

## **The Role of National Root Crop Research Institute (NRCRI), Umudike, Abia State in Agricultural Development**

**\*Akparanta, C.D., \*\*Ugwu, J.N., \*Nwawe, C.N., \*\*\*Utulu, S.N., \*Erumwenbibi, B.O.**

*\*Agricultural Economics Division, Nigerian Institute for Oil Palm Research (NIFOR), Benin City, Edo State*

*\*\*Enugu State University of Science and Technology, Agbani, Enugu State*

*\*\*\* Agric. Programme, Afe Babalola University, Ado-Ekiti, Ekiti State*

### **ABSTRACT**

This study was necessitated by the low productivity recorded in agricultural sector of the economy inspite of different research breakthroughs by different Research Institutions in Nigeria. This study was therefore designed to provide information on the utilization levels of research findings from National Root Crop Research Institute (NRCRI) by farmers in Ikwuano local government area of Abia State. Multi-stage sampling technique was used for the study. 10 villages were selected from the LGA and 15 farmers were randomly selected from each of the 10 villages given a total of 150 farmers. Data were analysed using descriptive statistics and likert scale. The results from the analysis shows that majority of the respondents were between the ages of 31-40years while 56% had secondary education and 19% had primary education. The constraints faced by the respondents in adopting improved technologies were; inadequate funds, the fear of being taxed, inadequate farm inputs and language barrier. The likert-scale result gave a mean score of 3.1. Technologies developed in agricultural research are not meaningful if the findings do not get to the end-users.

**Keywords:** Agricultural technologies, adoption rate, agricultural development, Nigeria.

### **INTRODUCTION**

Agriculture for a long time continues to be an important sector in the Nigeria economy because it can always be relied on to provides food and industrial raw materials for the growing population. The role of agriculture in provision of food, raw materials and employment for the teaming population has made the sector critical in Nigeria's march towards economic development (IITA 2009). The various attempts by previous governments in developing and reforming the sector, attest to this fact. As a result of the importance attached to this sector by the federal government of Nigeria, efforts have been made to expand and modernize agriculture with a view to increasing agricultural productivity and enhancing the food security in Nigeria. In spite of these efforts, the demand for food production does not appear to meet domestic needs, with export needs being insignificant. In such situation, two options are open, namely increasing the farmland area or increasing yield per unit area. While the former appears a difficult option, the latter can be realized through utilization of result of agricultural research (NRCRI 1997). Before the oil boom of 1970's, the Nigeria economy was primarily dominated by the agricultural sector, in addition to providing staple food, raw materials for industries and for export. Agriculture remains an important means of alleviating poverty. Agriculture is evolving towards a global system requiring high quality, competitive products and organized in value chains. Value chains analysis was originally developed for manufacturing (Gereffi 1994). However, the emergence of the oil economy as a major source of government revenue and foreign exchange earner introduced some structural changes in the economy. The economy hitherto agro-based was transformed into a mono-product economy solely depended on petroleum (CBN 1997). The role of agricultural research institute in the development of the nation's economy cannot be over emphasized whenever this is questioned providing solution to agricultural problems appears to be their main role (Ogunbodede B.A.2010). The National Root Crop Research Institute (NRCRI), which has the mandate to improve the root and tuber crops such as yam, cassava, cocoyam, sweet potato, Irish potato and ginger have great potential for contributing to national economic development. The institute conducts research into the genetic improvement of economically important root and tuber

