

Factors influencing the use of improved farm practices among small-scale farmers in Kano State of Nigeria

Oyewole S. O.^{1*} and Ojeleye O. A.²

¹Savanna Forestry Research Station, Samaru-Zaria, Nigeria.

²Department of Agricultural Economics and Rural Sociology, Ahmadu Bello University, Zaria, Nigeria.

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ABSTRACT

This study evaluates the factors influencing the use of improved farm practices among small-scale farmers in Kano State. Data were obtained from 110 farmers with the aid of structured questionnaire. Data were analysed using descriptive statistics and multiple regression analysis. The results showed that 73.6% of the respondents are in the range of 20 to 50 years which is the active age range. The mean age of respondents was 40 years. It was revealed that 80.9% of the respondents have farming experience of more than 10 years. About 15% had above primary education. The use of pesticides and herbicides among farmers is accounted for 77.3% of the respondents. The results also revealed that 74.5 and 80.9% of the farmers are aware and have adopted the use of improved seeds and animal traction respectively. The results further revealed that level of education and extension contact were positively and significantly influential to the use of improved farm practices. The study therefore recommends improved extension linkages to sensitize small-scale farmers on the need to adopt improved farm practices.

Keywords: Farm practices, small-scale, farmers, Kano State.

*Corresponding author. E-mail: shola4delord@yahoo.com.

INTRODUCTION

The role of agriculture in Nigeria's economy cannot be over-emphasized. It provides food for its growing population, employment for majority of the population as well as raw materials for agro-industries. Despite its importance, agriculture in Nigeria still faced with numerous problems resulted to low productivity. Generally, the Nigerian agricultural industry's poor performance despite various efforts made by government in increasing food production has been blamed on poor allocation and management of resources, low level of technology, inadequate capital, poor economic infrastructure and lack of adequate incentives amongst others (Sanni, 1991). Chief amongst these challenges is the issue of low level of uptake of technologies, which is responsible largely for agricultural sector's low level and poor performance (Ojeleye, 2009).

The major problem facing small scale agriculture in Nigeria is over dependent on traditional technologies characterized by poor yield and inefficiency. Transformation of traditional farming system for

increased food production calls for adoption of improved practices. One of the major challenges facing agricultural policy makers is the need for the investigation of those economic factors which contribute to the adoption of improved farm technology (Odoemenem and Obinne, 2010). For farmers to adopt an improved agricultural technology, they pass through many stages such as awareness, interest, trial, evaluation and adoption. Agricultural development depends, to a great extent, on the willingness and ability of the small scale farmers to make use of new technology as developed in research laboratories. New innovations in agricultural development are of little value until they can be put to use for the economic and social well-being of the people involved.

This study therefore examined the factors influencing farmers' usage of productivity enhancing technologies. The study is also designed to identify the current mode of technology use, the effect these technologies and practices in relation to socio-economic characteristics of the farmers.

MATERIALS AND METHODS

The study was conducted in Kano State. The state is located between latitudes 10°35' and 13° 02' north and between longitudes 7°30' and 10°35' east and is therefore part of the Sudano-Sahelian zone of Nigeria (Olofin et al., 2008). The state shares boundary with Jigawa, Katsina, Bauchi, and Kaduna states. The state, also known as the centre of commerce produces with groundnut as one of her chief legume crops, and it is also rich with solid mineral resources. Kano is known today as the most irrigated state in the country with more than 3 million hectares of cultivable land.

Multi-stage sampling technique was used for this study. The first stage involved random selection of 25% sample frame of the local governments from the study area, that is, 11 Local Government Area. The second stage involved random selection of two villages within the local Governments where five respondents were sampled randomly per village and ten farmers each per local Government. Altogether, 110 farmers were selected for the study. The local Governments randomly selected include: Gwarzo, Tofa, Sumaila, Wudil, Wurawa, Ungogo, Garko, Gaya, Shanono, Tarauni and Rogo.

