

## PERCEIVED RELEVANCE OF IMPROVED RICE PRODUCTION TECHNOLOGIES IN KATCHA LOCAL GOVERNMENT AREA OF NIGER STATE, NIGERIA

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### ABSTRACT

*This study examines perceived relevance of improved rice production technologies in Katcha Local Government Area of Niger State, Nigeria. Structured questionnaire was used in collecting data from 90 rice farmers who were randomly selected from the study area. Data on the socio-economic characteristics of the respondents, their awareness and perception of the improved rice technologies as well as yield before and after adopting the improved technologies were obtained. Descriptive statistics and T-test were used for statistical analysis. The findings indicated that majority (83.1 %) of the farmers were male with mean age of 41 years. The mean household size was 8 people and also 46% had less than secondary school education. Awareness of the improved rice technology recorded 85.4% for sawah practices, 69.7% for fadama, 94.4% for improved seed variety (nerica), 80.9% for plough, 62.9 for power tiller and 73.0% for planter. Improved seed variety and land evaluation technology were highly perceived to be relevant by the respondents in the study area. There was a significant difference between the output before and after adopting the improved technologies ( $t$ -value = -3142). The study recommended that extension agents should encourage farmers on the use of farm machinery and equipment, agrochemicals and land evaluation technologies to further boost rice production and that there should be adequate awareness creation for improved rice production technologies by extension agents and relevant stakeholders with a view to improving rice production through adoption of proven technologies.*

**KEY WORDS:** Farmers, perception, improved technologies, rice, sawah practices.

### INTRODUCTION

Active and systematic rice research started in the country in 1953 with the establishment of the Federal Rice Station at Badeggi in Niger State, now the headquarters of the National Cereals Research Institute (NCRI). The focus of the research station was to develop rice varieties with improved quality grains, uniform shape and sizes appropriate for minimal breakage during milling. This has made it imperative that farmers' perception of research results specifically rice production technologies be considered, since Nigeria is the largest rice producing country in West Africa, and unfortunately one of the largest importers of rice in the world (Odoemena, *et*

*al.*, 2008). Rice production in the country is characterized by a supply-driven production system that is rooted in subsistence system of farming. Rice is an important cereal in Nigeria, with the share of rice in cereals consumed increasing from 15% in the 1970s to 26% in the early 1990s (Akpokodje, *et al.*, 2001). Scientists' understanding of farmer's perception about technology is often clouded by misleading metaphor by which the process of technology development and delivery are described. Farmers tend to be seen as passive recipients, albeit users of technology developed by other people. At best, it is acknowledged that some feedback on farmer's reaction to a new technology is desirable in order to refine that technology;

but this is likely to be regarded as a need for mere fine tuning. However, farmers are not passive consumer but active problem solver who in fact develop for themselves most of the technologies they use. For many years, before today's National Agricultural Research systems were set up, farmers did their own research by integrating technologies from different sources and continuing to adapt it on their farms. Therefore, technology used by farmers is a complex product undergoing constant changes (Oladele and Fawole, 2007). According to Alonge and Martin (1995), farmer's perceptions regarding the compatibility of improved practices with their farming systems emerged as the best predictors of adoption of such practices. Moreover, Sheikh, *et al.* (2003) stated that farmers' attitudes towards the use of technology and contact with extension agents were the main factors influencing the adoption of no-tillage in rice production. Hence, there is a need to find out what farmers' perceptions are with regards to applying selected agricultural technologies. For the purpose of this study, improved agricultural technologies are represented by technologies which promote the sustainability of rice cropping systems. This paper intends to contribute to the existing literature by providing an empirical analysis of the possibility of applying improved agricultural technologies among rice farmers.

The main objective of this study was to analyze the perception of improved rice technologies in Katcha Local Government Area of Niger State, Nigeria. The specific objectives were to identify the socio-economic characteristics of the rice farmers, assess the perception of rice farmers about the relevance of rice production technologies, ascertain the respondents' level of awareness of improved rice technologies, and identify the problems encountered in rice production by the farmers in the area under study.

It was hypothesized that there was no significant difference between the outputs of

the farmers before and after the adoption of improved rice production technologies.