**\*Address for correspondence:**

dan\_flossie@yahoo.com

crops such as cassava, yam, cocoyam, sweet potato, Irish potato, ginger, rizga, Hausa potato, sugar beet and Turmeric. It also researches subjects such as crop cultivation techniques, storage, processing and utilization of the crops, concentrating on requirements of farmers in the south-east zone of Nigeria. The institute runs a diagnostic survey of the farming systems of the zone to obtain information on status of agricultural activities and to identify production construals and opportunities, conduct of up-stream (on-station) research to tailor down commodity research results to suit farmers' conditions. Conduct Monthly Technology Review Meetings (MTRMs), where scientists from research institutes and universities train the Subject Matter Specialists (SMSs) from the state Agricultural Development Programmes on improved technologies (Udealor 1999). The institute provides training of middle level agricultural workers, awarding National Diplomas and Higher National Diplomas and providing specialized vocational training to farmers. Technology generation is influenced by determination of needs, and research and management of technology generating institutions (World Bank, 1994). Previous research reports blamed ineffectiveness in technology generation on conventional research activities operated in Nigeria. Which have poor consideration of farmers' problems, skill and scale of operation and financial status and orienting of research to journal publication (Zaria *et al.*, 1994). In developing countries such as Nigeria, the acute lack of collaboration between the social and biological scientists on farming system research (FSR), has limited research efforts in generating relevant technologies (Van den Ban and Hawkins, 1992). The net effect of FSR adopted as a policy in the activities of the agricultural technology generation sub-system is the evolvement of technologies best suited to farming system and accepted by farmers (Asiabaka, 1998). According to Blum (1991), most research efforts in technology generation in developing countries are wasted due to their inadequate orientation to farmers' needs and utilization. There is a problem of choice of the right type of agricultural technologies and methods with which to communicate relevant technologies to small scale farmers. An agricultural technology is considered appropriate, if it provides a cost-effective level of productivity and has minimal effects on the environment (McNamara, 1990; Okigbo, 1994). According to Platt (1989), a critical issue to people appropriateness of technologies is in developing them at local levels using skills and perception of the people who live in the rural communities. Presently, technology generation sub-system in Nigeria experiences poor and uncertain funding, frequent government administrative changes and lack of policy initiative in research. According to Onwuaju (2009), the National Root Crop Research Institute (NRCRI) is currently promoting the value chain approach as a viable alternative that can drive agricultural development in Nigeria to a level where we can be self sufficient in food, fibre and agro raw materials production. The National Root Crop Research Institute (NRCRI) helps in the development and transfer of production packages-crop varieties, optimum spacing, optimum rate and time for fertilizer application, weed control measures and crop compatibilities, stacking methods in yam based systems, harvesting for maximum productivity of technologies. Weed control in root and tuber crops-based mixtures, cocoyam/maize/pigeon pea at 2.0m inter-row and 1.0 inter-row spacing. Development of complementary use of both cassava compositeroot meal and cassava composite meal with commercial feed in the feeding of broilers and laying birds (Udealor 2001). To enhance adequate food production in Nigeria, demands that farmers should be reached with appropriate technologies that are economically viable and culturally acceptable (Sokoya 1998). Therefore this study was to examine the contribution of agricultural research institutes with reference to National Root Crop Research Institute (NRCRI), Umudike for national development.

#### **Specific objectives of the study were to;**

- Identify the socio-economic characteristics of the farmers.
- Identify the packages/technologies introduced by NRCRI and examine the extent to which the farmers have adopted it.
- Identify the effect of the adopted technology on farm yield.
- Identify the factors that hinder farmers from adopting the improved technology.

#### **METHODOLOGY**

##### **Area of Study**

The area under study is National Root Crop Research Institute (NRCRI) Umudike. Umudike is a village in Ikwuano Local Government of Abia State, surrounded by some villages namely –

Umuarigha, Umuokwuo, Amawom, Umughalu, Amaba Ime, Nono, etc. The Institute region lie within latitude 050°c, 29°N and 07°c, 33'E. Average temperature of the area is 26°c, the maximum being 32°c, whereas the minimum is 22°c. The latitude falls within range of 122m (100ft) above sea level. It has the average rainfall of 2169.8mm which is obtained within the ranges of 148 and 155rain days. The relative humidity falls between 50-95% hence Umudike is within humid rainforest zone which is characterized by long duration (7-12 months) of rainfall and short period of dry season. (Meteorological Data NRCRI 1999).

### Method of Data Analysis

Purposive sampling technique was used to select Ikwano local government area, from where ten villages were randomly selected because of the impact of the role played by this research institute in their lives and for the growth of agriculture. Random samplings of 15 farmers were taken from each of the 10 studied villages, given 150 respondents. Information were obtained from both primary and secondary sources. Primary data were collected from farmers, while secondary sources were from annual reports, journals and seminars from NRCRI, etc. Data obtained were analysed using statistical tools such as frequencies, percentages and likert scale. Frequency distribution and percentages were used to analyse objectives i, ii, and iv and likert scale was used to analyse objectives iii. The use of 4(four) point likert scale, was used by the researcher. According to Vogt,(1999). A likert type-scale involves a series of statements that respondents may choose from in order to rate their responses to evaluate questions. The researcher likened the weighted mean to be;

$$4+3+2+1=10$$

$$\bar{a} = \frac{\sum fn}{Nr}$$

$$\bar{a} = \frac{10}{4} = 2.5$$

Where,

$\bar{a}$  = Mean score

$\sum$  = Summation

F = Frequency of response mode

N = Likert nominal value

In calculation, we could either accept the mean score to be effective or ineffective.

