UTILIZATION OF IMPROVED ROOT AND TUBER CROPS PRODUCTION TECHNOLOGIES AMONG EXTENSION AGENTS (EAS) IN KOGI-EAST SENATORIAL ZONE OF NIGERIA

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ABSTRACT
The utilization of improved Root and Tuber Crops Production Technologies among Extension Agents in Kogi State was assessed in 2007. The data were collected sing structured questionnaire and analyzed using simple descriptive statistics (frequency and percentages) and linear regression analysis. Results showed that all (100%) of the sampled EAs were aware of TMS 4(2)1425 while only 45% of them currently plant the variety. Yam minisett technique also had 95% awareness and 40% utilization. TMS 30572 cassava variety also had 85% awareness and 45% usage. Scarcity of planting materials and yam minisett dust was mentioned as factors responsible for the low level of usage of the technologies. The regression result showed that awareness creation on improved technologies had a positive and significant relationship with awareness and utilization at 1% level. It was recommended that Extension/Research linkages should be intensified, and improved varieties of crops should be multiplied and distributed to relevant stakeholders to boost its utilization.

Key words: Root, Tuber, Crops, Utilization, Extension agents, Improved, Varieties,

INTRODUCTION
The goal of most public agricultural research organizations is to undertake research and development work that will ultimately improve the productivity and sustainability of the agricultural and food sector (Maredia *et al*, 2001). Agricultural extension is one of the services required by local people to enable them adopt improved practices, and by so doing increase their productivity. The extension agents therefore constitute an important link between agricultural research and technology end users (farmers).

Adejoh *et al* (2006) opined that, it is not an overstatement to say that availability of relevant information on new improved farm practices to farmers at different locations is a major key to the success of the agricultural sector. However, the success of any laudable development and the attainment of desirable socio-economic status depend to some extent on the communication system that makes news, facts, figures and opinions available to the public. This view was corroborated by Okon *et al.,* (2006) that the degree to which the results of technological innovation are visible makes them more amenable to adoption than those that are not easily observed. The degree of relative advantage which can also be measured ink terms of social benefits and often expressed in economic profitability also determines the level of adoption of new technologies. National Root Crops Research Institute (NRCRI) Umudike which evolved from the status a provincial farm in 1923 was upgraded to a commodity research institute 1975 and saddled with the mandate of research into the genetic improvement of root and tuber crops farming system, agricultural extension delivery to farmers through training of farmers and extension agents (NRCRI, 2005). These mandates have been realized through the development of several improved root and tuber crops technologies. However, the issue at stake is the popularity of those technologies among the extension agents that were expected to be key promoters of the technologies among farmers.

The study was aimed at investigating the rate of awareness and utilization of the improved root and tuber crops technologies among extension agents in Kogi State as a follow up to an earlier

study which revealed that farmers rate of adoption of these technologies in the area was very low(below 40%) . This was to form a basis for intervention that may be needed for promoting the technologies so far generated in the area.

MATERIALS AND METHODS

The study was carried out in Kogi State. Anyigba and Alloma ADP zones were randomly sampled from Kogi East Senatorial Zone for study. Thirty Extension Agents were randomly selected from the list of EAs serving in the area, who attended the Fortnightly training during the survey. Questionnaire was the tool that was used to elicit responses from the respondents. Data was analyzed using simple descriptive statistics and linear regression analysis

The model was specified as:

$Y = F(X_1, X_2, X_3, X_4, X_5, X_6)$

Where

$Y =$ Number of Technology components used

$X_1 =$ Sex (Male = 1, Female = 0)

$X_2 =$ Age of Respondents in years

$X_3 =$ Marital status (Single = 1, Married = 2, Widowed = 3)

$X_4 =$ Household size (Number of persons in the Household

$X_5 =$ Occupation (Number of occupations)

$X_6 =$ Farming experience in years

$X_7 =$ Education level (years spent in school)

