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ACCESSIBILITY TO RICE PRODUCTION TECHNOLOGIES BY FARMERS UNDER BORNO STATE AGRICULTURAL DEVELOPMENT PROGRAMME, NIGERIA

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ABSTRACT

The study assessed the accessibility of farmers to rice production technologies in Borno State, Nigeria. Stratified random sampling method was used to select 534 upland, lowland and Fadama rice farmers in the study area. Data were analyzed using descriptive statistical tools. The descriptive tools include; frequencies, percentages, Means, and standard deviation. The results indicated that most of the respondents (31.5%), claimed to have been contacted by the extension agents on fortnightly basis, while 17.2% indicated that they have never been contacted by the extension agents in the study area. The study shows that all the rice production technologies apart from farm labour were affordable and most of the respondents reported that rice variety was very affordable. The accessibility to the rice production technologies by respondents had a mean score of 35 in the study area. The results further showed that majority (81.5%) of the respondents claimed that the husbands alone made decision on which rice field to use. The study recommended that Input supply units of extension agencies should be strengthened to make available and at affordable rates of rice production inputs in the study area.

Keywords: Accessibility, Rice Technologies, Development Programme, Nigeria

INTRODUCTION

Rice plays an important role in both producers' and consumers' life in Nigeria. The technology adoption aims to increase production not only for national food security but also for export. Though there have been trainings and campaigns to trigger farmer using of the technologies, the adoption extent was still low. Idiong (2005) reported that rice variety has special role in increasing agricultural production. The increase of total agricultural production of Nigeria in the past was due to the introduction of new varieties (Bzugu, 2002). The Borno State Agricultural Development Programme has varieties of rice; ITA 212 and ITA 257, Exchaina, Faro -37 and Faro-38 BU 90/2 and DA 29 and Faro - 14 and Faro - 27, with recommended production technologies, which were disseminated to farmers with a view to increasing rice production in the

State. However, the rate of farmers' use of rice production technologies in Nigeria was low (Imolehin, and Wada, 2000) the primary reasons for such low rice productivity could be among others inaccessibility of farmers to improved technologies.

Researches have been carried out on the adoption of rice production technologies in Nigeria (Imolehin and Wada, 2000; Umar, Ndanisa and Olaleye, 2009). However, various studies indicated that there is a wide gap between available technology and its accessibility, especially in rice cultivation among farming communities in Nigeria. Furthermore, there has not been any study on the accessibility to rice production technologies of farmers implied in Borno State, Nigeria. Therefore, this study was undertaken to fill this gap of scientific knowledge in the study area.

Objectives of the study

The main objective of the study was to assess the accessibility of farmers to rice production technologies in Borno State, Nigeria. The specific objectives were to:

- i) identify respondents' access to extension contact in the study area;
- ii) investigate level of affordability to rice production technology by respondents;
- iii) examine accessibility to improved rice production technologies by respondents; and
- iv) assess household decision on rice farming activities by respondents;

METHODOLOGY

The Study area

The study was carried out in Borno State which lies between longitudes 11°05' and 11°45' and latitudes 09°10' and 14°20' (BOSADP, 2003). The state has the largest land mass among the states in the Federation. It is bordered internationally by Cameroon to the East, Niger to the North and Chad to the Northeast. Borno state shares internal borders with Adamawa State to the South, Bauchi to the Southeast and Yobe to the West (Daura, 2001). According to the National Population Commission (2006), the State has a population of 4, 151, 193 million people with an annual growth rate of about 3.2 percent. The state has a mean annual rainfall of 250mm in the extreme North and a maximum of 1000mm in the South. The State has a tropical climate marked by alternating dry and rainy seasons, and the average temperature is 38.6°C (BOSADP, 2003).

Sampling Procedure and Sample Size

Sampling for administering questionnaires was done using the three Agricultural zones. Thus, three (3) Local Government Areas (LGAs) were randomly selected from each of the three zones giving a total of nine (9) LGAs namely; Dikwa, Marte, Mobbar, Jere, Konduga, Bama, Bayo, Askira-Uba and Shani for the study. Three (3) rice producing villages were randomly selected

from each of the nine (9) LGAs, bringing a total of 27 villages from all the three zones.

