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EVALUATION OF CROPS PRODUCTION INNOVATION STRATEGIES AND FARMER'S EDUCATION NEEDS FOR SUSTAINABLE PRODUCTION IN KAURU LOCAL GOVERNMENT AREA OF KADUNA STATE

Omodara, A. A, PhD
Dept. of Agricultural Education
Federal College of Education
PMB 1041, Zaria
ahmedodara@yahoo.com

Onwunali, M. R. O, PhD
Dept. of Agricultural Education
Federal College of Education
PMB 1041, Zaria
martinroyal2002@yahoo.com

Hiikyaa, N. A, PhD
Dept. of Agricultural Education
Federal College of Education
PMB 1041, Zaria

***Corresponding Author**: Omodara, A. A, PhD*

Abstract

Successive Nigeria government since independence have made quite a number of efforts to establish new facts, policies and ideas to conceive subsistent poor resource farmers on improved farm technologies and extension services for increased crop yield without success, hence the country wallow in abject poverty and hunger. Kauru Local Government, a predominantly crop farmers' environment was used to establish crop production innovations and farmers' extension education needs. A total of 150 structured questionnaires were randomly distributed to 15 farmers each in 10 villages, in the selected districts. Data were subjected to simple descriptive statistics, 4-point rating scale and mathematical techniques. Results indicates that 81.3 % were males at the age of 31-50 years, but mostly illiterates, although 36 % attained secondary and tertiary education. Of the 150 farmers, 66.7 % had 21 to 30 years' experience in crop production, and depended mostly on friends/neighbours and radio; 31.3 % and 26.3 %, respectively for agricultural innovation information. Results suggested that farmers required information on pest management strategies, fertilizer (acquisition and application), crop yield improvement, processing and storage, marketing, growing dry season crops and information acquisition among others. Therefore, farmers need adequate education possibly through farm shows, field days and extension services for sustainable crop production in the area..

Keywords: Farmers, Innovation, Education, Extension needs, Crop production

Introduction

Agriculture still offers the leading source of livelihood, and contributes a great percentage to national income for most developing countries around the world. Statistics from International Labour Organization (ILO, 2007) reported that about 60 % of Africa labour force still derive their livelihood from agriculture, making it the largest employer of labour in most developing countries. In Nigeria, almost 80 % of the work forces are involved in one way or the other in agriculture. Most of the farmers operate at subsistent level, making use of their old practices and tools thereby making the occupation more cumbersome and less profitable. Meanwhile there are still growing concerns about the ability of the existing traditional agricultural practices to feed the teeming population in Nigeria with population of about 200 million, with high rate of poverty, food insecurity and malnutrition (Fadare, Akerele and Toritseju, 2014). Hence the need for equipping these farmers with modern production innovation strategies to facilitate challenge of the nation food security.

Development of farmers through qualitative educational procedure is the panacea for sustainable agricultural

development. The training plays an important role in the advancement of human performance in a given situation. It is the training that provides a systematic improvement of knowledge, skill and attitude which in turn help the trainees to function effectively and efficiently (Sajeev and Singha, 2010). For the training to be relevant to the farmers, the farmers should not be left behind. Carrying the farmers along require assessment of the areas of their farm educational needs.

Needs assessment is a type of evaluation used by researchers in determining various areas of discrepancies in crop production chain (Ademola, Samuel and Ifedapo, 2012). In the case of this study, educational need assessment is the process of determining the difference between the levels of adoption of innovation strategies in crop production towards sustainable agriculture.

However, a number of studies, conducted in various parts of Nigeria revealed some constraints that are responsible for low level of agricultural technology adoption (Odoemenem and Obinne, 2010; Kudi, Bolaji, Akinola, and Nasa, 2011; Idrisa, Shehu, and Ngamdu, 2012). Some of the major constraints identified are poor credit facilities, poor knowledge/education, inadequate extension services, low farm size, poor land tenure system and labour availability. The need of assessment has become necessary in achieving food security, yield increase and improved nutritional quality of crops (HarvestPlus, 2012), through sustainable production without jeopardizing the natural resources for future generation. This study therefore established educational needs of farmers in Kauru, and shall be used by crop production stakeholders for sustainable production.

Objectives

The specific objectives of the study are to;

1. determine the socioeconomic characteristics of the farmers
2. assess the sources of current information on crop production strategies
3. determine the educational extension needs of the farmers in this area
4. identify the problems of the farmer towards sustainable crop production

Research Questions

The following research questions guided the study;

1. How did the socio-economic characteristics of the farmers influence their production?
2. What sources of information are available to farmers on agricultural innovation?
3. What are the educational needs of the farmers in the study area?
4. What are the problems that imped sustainable crop production in the study area?

Methodology

Descriptive survey research method was adopted for the study due to the coverage and sampled number of farmers. The study was carried out within Kauru Local Government Area (LGA) of Kaduna State, and LGA comprised of three districts, namely Geshere, Kauru and Chawai. Geshere. The area was purposively chosen because the inhabitant are predominantly farmers that cultivate various crops. A total of 150 structured and validated questionnaires were randomly distributed to 15 farmers in each of the randomly selected 10 villages in the three districts.

