farmers while urgently addressing the negative factors that hinder crop farmers' growth and improvement in crop production in the area.
2. Fostering farmers' education at all levels to ensure farmers improvement in inputs in crop production.
3. Government at all levels and private support fund is necessary to enhance crop production skills and development among farmers in the area.
4. Extension agents in the state should be properly trained and provided with all necessary technological packages required to teach and guide crop farmers on crop production.
5. Government should provide soft loans to these farmers, so as to facilitate adoption of improved management practices thereby improving good crop supply and ensuring food security.
6. Farmers should organize themselves into cooperative groups so as to facilitate loan procurement.

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