A stratified random sampling method was used to select the upland, lowland and Fadama rice farmers in the study area. Due to the heterogenous nature of the rice producing farmers in the state, the respondents were divided into three stratified into three sub-groups. The first stratum (sub-group) consists of farmers whose activity was primarily upland rice farming, the second stratum (sub-group) consists of producers from lowland areas and the third stratum (sub-group) was the Fadama rice farmers. The BOSADP provided the sampling frame for the proportionate selection of the respondents in each stratum bringing a total of 534 rice farmers used in the study. Data were analyzed using descriptive statistical tools. The descriptive tools include; frequencies (f), percentages (%), Means (π), and standard deviation (sd).

RESULTS AND DISCUSSION

Access to Extension Contact by Respondents

Table 1 shows that most of the respondents (31.5%), claimed to have been contacted by the extension agents on fortnightly basis, 22.1% of the respondents had been contacted by the extension agents every other month, 18.9% of them opined that they have been contacted by the extension agents weekly, 17.2% indicated that they have never been contacted by the extension agents and 4.5% of the respondents opined to have been contacted by the extension agents daily. The rest (5.8%) of the respondents did not indicate their opinion on level of contact with extension agents. The 31.5% affirmed to have been contacted by extension agents fortnightly. This response of farmers in the study area might be in line with BOSADP official schedules of field extension agents to meet with farmers once every two weeks (fortnightly). The result of this findings shows that the more frequent period of contact by extension agents to rice farmers were fortnightly and this makes it easier for extension

agents to reach more rice farm families at different times.

Affordability to Rice Production Technology by Respondents

Table 2 shows that the highest unaffordable factor was labour (56%), but all the rest fell below 20%, suggesting that all technologies apart from farm labour were affordable. Most of the respondents reported that rice variety was very affordable, while 27.9% of them said pesticides application was very affordable. Only 20% reported tractor hiring was very affordable, 14.6% indicated herbicide application, 22.5% use of threshing, 17.0% of the respondents were of the opinion that modern storage system was very affordable, though 22.5% of the respondent said disease control, 17.0% of them claimed that modern irrigation methods were very affordable. Similar finding was reported by Bzugu (2002) that there was a significant relationship between adoption of farm technology and level of production. He asserted that those farmers who are likely to adopt farm technologies have high income and large farm size. This assertion may not be true with farmers in the study whose farm sizes were small and may lead to low income from rice marketing, but adoption of rice technologies could be due to the increased yield for high profit gain. The availability of improved rice varieties with their rice production technologies constitutes a major factor of adoption by farmers (Ogunwale, Ayoade and Ayansina, 2006).

Respondents' opinion on their their levels of affordability of the rice production technologies were presented in Table 2. Respondents who reported rice varieties and rice production technologies were very unaffordable constituted about 15 on the average with a standard derivation of 3. Respondents who opined rice varieties constitute about 35% on the average and had a standard deviation of 20%. This implies that BOSADP had influenced the level of accessibility and motivation for farmers to afford

the purchase of the rice varieties and its production technologies. The study was in agreement with that of Umar, Ndanisa and Olaleye (2009) who stated that, adoption of rice production technology could be based on its profitability, cost effectiveness, accessibility and availability of such technologies.

They further stressed that farmers will first of all select technologies in a package that exhibit the required attributes and only add other technologies after having experienced positively the technologies already adopted. However, the result of this finding can be related to recommend improved rice varieties promoted by IITA to Nigerian farmers through ADPs nationwide.

Accessibility to Improved Rice Production Technologies by Respondents

Table 3 shows those respondents who reported inaccessibility to had good access to all farm rice production technologies, rated below 32%. The accessibility to the rice production technologies by respondents had a mean score of 35 in the study area. This result was in accordance with Chinaka, Ogbokiri, and Chinaka (2007) who reported that one viable and conceivable means of raising agricultural productivity in Nigeria is to make farm inputs readily available, accessible and at affordable prices to the farmers.