Mean score below 2.5 is ineffective,

Mean score from 2.5 and above is effective.

## RESULTS AND DISCUSSION

Data in Table 1 present information on the socio-economic characteristics of the respondents. The result shows that males practice farming in the study area than the females and majority of them are between the ages of 31-40 years. Majority (56%) of the respondents had secondary education which indicates that innovation can be easily adopted because of their level of education and it's in consonance with the work of Rogers (1983) which state that education facilitates adoption of innovation and the theory of group dynamics by Child (1986) contended that social interaction and imitation of parents, famous people in a group, etc encouraged adoption of innovation. In the same way, Voh (1982) supported the view by stating that education, young age, peer group, and availability of resources were some of the factors that influenced adoption and diffusion of innovation positively. About 80% of the respondents had 10-20 years of farming experience and farming was their major occupation.

**Table1.** Socio-Economic characteristics of respondents

Variables	Frequency	Percentage
<b>SEX</b>		
Females	60	40
Males	90	60
Total	150	100

<b>AGE</b>		
Below 30 years	23	15
31- 40 years	110	74
41-50 years	13	9
Above 50 years	4	2
Total	150	100
<b>EDUCATION</b>		
No schooling	18	12
Primary	28	19
Secondary	84	56
Tertiary	20	13
Total	150	100
<b>YEARS OF FARMING</b>		
0-10 years	8	5
11-20 years	120	80
21-30 years	12	8
31 years and above	10	7
Total	150	100
<b>OCCUPATION</b>		
Farming	100	67
Trading	20	13
Civil servant	10	7
Farming and trading	20	13
Total	150	100

Field survey, 2010.

Table 2 present the packages/ technologies of NRCRI and the extent to which the respondents had adopted it. The results show that the respondents have accepted and adopted much of the technologies released by the institute.

**Table2.** The packages/technologies introduced by NRCRI and the extent to which the respondents have adopted it.

Variable	Frequency	Percentage
Construction of improved yam barn	70	47
Yam minisett intercrop	65	43
Processing cassava into flour	60	40
Groundnut/cassava	45	30
Cocoyam/plantation intercrop	30	20
Late maize/cassava/melon	60	40
Yam/maize/cassava/cowpea	80	53
Processing of plantain into flour	50	33
Improved variety of cassava	65	43
Improved technique on sweet potatoes	35	23

Multiple responses

Field survey 2010

Data in Table 3 shows that the adopted technologies by the respondents gave a significant increase in the yield recorded by the respondents.

**Table3.** Effect of the adopted technology on their farm yield

Very high yield	High yield	Low yield	Very low yield	Mean score
40	95	10	5	3.1

Field survey 2010

Table 4 shows the constraints of the respondents in adopting the improved technology. Multiple responses given by the respondents' shows that 125% of the respondents had the problem of inadequate funds; this was supported by the findings of Kudi *et al* (2006) where he identified lack of finance as a major constraint in fish production in Kaduna State, Nigeria. Other problems encountered by the respondents were inadequate farm inputs (80%), language barrier (50%) and respondents' fears of being taxed (105%).

**Table4.** Factors that hinders the respondents from adopting the improved technology

Variable	Frequency	Percentage
Farmers often think they will be assessed for tax	105	70
Inadequate farm inputs (planting materials)	80	54
Language barrier	50	33
Inadequate funds	125	84

*Multiple responses*

*Field survey 2010*

## CONCLUSION

Agriculture remains the mainstay of the economy in terms of national output and employment generation. Agricultural research in terms of national agricultural development is not meaningful if their results neither reaches nor are accepted by the majority of farmers. The nations past agricultural policies and programmes, which adopted a top-down approach to agricultural research and development, have not been able to provide adequate momentum to the stagnating agricultural sector. Farmers must be carried along and their active participation sought throughout the research and development process. By providing incremental improvement geared to the capabilities of resourced-poor farmers, these farmers can be raised a step at a time. To this end, it is gratifying to observe the beginning of the close collaboration development between the farming system, research programmes of the nation’s research institute and agricultural development project.

For any nation to be self sufficient the nation should employ progressive agriculture and this can only be possible if agricultural research and government should play their roles in providing means for modern agriculture and thereby increasing agriculture and the nation’s economy.

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