Analytical techniques

The descriptive statistical was used mainly to describe the socio-economic characteristics of the respondents and identify the technologies enhancing productivity used by the farmers. Multiple regression analysis was used to identify factors influencing the use of technologies enhancing productivity. The regression model is specified below:

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + e$$

Where,

Y = productivity enhancing technologies (number)

X₁ = age of respondent in years (years)

X₂ = household size (number)

X₃ = educational status of respondent (years of formal schooling)

X₄ = contact with extension services scored (number of contact)

X₅ = membership of farmer's association (years)

X₆ = years of farmers' farming experience (years)

β_0 = constant term

$\beta_1 - \beta_6$ = coefficients for the respective variables in the regression model

e = error term

RESULTS AND DISCUSSION

Socio-economic characteristics of the respondents

The results presented in Table 1 showed that 73.6 of the respondents are in the range of 20 to 50 years which is the active age range. At this age, they are virile and can do a lot of farm work if given proper incentives. About 26% of the sample are the dependent age of less than 20 years and above 50 years. The mean age of respondents was 40. The study revealed that 80.9% of the respondents have farming experience of more than 10 years. This represents a sizeable percentage of farmers

Table 1. Socio-economic characteristics of the farmers in the study area.

Variables	Frequency	Percentage
Age		
≤ 20	8	7.3
21-30	16	14.5
31-40	32	29.1
41-50	33	30.0
> 50	21	19.1
Farming experience (years)		
≤ 10	21	19.1
11-20	33	30
21-30	40	36.4
31-40	14	12.7
> 40	2	1.8
Gender		
Male	80	72.72
Female	30	27.27
Marital status		
Single	12	10.9
Married	97	88.2
Widow	1	0.9
Household size		
≤ 5	3	2.7
6-10	46	41.8
11-15	41	37.3
16-20	16	14.6
> 21	4	3.6
Education		
No formal education	9	8.2
Quranic education	47	42.7
Adult education	11	10.0
Primary education	30	27.27
Secondary education	11	8.2
Post sec. education	2	1.8
Extension contact		
No contact	12	10.9
Weekly	25	22.7
Monthly	35	31.8
Bi-monthly	15	13.6
Quarterly	10	9.1
Once/twice a year	13	11.8
Total	110	100

in the sampled area. It is expected that with increasing years of farming, farmers gain experience in the art of

Table 2. Distribution of respondents according to productivity enhancing practices adopted.

Productivity enhancing practices	Frequency (out of 110)	Percentage
Chemicals use	85	77.3
Fertilizers use	104	94.5
Improved seeds use	82	74.5
Use of credit facilities	14	12.7
Animal traction	89	80.9
Tractor facilities	30	27.3
Crop rotation practice	81	73.6
Technical labour awareness	68	61.8
Technical labour patronage	35	51.5
Storage practice	70	63.6
Crop processing	37	33.6
Market accessibility	96	87.3

farming to the advantage of gaining understanding and increasing productivity. This also assists to identify the respondents as farmers who have perhaps lived all or most of their lives in farming. As shown from Table 1, 41.8% of the respondents have household size ranging between 6 and 10 persons. This seems to be the predominant range of the family sizes. Household size ranging between 16 and above amounted to 20% of the respondents, and this could consequently mean more family labour contributing to the farm family economy. It was found that about 8.2% of the farmers had no education and 42.7% had Quranic education while 10% had adult education. About 27.27, 8.2 and 1.8% had primary, secondary and post secondary education respectively. Education propels farmers to adopt innovations and technologies that are vital for enhancing productivity.

Productivity enhancing practices usage by farmers in Kaduna and Kano States

The distribution of respondents based on the productivity enhancing practices usage is presented in Table 2. The use of pesticides and herbicides among farmers is accounted for 77.3% of the respondents, indicating that a sizeable number of farmers are well exposed to the use of chemicals to enhance production and productivity in agriculture. The use of fertilizer in the states also records a high percentage of 94.5% among the sampled farmers. This basically shows the level of awareness and use of pesticides, herbicides and fertilizers.