Household Decision for Rice Farming Activities by Respondents

Table 4 shows that 18.5% of the respondents claimed that the husbands alone made decision on which rice field to use(81.5%), which rice variety to grow (62.5), purchasing fertilizer (77.2%), hiring of labour (66.5%), application of herbicide (57.1%), allocation of family labour (31.6%), rice processing (27.3%), rice storage (45.3%), rice marketing (51.9%), use of income from rice (46.4%) and rice consumption (7.3%), with a mean score of 50% and standard deviation SD 22. The respondents reported that their wives alone affirmed to have made decisions on which rice field to use (1.7%), which rice variety to grow (8.9%), purchasing fertilizer (4.5%), hiring farm

labour (3.9%) herbicide application, (2.6%), allocation of family labour (2.4%), rice processing (7.5%), rice marketing (6.6%), use of income from rice (21.3%) and rice consumption (10.3%). The mean of the respondents was 9% with a standard deviation (SD) of 8. The findings revealed that less number of women participated in rice farming decision which is contrary to the findings of Imolehin and Wada (2000) who reported that female labour is regarded as supplementary to that of male and consequently the benefits of development programme are only expected to filter drawn to women through their men folks.

CONCLUSION

The study indicated that the highest unaffordable factor in adoption of rice production technology by respondents was labour, while all the other factors were affordable. The respondents indicated that the most important inaccessible factors was wash borehole in the study area. The results further showed that household decision on rice farming activities were significantly under taken by husbands alone in the study area.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations were made; -

1. Input supply units of extension agencies should be strengthened to make available and at affordable rates of rice production inputs in the study area.
2. Extension agencies should create more awareness among farmers in promoting the rice production technologies in the study area.
3. Farmers should form cooperatives to take advantage of accessibility of rice production technologies from government and development agencies in the study area.

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Table 1: Distribution of Respondents by Period of Contact with Extension Agents (n = 534)

Extension Contact	Frequency (F)	Percentage (%)
Daily	24	4.5
Weekly	101	18.9
Fortnightly	168	31.5
Every other month	118	22.1
Never	92	17.2
No response	31	5.8
Total	534	100

Source: Field survey, 2010

Table 2: Distribution of Respondents by Level of Affordability to Rice Production Technology (n=534)

Approved Rice Technologies	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)
	VA	A	UND	UNA	VUNA	NR
Rice Seed variety	195(36.5)	192(36)	47(8.8)	43(8.1)	18(3.4)	39(7.3)
Pesticides	149(27.9)	211(39.5)	64(12.0)	43(8.8)	17(3.2)	46(8.6)
Fertilizer	126(23.6)	198(37.1)	73(13.7)	43(8.1)	19(3.6)	75(14.0)
Tractor hiring	108(20.2)	198(37.1)	75(14.0)	43(8.8)	25(4.7)	85(15.3)
Transportation cost	91(17.0)	229(42.9)	65(12.2)	43(12.5)	18(3.4)	64(12.3)
Use of herbicides	78(14.6)	242(37.6)	75(14.0)	76(14.2)	31(5.8)	32(6.0)
Use of threshing machine	120(22.5)	201(37.6)	71(13.3)	76(14.2)	29(5.4)	37(6.9)
Modern storage system	91(17.0)	225(42.1)	92(17.2)	65(12.2)	31(5.8)	30(5.6)
Disease control	243(45.5)	76(14.2)	70(13.1)	63(11.8)	17(3.2)	98(18.4)
Irrigation method	81(15.2)	209(39.1)	107(20.0)	78(14.6)	10(1.9)	49(9.2)
Tube – wells	74(13.9)	202(37.8)	95(17.8)	77(14.4)	42(7.9)	44(8.2)
Wash bore hole	76(14.2)	199(37.3)	90(16.9)	66(12.4)	53(9.9)	34(6.4)
Land	76(14.2)	198(37.1)	77(14.4)	71(13.3)	73(13.7)	39(7.3)
Labour	31(5.8)	57(10.7)	76(14.2)	299(56.0)	39(7.3)	32(6.0)
Total *	1555(291)*	2634(493)*	1077(202)*	1114(209)*	422(79)*	704(132)*
Mean (x)	111(21)	188(35)	77(14)	80(15)	30(6)	50(9)
Standard Deviation	54(10)	54(10)	15(3)	65(12)	17(3)	22(4)

Source; Field Survey, 2010

Key

Very affordable = AV; Affordable = A; Undecided = UND; Unaffordable = UNA; Very Unaffordable = VUNA; No response = NR