## METHODOLOGY

The study was conducted in Katcha Local Government Area of Niger State, Nigeria. Niger state is located within latitudes 8° 10° north and longitudes 3° 8° east of the prime meridian with land area of 76,363 square kilometers and a population of 4,082,558 people (Wikipedia, 2008). The State is agrarian and well suited for production of arable crops such as cowpea, yam, cassava and maize because of favourable climatic conditions. The annual rainfall is between 1100mm 1600mm with average monthly temperature ranges from 23°C and 37°C (NSADP, 1994). The vegetation consists mainly of short grasses, shrubs and scattered trees.

The respondents were selected using a multi-stage sampling technique. The first stage involved the purposive selection of Katcha Local Government Area (LGA) due to the preponderance of rice growers in the LGA. The second stage involved the random selection of two rice producing districts from the LGA. The third stage involved the random selection of three villages from each of the two districts which was followed by random selection of 15 farmers from each village to give a total of 90 farmers as sampled respondents for the study. Only 89 of the respondents returned their questionnaires. Data were collected with the use of structured questionnaire designed in line with the objectives of the study. The data collected include output of rice, land evaluation technologies (sawah, fadama, and eco-technology), machinery and equipment use (Thresher-cleaner, reaper-harvester, power tiller, planter, and plough), use of agrochemicals (pesticides, insecticides, fertilizer), and improved seeds varieties (Nerica, Faro 45).

Frequency distribution, tables and percentages were used to describe the socio-economic characteristics of the farmers in the study area. T test was used to test if there

is significant relationship between the farmer's rice output before and after adopting the technologies.

**RESULTS AND DISCUSSION**

**Socio-economic characteristics of the respondents**

Some socio-economic characteristics may influence the farmer's choice of improved technologies in the area.

Table 1 shows that majority of the respondents (83.1%) were males. This shows that rice production is male dominant in the study area. It was also shown that 55.1% of the sampled farmers were between the ages of 30 and 50 years. Thus, majority of the sampled farmers were middle aged, which could result in a positive effect on production. The result also indicates a low level of respondents' educational

qualification as 46.1% of the respondents had only secondary education and few (23.6%) had tertiary education. However, large number of the farmers (69.7%) had formal education. This could enhance adoption of improved rice production technologies through extension activities in the area. Moreover, the results further showed that the average household size was 8 people. Generally, in any agrarian settlement, a large family size guarantees free and cheap labour. Also, the average years of farming experience of the respondents was 18.4 years. This implies that majority of farmers in the study area had been in the business of rice production for a long time.

**Table 1: Socio-economic characteristics of sampled farmers.**

**Table 1. Contd.**

<b>Variables.</b>	<b>Frequency</b>	<b>Percentage</b>	<b>Mean Value</b>
<b>Sex</b>			
Male	74	83.1	
Female	15	16.9	
<b>Marital status</b>			
Single	25	28.1	
Married	51	57.3	
Divorced	5	5.6	
Widow(er)	8	9.0	
<b>Age (years)</b>			
Less than 21	3	3.4	
21-30	17	19.1	40.5
31-40	24	27.0	
41-50	25	28.1	
51-60	18	20.2	
Above 60	2	2.2	
<b>Education</b>			
Non-formal education	7	7.9	
Primary	18	20.2	
Secondary	41	46.1	
Tertiary	21	23.6	
Adult education	2	2.2	
<b>Household size</b>			
1-5	41	46.1	8.2
6-10	41	46.1	
11-15	5	5.6	
16-20	2	2.2	

Source: Field survey, 2009

Variables.	Frequency	Percentage	Mean Value
<b>Years of farming experience</b>			
1-5	1	1.1	18.4
6-10	3	3.4	
11-15	8	9.0	
16-20	18	20.2	
Above 20	59	66.3	

### *Awareness of rice production technologies*

Table 2 shows farmers' awareness of improved rice production technologies. Fadama development and 'sawah' practices under land evaluation recorded high awareness among the respondents except the eco-technology where only few (12.4%) were aware. Possible reasons for this high awareness of the two practices might be connected to improvement in extension services being provided by the National Cereals Research Institute (NCRI), Badeggi

which is located in Niger State of Nigeria. The awareness may also be due to the involvement of some Agricultural Research Institutes in the preparation of extension materials such as posters, bulletins and radio programmes among others. However, technologies on land evaluation were not as popular as technologies relating to improved seed varieties, use of machinery and equipment. The costs associated with these technologies might be responsible for the low percentages of its awareness among rice farmers.