$X_8 =$ Awareness creation of Technology (Participation in Ext/Research activity)

RESULTS AND DISCUSSION

The results in table 1 revealed majority (90%) of the respondents were males while 93% were married. Majority (60%) had household size of 6-10 and 73% had tertiary education. Majority 77 and 73% of the respondents grew yam and Cassava. The findings in Fig. 1 showed that all (100%) of the EAs were aware of TMS 4(2)1425 cassava varieties and 45% of them currently grow the variety. This was followed by yam Minisett with 95% awareness rate and 40% utilization by the EAs. TMS 30572 also had 85% awareness with 45% using the variety.

The observed variation between awareness and utilization of these technologies was as a result of scarcity of planting materials and minisett dust as reported by majority of respondent other reasons adduced by the EAs was inaccessibility to relevant information and difficult working conditions. This agrees with the views of scholars that Agricultural extension deliver is faced with a lot of problems, which include low level technology employed by farmers; low level of adoption of improved technologies, improper packaging of research results thus leading to misinterpretations; release of vague technologically not feasible, economically unviable and culturally incompatible technologies; lack of adequate manpower in the extension delivery outfits; inadequate logistic support and extension messages skewed in favour of crops (Ugboh,1999; Ellis, 1994; Nwachukwu, 2004 and Chinaka *et al,* 2007). Results in Table 3 on the awareness and use of yam minisett component technologies showed that application of fertilizer 8 weeks after planting and spacing of 25 x 100cm had awareness of 80% and 70% among EAs while many (40%) of the EAs used the weeding (2-3 times) of the yam minisetts. Planting of yam minisett or ridges and application of fertilizer (NPK 400kg//ha.) had77 40% usage among EAs, thus result showed a high level of awareness of some of the yam minisett technology components among EAs in the area. A common complain was scarcity of fertilizer and minisett dust. The regression results showed that awareness creation on improved technologies was positive and significant at 1% level indicating a direct relationship with awareness and utilization.

CONCLUSION

The major objective of the study was to access the awareness and utilization of NRCRI developed improved technologies among EAs in Kogi State. Results from this study showed that TMS 4(2) 1425, yam minisett technology and TMS 30572 had a high level of awareness among the EAs, while the utilization of the technologies were generally low among the EAs the highest utilization of 45% was recorded in TMS 30572 cassava variety. The major reasons for this low rate of usage of the variety included high fresh tuber yields, early maturity and high gari quality, while scarcity of planting materials and lack of information accounted for the low utilization of NR8082 and NR 8083.

The yam minisett technique also recorded low usage among the EAs due to scarcity of fertilizer and minisett dust at the critical time it is needed. The regression results showed that adoption increase with increase in awareness creation on the technologies.

Based on the findings, it was recommended that Extension/Research linkages be established and sustained with the Extension Agents in the area studied to increase the awareness and utilization of these technologies by the EAs to further create room for diffusion among farmers.

NRCRI should increase the multiplication of improved varieties and make same available to the extension agents to try on their farms. Training should be encouraged and collaboration between National Root Crops Research Institute Umudike(NRCRI) and National Cereals Research Institute Badeggi (NCRI) that have the zonal mandate for the farming systems research and extension in the middle belt should be strengthened through the monthly technology review meetings and other technology transfer avenues in the study area to boost adoption.

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Table 1:   Distribution of EAs in Kogi State according to Demographic Characteristics

Variables	F	%
Sex	-	-
Male	27	90
Female	3	10
Total	30	100
Age		
21-30	3	10
31-40	13	43
41-50	10	33
51-60	4	13
Total	30	100
Marital Status		
Single	2	7
Married	28	93
Widowed	-	-
Total	30	100
Household Size		
1-5	3	10
6-10	18	60
11-15	6	20
>15	3	10
Total	30	100
Farming Experience		
1-10	3	10
11-20	9	30
21-30	11	37
31-40	6	20
41-50	1	3
Total	30	100
Education Level		
School Cert.	8	27
Tertiary	22	73
Total	30	100

Source: Field Survey, 2007.