* Multiple Responses

Table 3: Distribution of Respondents by Accessibility to Improved Rice Production Technologies

Farm Inputs	VA	A	UND	UNA	VUNA	NR
	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)
Fertilizer	51(9.6)	153(28.7)	129(24.2)	100(18.7)	38(7.1)	63(11.8)
Pesticide	5 (0.9)	98(17.6)	202(37.8)	117(21.9)	49(9.2)	67(12.5)
Finance	20(3.7)	70(13.1)	176(33.0)	130(24.3)	76(14.2)	62(11.6)
Herbicide	14(2.6)	59(11.0)	137(25.7)	133(24.9)	108(20.2)	83(15.5)
Tractor hiring services	38(7.1)	166(31.1)	100(18.7)	100(18.7)	58(10.9)	72(13.1)
Farm labour	42(7.9)	143(26.8)	142(26.6)	106(19.9)	31(5.8)	70(13.1)
Technical expertise	36(6.7)	92(17.2)	111(20.8)	173(32.4)	49(9.2)	73(13.0)
Disease control facilities	30(5.6)	91(17.0)	116(21.7)	188(35.2)	41(7.7)	68(12.7)
Irrigation facilities	31(5.8)	106(19.9)	107(20.0)	191(35.8)	26(4.9)	73(13.7)
Water Management	32(6.0)	74(13.9)	130(24.3)	197(36.9)	24(4.5)	77(4.4)
Tube –well	27(5.1)	83(15.5)	135(24.3)	192(36.0)	34(6.4)	63(11.8)
Wash borehole	31(5.8)	57(10.7)	76(14.2)	299(56.0)	39(7.3)	32(6.0)
Modern storage system	13(2.4)	127(23.8)	108(20.2)	176(33.0)	49(9.2)	61(11.4)
Total *	370(69)	2634(493)*	1077(202)*	1114(209)*	422(79)*	704(132)*
Mean (x)	28(5)	188(35)	77(14)	80(15)	30(6)	50(9)
Standard Deviation	13(2)	54(10)	15(3)	65(12)	17(3)	22(4)

Sources: Field Survey, 2010

Key;

Very Accessible = VA; Accessible = A; Undecided = UN; Not Accessible = NA; Very Inaccessible = VINA; No Responses = NR

Table 4: Distribution of Respondents by Household Decision for Rice Farming Activities n = 543

Decision on the rice Farming activities	*Husband alone	*Wife alone	*Husband and wife	*All adults in the home	*No response
	f (%)	f (%)	f (%)	f (%)	f (%)
Which rice field to use	435(81.5)	9.(1.7)	37(6.9)	30(5.6)	3(2.4)
Which rice variety to grow	334(62.5)	46(8.6)	76(14.2)	45(8.4)	31(5.8)
Purchasing fertilizer	412(77.2)	24(4.5)	53(9.9)	18(3.4)	27(5.1)
Hiring labour	355(66.5)	21(3.9)	94(17.6)	38(7.1)	26(4.9)
Application of herbicides	305(57.1)	14(2.6)	62(11.6)	116(21.7)	30(5.6)
Allocation of family labour	169(31.6)	13(2.4)	202(37.8)	118(22.1)	31(5.8)
Rice processing	146(27.3)	146(27.3)	120(22.5)	98(18.4)	23(4.3)
Rice storage	242(45.3)	40(7.5)	149(27.9)	63(15/5)	20(3.7)
Rice Marketing	277(51.9)	35(6.6)	110(20.6)	78(14.6)	24(4.5)
Use of income from rice	248(46.4)	114(21.3)	68(12.7)	68(12.7)	36(6.7)
Rice consumption	29(7.3)	55(10.3)	102(19.1)	229(42.9)	00.00
Total *	2962(555)	517(97)	1073(201)	901(172)	251(49)
Mean (x)	269(50)	48(9)	98(18)	82(16)	23(4)
Standard Deviation	118(22)	44(8)	47(9)	59(11)	11(2)

Source: Field survey, 2010

*multiple responses

KEY:

Figure in parentheses are percentages (%); Figure outside parentheses are Frequencies (f)