

Adoption of RTEP Production Technology Among Cassava-based Farming Households In Southwest NigeriaAdekemi A. Obisesan¹, Bola T. Omonona², Suleiman A. Yusuf³, Omobowale A. Oni⁴Department of Agricultural- Economics, University of Ibadan, Nigeria
kemi_triumph@yahoo.com

Abstract: One of the fundamental ways of improving agricultural productivity is through introduction and use of improved agricultural technologies. Root and Tuber Expansion Programme (RTEP) was one of the agricultural programmes in Nigeria. This study examined the adoption of RTEP production technology among cassava-based farming households in Southwest, Nigeria. The study utilized primary data collected using structured questionnaire. Multistage sampling technique was employed in the selection of 180 cassava-based farming households in four RTEP participating local government areas in the zone. The data were analyzed using descriptive statistics such as: frequency, mean, percentages, standard deviation and tables. The adoption level of RTEP improved cassava production technology by the RTEP farmers was 76% and adoption level of the technology differs by socio-economic characteristics. Level of adoption differs by educational level, participation in off-farm activities and credit accessibility among other factors. Therefore, effective extension services should be put in place to give some level of training to farmers. Policy measures should be oriented towards the support and improvement of rural off-farm income opportunities and improving credit access should be considered as a core component of any development intervention such as RTEP.

[Obisesan AA, Omonona BT, Yusuf SA, Oni OA. **Adoption of RTEP Production Technology Among Cassava-based Farming Households In Southwest Nigeria.** *N Y Sci J* 2013;6(2):62-65]. (ISSN: 1554-0200). <http://www.sciencepub.net/newyork>. 11

Keywords: Technology Adoption; RTEP; Cassava ; Nigeria.

1. Introduction

Agriculture is a fundamental instrument for sustainable development, poverty alleviation and enhanced food security in developing countries. It is a vital development tool for achieving the Millennium Development Goals (MDG), one of which is to halve the share of people suffering from extreme poverty and hunger by 2015 (World Bank, 2008). In Africa, agriculture is a potent option for spurring growth, overcoming poverty, and improving food security. Agriculture remains a significant sector in Nigeria's economy despite the extensive role of the oil sector in the economy. It serves as the economic mainstay of the majority of households in Nigeria (Amaza, 2000). It contributes about 45% of the GDP, employs two-third of total labour force and provides livelihood for over 90% of the rural population. The sector is dominated by smallholder farmers accounting for over 90% of the total output while more than half of the farmers produce only food crops including cassava (IFAD, 2010).

Nigeria is currently the largest producer of cassava in the world with an annual output of over 34 million tonnes (FAOSTAT, 2005). Cassava is increasingly gaining an urban market presence in Nigeria as a result of its increased use as processed food, with rural and urban consumption patterns becoming increasingly similar in that cassava appears

to be a food of choice even in the face of alternative food options in urban areas (Phillips et al, 2004). It is majorly produced by small holder farmers cultivating less than two hectares of land and plays a dominant role in the rural economy of the southern agro-ecological zones though increasingly gaining importance in other parts of Nigeria. Cassava is important, not just as a food crop but even more so as a major source of cash income for producing households. As a cash crop, it generates cash income for the largest number of households, in comparison with other staples, contributing positively to poverty alleviation. As a food crop, cassava fits well into the farming systems of the smallholder farmers in Nigeria because it is available all year round, thus providing household food security (Nweke et al, 2000).

Consolidating the gains made under the Cassava Multiplication Programme (CMP), the Root and Tuber Expansion Programme (RTEP) commenced in 2001 with the main goal of increasing productivity and income, alleviating poverty and improving food security status of the farmers with less than 2 hectares of land, growing and processing cassava, yam, cocoyam, irish and sweet potato in the project areas. Increasing agricultural productivity in the country is an urgent necessity and one of the fundamental ways of improving agricultural productivity is through

introduction and use of improved agricultural technologies that is the adoption.

According to Feder et al, 1985 adoption refers to the decision to use a new technology, method, practice, etc by a farmer or consumer while the level of adoption is the extent of use or the intensity of adoption of a given technology (Nkonya et al, 1997). The estimates of adoption level of RTEP production technology and the difference by socio-economic factors will inform the government and other stakeholders on the extent to which the whole package has been adopted; where to devote the available resources in order to alleviate constraints and increase research efficiency as well as designing policy, programmes and institutional reforms to enhance technology adoption.

However, for the periods of implementation of RTEP, very little is known about the adoption level of its production technology package by the cassava-based farming households in Nigeria. Therefore, this study intends to: determine the adoption level of RTEP production technology by cassava-based farming households in the study area and examine the adoption level of RTEP production technology by socio-economic characteristics of the cassava farming households in the study area.