The use of improved seeds and animal traction also received a wide coverage (usage) among the sampled farmers. It is noted that 74.5 and 80.9% of the farmers are aware and have adopted the use of improved seeds and animal traction respectively. However, the study does not found out whether the seeds were of pure breed. Also, only 12.7% of the sampled farmers in the

area had access to credit facilities.

The use of machineries like the tractor, diesel engines, crushers, threshers, seed drill, are part of the elements of technologies classed 'new machines'. These modern farm machineries which are mostly tractor mounted essentially substitute human labour on the farm and therefore reduce drudgery, allowing for increased cultivation and consequently increased production. As shown in Table 2, only 27.3% of the sampled farmers use tractor facilities. It was observed that 58.3% of farmers agree to the presence of technical know-how personnel, although only 48.6% these farmers have access to patronize these technical men in the study area. Crop rotation is a form of farming system essentially undertaken to manage soil fertility, control erosion, weeds and pests. It is a very good agricultural practice which when adopted enhances farmers' productivity. About 73.6% of farmers are aware of this practice and claimed to have adopted same. Storage of farm produce and processing are two very vital practices that can undoubtedly enhance farmers' income when they are well managed. Storage is the holding of goods from the time of production until they are needed, while processing entails conversion of a commodity from its raw state to a form more acceptable to the buyers (consumers) or to the next stage in the distribution chain. Storage and processing can be traditional, intermediate or of improved or advance technology. It was noted that 63.6% of farmers sampled responded to using one form of storage measure or the other in the study area.

Socio-economic factors influencing the usage of improved farm practices

The results in Table 3 showed the factors influencing the productivity enhancing practices adopted by the farmers. It was revealed that level of education and extension contact, were positively and significantly influential to the

Table 3. Factors influencing productivity enhancing practices usage in the study area.

Variables	Coefficient	Standard error	t-value
Age of respondent X_1	-5.365	3.034	-1.768*
Household size X_2	0.659	0.727	0.906
Level of education X_3	0.999	0.323	3.092***
Extension contact X_4	-4.431	1.762	2.514**
Membership of association X_5	-1.101	1.204	0.914
Farming experience X_6	0.862	0.562	1.533
Constant a_0	10.847	5.122	2.117**

R Square = 0.25; F-Value = 2.25**; *** Significant at 1%; ** Significant at 5%; *Significant at 10%.

use of productivity enhancing practices. The estimated coefficient obtained for extension contact had positive influence on the use of technologies which imply that increase in number of extension contact would increase number of technologies used by the farmers. Nwaru (2001) opined that by ensuring resources are better mobilized and more efficiently used, a vibrant and functional extension system could be a solution to the problem of acute scarcity of resources in the rural economy which is complicated by inefficiency of use of such resources. The estimated coefficient for education was positive and significant at 1 percent level of probability. This implies that education was positively related to adoption of improved farm practices. The implication of this is that, adoption of improved farm practices would increase with attainment of higher levels of education by the farmers. The negative coefficient obtained for age implies that as farmer increase in age, adoption of improved farm practices decreases. Age has a significant influence on the decision-making process of farmers with respect to risk aversion and adoption. Young farmers tend to make good decision with respect to improved farming.

CONCLUSION AND RECOMMENDATIONS

The most important factors influencing the decision of farmers to adopt improved farm practices among small-scale farmers in the study area were age, level of education and extension contact. The fact that extension contact which is institutional in nature influence the adoption decision suggest that higher extension contacts would increase adoption of improved farm production technologies. Level of education of the farmers indicates that good education propels heads of households to adopt innovations and technologies that are vital for efficient and improved crop productivity. The level of education affects the type of decision taken by the farmers in agricultural production. The study recommends improved extension linkages to sensitize small-scale farmers on the need to adopt improved farm practices.

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