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FARMERS PERSONAL AND FARM ENTERPRISE CHARACTERISTICS AND THEIR ADOPTION OF IMPROVED CASSAVA PRODUCTION TECHNOLOGIES IN IMO STATE, NIGERIA

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ABSTRACT

The relationship between farmers personal and farm enterprise characteristics and their adoption of improved cassava production technologies in Imo State, Nigeria was examined in this study. A structured questionnaire was used to obtain data from 450 cassava farmers who were selected through stratified sampling technique from 6 autonomous communities in Imo State. Findings showed that adoption of improved cassava production technologies among farmers was generally low. Education level, Annual farm income, attitude towards change in agriculture, farm size, Social participation, usefulness of information, and credibility of information source were positively and significantly related to adoption of improved cassava production technologies, while age was negatively but significantly related to adoption of improved cassava production technologies.

INTRODUCTION

Cassava is an important and a major staple crop in almost every part of Nigeria. To this end, statistics show that Nigeria is leading the cassava production in the world, producing about 20% of total world production since 1993 (FAO, 1996). In Africa, Nigeria is producing about 38% of total production, while in west Africa she accounts for over 67% of the total production (Gebremeskel and Onyewole, 1987). As a preferred staple food, cassava holds up to 67% of all roots and tubers consumed in Nigeria and is being eaten by all classes of people directly and indirectly in varied forms (Ezedinma 1990; Ezumah, