

Full Length Research Paper

Factors Affecting Adoption of Appropriate Technologies on Cassava Production in Oriire Local Government Area of Oyo State, Nigeria

***Ayoade A.R, Akintonde J.O and Oyelere G.O**

Department of Agricultural Extension and Rural Development
Ladoke Akintola University of Technology, Ogbomoso. Oyo State

Accepted 01 February, 2012

The major focus of this paper was to examine the factors affecting adoption level of appropriate technologies on cassava production in Oriire Local Government area of Oyo State Nigeria. The study in its specific objectives examined the socio-economic characteristics of the respondents; determined the farmers' sources of information on cassava production. And finally the study determined the technologies available on cassava production and their extent of use. The study employed the use of structured interview schedule in the collection of relevant information from 120 farmers in 5 villages selected for the study. Data collected were analyzed with frequency distribution, percentages and mean values as the main descriptive statistics, while correlation coefficient was used to determine the relationship between the variables. The mean age of the respondent was 44.8 and they were mostly married (77.6%). Majority of the respondents sampled were male and had no formal education. Most of the respondents engaged in farming as primary occupation and received information through extension agents. The results of the findings revealed that 3.3% have used and discontinued the use of improved varieties while 10.3% are still in use of these varieties. Other technologies still in use include appropriate plant spacing (68.3%), intercropping (16.7%), harvesting (8.3%), use of herbicides (7.5%), use of tractor (4.2%), and fertilizer application (10.8%). The major identified factors affecting the farmer's level of adoption are lack of information about the technologies (96.7%); poor land tenure system (95.8%), lack of credit facilities (86.7%) and climate change (75%). Other factors include high cost of labour (77.5%), high cost of fertilizer (37.5%) and in availability of improved varieties (42.5%). The correlation coefficients indicates that significant relationships exist between lack of information (.298*), lack of credit facilities (.523**), high cost of fertilizer (.424**), non-availability of improved varieties (.294*), poor land tenure system (.362*), climate change (.220**) and the adoption level of the appropriate technologies. Therefore, this study recommends that the extension and other relevant service providers should make use of diverse means of communicating with farmers about necessary in formations on cassava production and climate change. Also credit facilities can be provided through farmer's community based organizations.

Keywords: Cassava, production, adoption, technologies.

INTRODUCTION

Cassava (*manihot esculenta*) is one of the most important staple food crops in Tropical Africa and its efficient production of food energy, year round availability and tolerant of extreme environmental stresses make it

eminently suitable for farming and food system in Nigeria. Cassava production plays a key role in alleviating poverty in Nigeria, as it is virtually impossible that an average household will not consume cassava product in a day. Therefore, cassava is an important factor in food security, poverty alleviation, rural – urban drift and reducing unemployment among others (Okpukpara, 2006). Also, cassava plays a principal role in the food economy of

*Corresponding Author E-mail: Ayonikea60@yahoo.com

Nigeria as it supplies more than half of the caloric intake of Nigerians and it is believed that any geometric increase in cassava output is much likely to close the food shortage gap and declare surplus to combat food insecurity in Nigeria (Nwosu and Asumugba, 2003).

In recognition of the benefit of cassava, the then president of Federal Republic of Nigeria took steps to ensure that cassava export is regarded as one of the non oil - export in order to increase the nation's foreign exchange (Asadu, 2006). This increase in cassava export has negatively affected local supply and has manifested in high prices of cassava and its derivatives. Also, one of the major challenges facing developing countries in the tropics is the production of sufficient food for the large population. In Nigeria, the agricultural sector has failed to perform its assigned role effectively. This manifests in the reduced agricultural output and staple foods for the nation's teeming population. This leads to a serious need to improve its production level to match with the demand of this commodity, which can best be achieved through the expansion of the hectare under cultivation or by the use of appropriate technology and adoption of different technologies among the Nigerian farmers (Fresco, 1993, Otoo, 1994 and Ali, 2005 in Okpukpara 2006). In Nigeria access to land is restricted due to tenure problems; therefore the use of appropriate technologies without necessary expanding hectares under cultivation to increase output becomes a better economic option. The development of improved cassava varieties by research institute and universities have helped to increase cassava production output. These improved varieties have several advantages over local varieties which include wide ecological adaptation, disease and pest tolerance, high yielding, short maturity period and low cyanide content (Oboh et al, 2006). Other appropriate technologies introduced include herbicides application, use of insecticides, use of inorganic fertilizer, use of tractor, appropriate spacing, planting date and tillage practices. These technologies are packaged and disseminated to farmers by Agricultural Development Project through extension services (Nweke et al, 2002). Even though the state ADP had introduced these technologies to the study area farmers still use the old technologies despite the disadvantages (Lateef, 2010). Therefore, there is the need to identify the factors that affects farmers' adoption of the appropriate technologies in the study area. The general objective of this study is to identify the factors that affect the adoption level of the appropriate technologies on cassava production in Oriire Local Government Area of Oyo State. Specifically, the study identified the socio-economic characteristics of the cassava farmers and identified the cassava production technologies available to the respondent in the study area. The study further investigated the level of adoption of appropriate technologies on cassava production in the study area and identified the problems encountered in the adoption of the appropriate technologies by the farmers.

The study finally determined the relationship between the identified factors and the level of adoption of appropriate production technologies.

METHODOLOGY

The study was carried out in Oriire Local Government Area (LGA) of Oyo State. The Local Government Area is located in the latitude 8.10N and longitude 3.290E. It has uniform temperature, moderate to heavy seasonal rainfall and high relative humidity, the mean annual temperature of 24.40C and highest of usually experience in March with a mean temperature of 28.70C. The population of Oriire LGA was estimated to be 150628 (that of male was 76335, while female was 74293) (Census, 2006).

The population of this study includes both male and female cassava farmers in the study area. Purposive sampling technique was used in selecting (4) villages which include Ajinapa, Ayekale, Alagbede and Babaloke respectively based on their concentration on cassava farming. After which, thirty (30) cassava farmers were selected randomly from each of the selected four (4) villages. Respondents were selected systematically from the compiled list of cassava farmers with help of the extension agents in the study area, which makes a sample size of one hundred and twenty (120) for the study.

Primary data was the main source of data used for this study, and was collected from the respondents through structured interview schedule. Information collected includes the socio-economic characteristics of the respondents, the appropriate technologies available on cassava production and the factors influencing the appropriate adoption level. The study further determined the relationship between the socio-economic characteristics of the respondents and their level of adoption of the technologies.

The dependent variable was the adoption level of appropriate cassava production technologies, which was measured by the extent of use of these technologies, while the independent variables were the identified factors affecting level of adoption. The statistical tools employed for this study include both descriptive and inferential statistics. The descriptive statistics include frequency distribution and percentages and mean values, while correlation coefficient was used to determine the relationship between the variables.

RESULTS AND DISCUSSION

Socio-economic characteristics of the respondents

The socio-economic characteristics of the respondents are shown in Table 1. Results indicate that 68.3% of the farmers sampled for study were male with about 34 per

Table 1. Distribution of respondents by their socio-economic characteristics

Age	Frequency	Percentages
< 30	18	15.0
31-40	27	22.5
41-50	41	34.2
51-60	25	20.8
>60	9	7.5
Sex		
Male	82	68.3
Female	38	31.7
Level of Education		
Non-formal education	22	18.3
Pry Sch.Completed	15	12.5
Pry sch. Uncompleted	76	63.5
Sec sch. Completed	7	5.8
Marital status		
Single	16	13.3
Married	93	77.6
Widowed	4	3.3
Divorced	7	5.8
Household size		
1-3	51	42.5
4-6	56	46.7
>6	13	10.8
Pry occupation		
Farming	32	36.7
Trading	37	30.8
Artisan	28	24.2
Driving	8	6.7
Civil Service	5	4.2
Others	9	7.5
Years of Experience		
<10	40	33.3
11-20	63	52.6
21-30	16	13.3
>30	1	0.8
Farmsize		
1-2	50	41.7
3-4	70	58.3

cent between ages 41 and 50 years. The mean age of the respondents is 44.8. This implies that majority of the farmers were active and matured and this is expected to have influenced their decision regards the use of the technologies. The level of education is averagely high as 63.5 per cent of the cassava farmers completed their primary school education, while another 5.8 per cent of

the respondents also had their secondary education completed and 77.6per cent of them with married status.

It was also revealed that 46.7 per cent had between 4 and 6 members in their household, with 73.3 per cent engaging in farming as their primary occupation. Farming experience was high with 66.7 per cent having spent more than ten years in cassava farming. Distribu-

Table 2. Distribution of respondents by Sources of information

Information sources	*Frequency	Percentages
Extension service	64	53.3
Mass Media	61	48.0
Family and friends	64	53.3
NSPFS	53	41.7

Table 3. Distribution of Respondents by identified factors affecting adoption of appropriate technologies

Factors	*Frequency	Percentage
Lack of information	116	96.7
Inadequate credit facilities	104	86.7
High cost of labour	93	77.5
High cost of fertilizer	45	37.5
Unavailability of improved varieties	51	42.5
Climate change	90	75
Poor land tenure system	115	95.8

Source: Field Survey, 2010.

*: Multiple Responses

Table 4. Distribution of Respondents by adoption level of technologies Recommended

Technologies	Still use	Some of the time	Not all the time	Use/discount
Cultivation of improved	13(10.3)	99(82.5)	4(3.3)	4(3.3)
Appropriate Spacing	82(68.3)	13(10.8)	10(8.3)	15(12.5)
Cassava intercropping	20(16.7)	12(10.0)	31(25.8)	57(47.5)
Harvesting	10(8.3)	83(69.2)	17(14.2)	5(4.2)
Use of herbicide	9(7.5)	15(12.5)	87(72.5)	9(7.5)
Use of tractor	5(4.2)	10(8.3)	90(75.0)	15(12.5)
Fertilizer application	13(10.8)	12(10.0)	90(75.0)	5(4.2)

Source: Field Survey, 2010

tion of respondents according to farm size shows that 41.7 per cent cultivated about two hectares of land. It can be inferred from the foregoing that the farmers generally fall within the active farming age bracket with average high level of education and high farming experience.

Factors affecting adoption of appropriate cassava technologies

The factors affecting adoption of appropriate technologies on cassava production as identified by farmers are presented on table 3. Lack of information (96.7%), poor land tenure system (95.8%), inadequate credit facilities (86.7%), climate change (75%) and high cost of labour (77.5%) were the main factors affecting the use of appropriate technologies on cassava production. Others

are high cost of fertilizer (37.5) and non-availability of improved varieties (42.5%).

Adoption Level of Appropriate Cassava Technologies Recommended

The appropriate technologies still in use as shown in Table 4 include improved varieties (10.3%), appropriate spacing (68.3%), cassava intercropping (16.7%) and harvesting techniques (8.3%). Others are use of herbicides (7.5%), use of tractor (4.2%) and fertilizer application (10.8%). It can be observed that most of the respondents use appropriate spacing and cassava intercropping. However, very low percentages use tractor, herbicides and harvesting techniques in cassava production which might be due to the problem of land

Table 5. Result of correlation coefficients showing the relationship between Identified factors and the adoption of appropriate technologies

Variables	Correlation coefficient	Remark
Lack of information	.298*	S
Lack of credit facilities	.523**	S
High cost of labour	.515	NS
High cost of inputs	.424**	S
Unavailability of improved Varieties	.294*	S
Poor Land tenure system	.362*	S
Climate change	.220**	S

** : Correlation is significant at 0.1 level (2 – tailed)

* : Correlation is significant at 0.5 level (2 – tailed)

S: Significant, NS: Not Significant

tenure system of the area, and poor use of herbicides might be due to the cost of input which is usually high per unit output. This finding conforms to a similar study carried out in Anambra state where land tenure system and use of herbicides were in low usage.

Test of Hypothesis

H01: There is no significant relationship between selected factors and adoption of appropriate technologies on cassava production.

The result of correlation coefficient indicates that significant relationships exist between lack of information (.298*), lack of credit facilities (.523**), high cost of fertilizer (.424**), unavailability of improved varieties (.294*), Poor land tenure system (.362*), climate change (.220**) and the adoption level of the technologies. This implies that the low level of use of some of these technologies might have been caused by these factors.

CONCLUSION AND RECOMMENDATIONS

This study has shown that that 3.3% have used and discontinued the use of improved varieties while 10.3% are still in use of these varieties. And other technologies still in use include appropriate plant spacing, intercropping, harvesting, use of herbicides and use of tractor and fertilizer application. The major identified factors affecting the farmer's level of adoption are lack of information about the technologies, poor land tenure system, lack of credit facilities and climate change. Other factors include high cost of labour, high cost of fertilizer and non-availability of improved varieties. The correlation coefficients indicates that significant relationships exist between lack of information, lack of credit facilities, high

cost of fertilizer, non-availability of improved varieties, poor land tenure system, climate change and the adoption level of the appropriate technologies. Therefore, this study recommends that the extension and other relevant service providers should make use of diverse means of communicating farmers about necessary in formations on cassava production and climate change. Also preference can be given to cassava producers to enable them have easy access to subsidized credit.

REFERENCES

- Asadu PO (2004). Presidential Initiative on Cassava Production and Export-Genesis and Scope. A paper presented at conference organized by National Cereal Research Institute held at Moore Plantation Ibadan, Oyo Nigeria from 24th April-27th April, 2004 in Okpukpara, 2006: Credit Constraints and Adoption of Modern Cassava Production Technologies in Rural Farming Communities of Anambra State, Nigeria.
- CBN (2003). Central Bank of Nigeria Annual Reports and Statement of Account.
- Lateef AF (2010). Adoption Level of Appropriate Technologies on Cassava Production in Oriire Local Government area of Oyo State. An unpublished B.Tech thesis Submitted to the Department of Agricultural Economics and Extension. LAUTECH, Ogbomoso Oyo State.
- Nweke FI, DSC Spencer, JK Lyman (2002). The Cassava Transformation Africa's Best – Kept Secret. East Lansing: Michigan State University Press.
- Nwosu KI, GN Asumugha (2003). Fight against Rural Poverty in Nigeria, the role of the National Root Crop Research Institute Umudike. Invited paper presented at the 25th Anniversary celebration of International fund Fund for Agricultural Development. (IFAD) in Abia State.
- Oboh VU, AC Aye, A Hyande (2006). Socio-economic determinant of farmers adoption of Improved Cassava Varieties in Oju Local Government Area of Benue State in Proceedings of 20th Annual National Conference of farm Management Association of Nigeria. Pp 478-482.
- Okupukpara BC (2006). Credit Constraints and Adoption of Modern Cassava Production Technologies in Rural Farming Communities of Anambra State, Nigeria. Pp 282 – 290.