The instrument adopted for this study was developed by the researchers. The questionnaire used was divided into four sections of A, B, C, and D. Section A designed for biometric data of the farmers, section B, covered sources of innovation information, section C, for educational needs of the farmers while section D, dwelled on the problems confronting the

farmers. Section A contained six items with options, section B contained 10 items, section C contained 19 items on area of needs designed in line with four-point rating scale of Strongly Needed (SN = 4), Needed (N = 3), Merely Needed (MN = 2) and Not Needed (NN = 1).

The instrument was validated with the assistance of three experts from Department of Agricultural Education, Federal College of Education, Zaria. Their suggestions were used in restructuring the instrument. The reliability of the instrument was established after a trial test, carried out with 20 farmers in Sabon-Gari Local Government Area of Kaduna State. Test and re-test method was adopted and subjected to Pearson Product Moment Correlation (PPMC) and Spearman Brown Prophesy formula at 0.88 reliability.

Section A and B were analysed using simple frequencies and percentages, while section C was analysed using mathematical technique called Need Confrontation Index (NCI) with a formula;

NCI = (SN x 4) + (N x 3) + (MN x 2) + (NN x 1)

Where;

NCI = Need confrontation index
SN = Strongly Needed frequency
N = Needed frequency
MN = Merely Needed frequency
NN = Not Needed frequency

The decision rule for this section is as follow;

SN	=	3.50 – 4.00
N	=	2.50 – 3.49
MN	=	1.50 – 2.49
NN	=	0.5 – 1.49

The section D is also analysed using relative percentage.

Results and Discussion

Table 1: Socio-economic characteristics of the farmers

Characteristics		Frequency	Percent
Sex:	Male	122	81.33
	Female	28	18.67
Age in years	18-30	28	18.67
	31-40	44	29.33
	41-50	40	26.67
	51-60	32	21.33
	> 60	06	4.00
Marital Status:	Single	28	18,67
	Married	118	78.67
	Divorce	04	2.67
Education:	No Education	53	35.33
	Primary	42	28.00
	Secondary	40	26.67
	Tertiary	15	10.00
Occupation:	Farming	100	66.67
	Teaching	17	11.33
	Civil Servant	17	11.33
	Trading	16	10.67
Year of Experience:	1-10	29	19.33
	11-20	35	23.33
	21-30	47	31.33
	31-40	34	22.67
	> 40	05	03.33
			n = 150

n = number of farmers

Result (Table 1) showed that 81.33 % were male farmers within the ages of 31-40 (29.33 %) years, and 78.67 % were married. Results also revealed that majority (35.33 %) did not have formal education but few had primary, secondary, tertiary education, and are predominately farmers (66.67 %) with 21-30 (31.33%) years of experience in crop production. The implication of the results is that most of the farmers were illiterate youth who had followed their parents from childhood in farming, and possibly why subsistent practise dominated the area. This is because despite their years of experience, crop yield remains low due to the fact that they lack good sources of required information. The result agrees with Nwanosike (2007 and 2011) and Fadare, Akerele and Toritseju, (2014) who reported that, Nigeria farmers particularly in the North were dominated by male and young farmers who are within the age of 31 – 40 years. On the other hand, Fadare *et. al.* (2014) reported that most farmers are not education and were possible, are not in the area of crop production. Anaeto, Asiabaka, Ani, Umunakwe and Ejiogu-Okereke (2017) contrarily reported that female farmers dominated in Farmers Field School (FFS) in Anambra State. This is probably due to locational effect and culture differences in the East where the females are not restricted in anyway.

Table 2: Sources of farmer's information on innovation strategies available in the Kauru Local Government Area

Sources	Frequency	Rank
Friends/Family	105	1
Radio	88	2
Television	34	3.
Internet	24	4.5
Newspaper	24	4.5
Extension Agents	15	6
Advisory Bulletin	13	7.5
Magazine	13	7.5
Field Day/Shows	10	9
Newsletter	09	10

Table 2 result inferred that source of innovative information were dominated by friends/family, radio and television which ranked first, second and third, respectively. Furthermore, the use of information through internet the most effective, fastest and global source ranked 4th followed by newspapers. Results also showed that extension services were poor source of information. Printed media such as advisory bulletin, magazine and newsletter were not effective as they ranked relatively low, and this may be associated with poor farmers' level of education. The results implied that most farmers practised subsistent farming, probably why yield of crops remain low. Earlier, reports have showed that farmers depended on local sources of information such as friends,

radio and television in innovative strategies on crop production. (Nwanosike 2007; Fawole 2008; Zarmai, Okwu, Dawang, Nankat 2014; Omodara, Onwunali and Hiikyaa, 2020; Hassan, Onwunali and Ibrahim, 2020). However, field observation revealed that, farmers are willing to use internet facilities and work with extension officers but are hindered by insufficient services, inconsistent power supply and inadequate internet facilities in the rural areas of Kauru