2. Materials and Methods

The study was carried out in south west, Nigeria. South west is one of the six geopolitical zones in Nigeria. It falls on latitude 6° to the North and latitude 4° to the South while it is marked by longitude 4° to the West and 6° to the East. It is bounded in the North by Kogi and Kwara States, in the East by Edo and Delta States, in the South by Atlantic Ocean and in the West by Republic of Benin. The climate is equatorial with distinct wet (rainy) and dry seasons with relatively high humidity. The dry season lasts from November to March while the wet season starts from April and ends in October. The mean annual rainfall is 1480mm with a mean monthly temperature range of 18°-24°C during the rainy season and 30°-35°C in the dry season. Southwest Nigeria covers approximately an area of 114,271 kilometer square that is approximately 12 percent of Nigeria's total land mass and the vegetation is typically rainforest. The total population is 27,581,992 as at 2006 and the people are predominantly farmers. The climate in the zone favours the cultivation of crops like maize, yam, cassava, millet, rice, plantain, cocoa, kola nut, coffee, palm produce, cashew etc (NPC, 2004). The zone comprises of six states namely: Ekiti, Lagos, Ogun, Ondo, Osun and Oyo state.

Primary data were collected for the purpose of this study using structured questionnaire. Some of the data include: socio-economic and demographic characteristics, participation in RTEP productive activities, cassava production, RTEP cassava production technology and credit facilities. The list of the RTEP participating LGAs and communities were collected from ADP and other relevant information were retrieved from RTEP programme implementation manual (PIM).

Multistage sampling technique was employed in this study. The first stage was the random selection of Ondo and Ogun states from the RTEP participating states in Southwest, Nigeria. The second stage involved the random selection of two RTEP participating LGAs from each state while in the third stage, three communities were randomly selected from each LGA. This resulted to 12 communities in the two states. The final stage involved a random selection of 15 households from each of the RTEP communities resulting to a total of 180 respondents. However, a total of 157 were used in the analysis.

Analytical techniques employed in this study include: descriptive statistics such as: frequency, mean, percentages, standard deviation and tables.

Following (Tiarniyu et al, 2009) and adapting it to this study, technology-use ranked score was computed for each RTEP respondents based on the identified elements of the technology package (improved varieties, recommended spacing, timely maintenance, fertilizer and herbicide application) and adoption index was generated for individual farmer. Adoption index of individual RTEP farmer was calculated as follows:

$$AI_i = \frac{TS_i}{TTS} \dots\dots\dots(1)$$

$$AAI = \sum_i^n \frac{AI_i}{N} \dots\dots\dots(2)$$

3. Results and Discussion

The adoption level refers to the intensity of use of improved technology by the farmers measured using their adoption scores. The adoption index generated shows to what extent the farmers have adopted the whole technology package. The mean adoption index for the whole sample of RTEP beneficiaries was 0.76 indicating that RTEP farmers adopted 76% of the complementary technologies on the average. This implies that the adoption of RTEP improved production technology made an appreciable headway in the study area.

Table 1 shows the distribution of RTEP cassava farmers (beneficiaries) by Socio-economic characteristics and level of adoption (technology-use) of RTEP cassava improved production technology. 74.63% of the RTEP farmers are male compared to 25.37% female beneficiaries. The mean adoption index of the male RTEP farmers was 0.87 while that of their female counterparts was 0.63. This implies that more male farmers are involved in cassava production and are more likely to adopt improved cassava production technology, this might be because cassava production is tedious and masculine in nature and that male headed households have better access to information and other resources on improved cassava production technology. This is consistent with Nweke et al, 2000 and Tijani and Thomas, 2011 that more male are involved in cassava farming in Nigeria.

The average age of the beneficiaries was 44 years. Comparing the various age groups, farmers between 31-40 years of age had the highest mean adoption index of 0.82 while those above 50 years of age had the least mean adoption index of 0.73. This points to the innovativeness of younger farmers. The average household size among the RTEP farmers was 6 people per family. Households with above 9 people had the highest mean adoption index of 0.80 while those with between 0 and 4 household size had the least mean adoption index of 0.71. The majority (51.59%) of RTEP farmers had primary education while 12.74% and 35.67% had secondary and no formal education respectively. Those with secondary education had the highest mean index of 0.88 while those with no formal education had the least mean index of 0.69. This shows the importance of education in technology adoption. Education increases farmers' ability to obtain, process, and use information relevant to technology adoption.

The average years of cassava farming experience of the RTEP farmers was 16 years. The beneficiaries with above 20 years of cassava farming experience had the highest mean adoption index (0.87) while those that had years of farming experience of 5 years and below had the least adoption index of 0.74. Experience improves farmers' skill of cassava production. A more experienced farmer may have a lower level of uncertainty about the technology's performance (Chilot, 1994). The average land area cultivated by the beneficiaries was 0.98 hectare this is in agreement with Tijani and Thomas, 2011 who opined that majority of cassava farmers in Nigeria have small land holdings. This also reveals the main target of RTEP programme which provides support for farmers cultivating less than 2.0 hectares of land. Farmers cultivating between 1.1 and 1.5hectares of

land had the highest mean adoption index of 0.85 while those cultivating 0.5hectares and below had the least adoption index (0.66). This is attributed to the fact that farmers with large land area can afford the expenses on agricultural technology.