Table 2:   Distribution of Respondents According to Crops Grown

Crops Grown	F	%
Cassava	22	73
Sweet Potato	3	10
Yam	23	77
Cocoyam	5	17
Ginger	-	-
Others Cowpea, G/nut etc.	10	33

Source: Field Survey, 2007
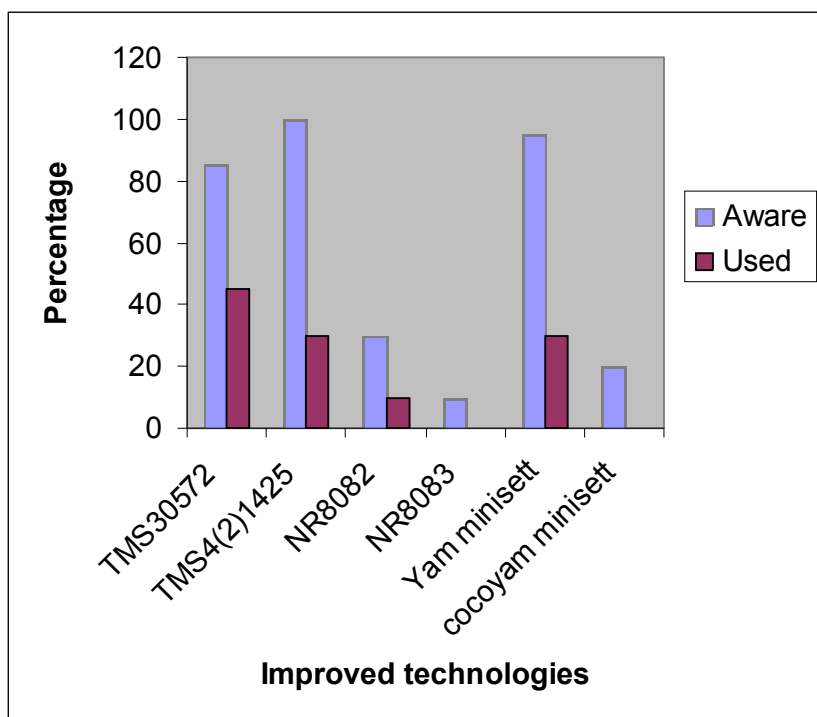
Fig. 1: Distribution of EAs according to Awareness & Use of improved technologies from NRCRI

Table 3:   Distribution of EAs according to their Awareness and use of   Yam Minisett Component Technologies

Component Technology	Not Aware		Aware		Used	
	F	%	F	%	F	%
Seed dressing chemicals (minisett)	2	7	13	43	9	50
Planting on ridges or beds	-	-	18	60	12	40
Plant spacing 25 x 100cm	5	17	21	70	4	13
Fertilizer application (NPK) 400kg/ha	-	-	18	60	12	40
Applying fertilizer k8 weeks after planting	2	7	24	80	4	13
Weeding (2-3 times)	-	-	6	20	24	23
Staking*	-	-	6	20	6	20
Yam minisett	-	-	27	20	12	40

Source: Field Survey, 2007 * Minimum Staking

Note: Multiple responses recorded.

Table 4:   Regression Analysis of Factors   Influencing the Utilization of Yam
**   Minisett   in   Kogi State**

Variables	Parameter estimates
Constant	-4.86205(-.83)
Sex (X_1)	.05323 (.02)
Age (X_2)	-.86918(-1.50)
MS (X_3)	.07942(0.05)
Household Size (X_4)	.08206 (.78)
Occupation (X_5)	.68579 (2.28)
Farming Experience (X_6)	.01648(.26)
Education Level (X_7)	.07883(.83)
Awareness of Tech. (X_8)	1.21836(4.28)***

R^2 .6481
R   .5073
Fratio 4.60**

Source: Field Survey, 2007