Table 3: Farmer's areas of educational extension need in Kauru

S/No	Needs of Farmers	SN	N	MN	NN	NCI	Mean	Decision
1	Prevent and control pest	124	19	4	3	564	3.76	SN
2	Obtain and apply fertilizer	117	26	6	1	559	3.72	SN
3	Improve crop yield	119	20	7	4	554	3.69	SN
4	Processing and storage	114	24	7	5	547	3.64	SN
5	Market farm produce efficiently	105	33	10	2	541	3.60	SN
6	How to grow seasonal crops	104	25	14	17	530	3.53	SN
7	Acquire agricultural information	105	28	9	8	526	3.50	SN
8	Obtain and utilize farm credits	101	27	16	6	523	3.48	N
9	Acquire more skills	107	20	12	11	523	3.48	N
10	Visit by Extension Agent	99	22	19	10	511	3.40	N
11	Obtain large hectare of land	98	22	23	7	510	3.40	N
12	Handling and transporting produce	91	30	21	8	504	3.40	N
13	Hiring tractor services	82	29	24	15	478	3.18	N
14	Conservation of soil	75	34	27	14	450	3.14	N
15	Member of farmers' association	73	33	21	23	456	3.04	N
16	Keeping of simple farm record	72	30	25	23	451	3.00	N
17	Planning farm activities	48	61	19	22	435	2.89	N
18	Forming Farmers' cooperative	39	73	21	17	434	2.89	N
19	Reading and writing	36	57	26	31	398	2.65	N
	Grand Mean						**3.34**	

SN= strongly needed, N=needed, MN= merely needed, NN= not needed, NCI= needs confrontation index

Farmers in the Kauru Local Government Area's opinion on their area of educational need identified 19 items. Based on the Confrontation Index (CI) formula these needs ranged between 398 and 564 in CI of 0 to 600, while their mean ranged between 2.65 and 3.76. The area of the educational need of the farmers indicated strongly seven items with prevention and control of pests ranking highest while the remaining 12 items indicated not needed with reading and writing being lowest probably because of their level of education. The grand mean of 3.34 indicated that the farmers in Kauru Local Government Area are in need of all these innovative strategic information. Similarly, Nwanosike (2007) also reported that how to prevent and control pests as a major educational need of farmers in Zaria, Kaduna State while Okwoche, Abu and Hon (2015) reported that farmers can improve on farming activities when

they are educated on how to obtain credit facilities in Benue State.

Table 4: Problems affecting crop production in the area

S/No	Problems	Agreed	Percentage	Disagreed	Percentage
1	Inadequate capital	147	5.44	3	0.11
2	Lack of access to fertilizer	143	5.30	7	0.26
3	Poor storage facilities	141	5.22	9	0.33
4	Inadequate credit facilities	137	5.07	13	0.48
5	Lack of information	130	4.81	20	0.74
6	Poor transportation	130	4.81	20	0.74
7	Poor marketing	129	4.78	21	0.78
8	Inconsistent government policies	127	4.70	23	0.85
9	Low provision of farm implement	127	4.70	23	0.85
10	Climate change	124	4.59	26	0.96
11	Inadequate land	119	4.41	31	1.15
12	Lack of social amenities	115	4.26	35	1.30
13	Poor network system	112	4.15	38	1.41
14	Poor incentives	109	4.04	41	1.52
15	Inadequate education	97	3.59	53	1.96
16	Inadequate extension services	89	3.30	61	2.26
17	Cultural belief	39	1.44	111	4.11
18	Language barrier	37	1.37	113	4.19
		2052	75.98	648	24.00

In analysing problems confronting crop production farmers, the Table above showed that inadequate capital, lack of access to fertilizer, poor storage facilities and inadequate credit facilities were major impediments while language barrier and cultural belief ranked lowest among the identified problems. The findings of this study agreed with Auta, Akiyo and Akpoko (1992), Imoukhuede (1999) and Nwanosike (2007) who reported that inadequate access to fertilizer and capital as well as lack of access to extension services were the major problems of farmers in Nigeria. On the contrary, Anaeto, *et al*. (2017) rated illiteracy as the highest problem confronting Farmers Field School (FFS) in Anambra State of Nigeria.

Conclusion

Crop production activities in Kauru, Kaduna State is basically subsistence as major source of production information relies on parents to children, friends, radio and television instead internet facilities that provides global current, fast and reliable information within a short period. Extension services will facilitate and redirect farmers in areas of pest management, fertilizers acquisition and application, improved crop yield, processing and storage of produce as well as acquisition of required information. Government at all levels, NGOs and other stakeholders needs to assist farmers in funding to increase production, improve livelihood and standard of living.

Recommendations

Based on the findings of this study, the following recommendations were proffered;

There should be a well-established and coordinated communication channel between research institutions, extension organisations and farmers to facilitate innovative strategies that will improve output of farmers and sustainable agricultural production in the study area.

Organisation of functional education extension services by both State and Local Government will update the farmers on recent and upcoming technologies that will bring about the desired sustainable agricultural production to the study area

Both Local and State Government should provide affordable credit facilities or agricultural loan to farmers in Kauru Local Government Area of Kaduna State so as to boost productivity of small-scale farmers.

Farmers are enjoined to form cooperative societies and farmers' association so as to facilitate access to information and credit facilities and the ability to discuss and make request from government.

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