Table1: Socio-economic Characteristics of RTEP Beneficiaries by Adoption Index

Characteristics	Percentage	Mean Adoption Index
Gender		
Male	74.63	0.87
Female	25.37	0.63
Age \leq 30	13.12	0.80
31-40	30.25	0.82
41-50	35.63	0.79
>50	21.00	0.73
Mean	44.27	
SD	10.13	
Household size 0- 4	16.25	0.71
5-9	77.00	0.78
>9	6.75	0.80
Mean	6	
SD	1.99	
Level of Education		
No formal	35.67	0.69
Primary	51.59	0.74
Secondary	12.74	0.88
Years of farming experience \leq 5	10.19	0.74
6-10	21.65	0.77
11-15	32.48	0.80
16-20	23.56	0.81
>20	12.10	0.87
Mean	15.71	
SD	10.30	
Area cultivated (hectares) \leq 0.5	26.75	0.66
0.6-1.0	64.33	0.80
1.1-1.5	8.92	0.85
Mean	0.98	
SD	0.35	
Credit access		
Yes	82.50	0.86
No	17.50	0.65
Off-farm activity		
Yes	73.13	0.87
No	26.89	0.68
Cassava-yield (tonnes /ha)6-10	28.12	0.73
11-15	81.88	0.85
Mean	14.86	
SD	1.27	

Field Study, 2011

The average cassava yield was 14.86 tonnes /ha. This shows the high yield potential of the RTEP improved cassava production technology. 81.88% of RTEP farmers had cassava yield of above 10 tonnes/ha with a mean index of 0.85 while those with cassava yield between 6 and 10 tonnes/ha had a mean index of 0.73. Majority (73.13%) of the RTEP

farmers participates in off-farm activities with a mean adoption index of 0.87 while those not participating had a mean index of 0.68. Those that had access to credit facilities (82.50%) had a mean index of 0.86 compared with a mean adoption index of 0.65 for those with no access to credit. This is attributed to the fact that farmers with credit access can overcome their financial constraints and attain new technology.

4. Conclusion and Policy Implication

This study examines the adoption level of RTEP improved production technology by cassava-based farming households in southwest Nigeria. The study revealed that the adoption level of RTEP improved cassava production technology by the RTEP farmers was 76% and that adoption of the technology differs by socio-economic characteristics. Level of adoption differs by educational level, participation in off-farm activities and credit accessibility among other factors. Hence, effective extension services should be put in place to give some level of training to farmers and rural development policies should promote the establishment of more schools in the rural areas. Policy measures should be oriented towards the support and improvement of rural off-farm income opportunities. Furthermore, improving credit access should be considered as a core component of any development intervention such as RTEP.

Corresponding Author:

Obisesan Adekemi.A
Department of Agricultural- Economics
University of Ibadan
Oyo state, Nigeria
E-mail: kemi_triumph@yahoo.com

References

- (1) Amaza PS. *Resource use efficiency in food crop production in Gombe state, Nigeria*. Unpublished PhD thesis, Department of Agricultural Economics, University of Ibadan, 2000.
- (2) IFAD (International Fund for Agricultural Development), *Rural poverty report 2001: The challenge of ending rural poverty*. Rome, Italy: (IFAD).www.ifad.org/poverty/index.htm
- (3) FAOSTAT *database*, 2005.
- (4) Phillips TP, Taylor DS, Sanni L, Akoroda MO. *A Cassava industrial revolution in Nigeria: The potential for a new industrial crop*. IFAD/FAO/UN Rome 2004, 49-56.
- (5) Nweke FI, Spencer SC, Lynam J. *The Cassava Transformation; Africa's Best Kept Secret*. (Michigan State University Press. Michigan, 2000) 60-65.
- (6) Feder G, Just RE, Zilberman D. *Adoption of agricultural innovations in developing countries: a survey*. *Econ. Dev. Cult.Change*.1985: 33, 255-297.
- (7) Nkonya E, Schroeder T, Norman D. *Factors affecting adoption of improved maize seed and fertilizer in North Tanzania*. *Indian j. Agri.econ*. 1997: 48(1), 1-12
- (8) National Population Census (NPC). *National Bureau of Statistics Official Gazette* (FGP71/52007/2,500(OL24)Abuja,2004 URL <http://www.nigerianstat.gov.ng>
- (9) Tiamiyu SA., Akintola JO, Rahji MAY. *Technology adoption and production difference among growers of New Rice for Africa in savanna zone of Nigeria*. *Tropicultura*, 2009: 27(4), 193-197
- (10) Tijani SA, Thomas K.A. *Effectiveness of Root and Tuber Expansion Programme on cassava farmers production in Remo area of Ogun state, Nigeria*. *Ozean journal of Applied Sciences* 2011:4(3), 295- 306
- (11) Chilot Y. *Factors Influencing Adoption of New Wheat Technologies in the Wolmera and Addis Alem Areas of Ethiopia*. An M.Sc. thesis presented to the school of graduate studies of Alemaya university of Agriculture, Ethiopia,1994.
- (12) World development report, Agriculture for development. The World Bank, 2008, Washington DC

11/27/2012