### **Table 2: Farmers' awareness and**

### **perceived relevance of improved rice production technologies**

Source: Field Survey, 2009.

Technologies	Awareness				Perception			
	Aware		Not aware		Relevant		Not relevant	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
<b>Land evaluation technology</b>								
Eco-technology	11	12.4	78	87.6	0	0	89	100
Fadama development	62	69.7	27	30.0	49	55.1	40	44.9
Sawah practices	79	85.4	13	14.6	54	60.7	35	39.3
<b>Improved varieties</b>								
Nerica	84	94.4	5	5.6	80	89.9	9	10.1
Faro 45	37	41.6	52	58.4	12	13.5	76	85.4
Others	23	25.8	66	74.2	5	5.6	84	94.4
<b>Machinery and equipment</b>								
Thresher	13	14.6	76	85.4	3	3.6	86	97.4
Reaper-harvester	28	31.5	61	68.5	8	9.0	81	91.0
Power tiller	56	62.9	33	37.1	6	6.7	83	93.3
Planter	65	73.0	24	27.0	4	4.5	85	95.5
Plough	72	80.9	15	16.9	29	32.6	60	67.4

### *Perceived relevance of rice production technologies by farmers*

Farmers' perception of the relevance of improved rice production technologies shows a high degree of variation. This has the tendency

of affecting the adoption of these technologies. Also, some of the technologies are not in the current interest and immediate needs of the farmers which might influence their perceptions as at the time of this study. The perception of farmers about the

relevance of these technologies, therefore necessitates the need for a demand-driven technology generation . The improved rice varietal technology (Nerica) was perceived relevant by the farmers. This may be attributed to the fact that rice production feature prominently in the farming system of the respondents.

**Problems encountered by rice farmers in the study area**

The major problem encountered by the respondents in the study area was that of

**problems encountered by farmers.**

Problems	Frequency*	Percentage
Pest	38	42.7
Disease	31	34.8
Pilfering	8	9.0
Inadequate rainfall	56	62.9
Lack of credit facilities	86	96.6

\* = Multiple responses were allowed.

Source: Field Survey, 2009

**Hypothesis testing**

The result in Table 3 shows that there was a significant difference between farmers' outputs

inadequate rainfall. Another problem usually faced by the respondents is the lack of credit facilities as presented in Table 4. Also, 38 respondents claimed that the problem of pests has caused reduction in their output over the years. This may be attributed to the insufficiency of herbicide and insecticides as a result of little or no access to credit facilities in the study area.

**Table 3: Distribution of respondents by**

before and after adopting improved rice production technologies with mean values of 1244.60 kg/ha and 2033.91 kg/ha respectively. This implies that the adoption of appropriate improved rice production technologies by the farmers had increased rice yields per hectare in the study area.

**Table 3: Difference between the farmers output before and after adopting improved agricultural technologies.**

Rice Yields / Hectare	Mean	T- value	p-value	Decision
Output before(Kg/ Ha)	1244.60	-3.142	0.002	Significant
Output after (kg/ Ha)	2033.91			

Source: field survey, 2009

**CONCLUSION AND RECOMMENDATIONS**

This study examined farmers' perceived relevance of improved rice production agricultural technologies in Katcha Local Government Area of Niger State, Nigeria. The study revealed that majority (83.1 %) of the farmers were male with the mean age of 40.5 years. The study also showed that

farmers in the study area perceived the relevance of improved rice production technologies considered. However, the use of eco- technology, thresher and reaper harvester by the farmers was very low in the study area. Findings further revealed a significant difference between rice yields before and after adoption of improved production technologies.

Based on the findings, it is recommended that extension agents should encourage farmers on the use of farm machinery and

equipment, agrochemicals and land evaluation technologies to further boost rice production. There should be adequate awareness creation of improved rice production technologies by extension agents and relevant stakeholders with a view to improving rice production through adoption of or proven technologies.

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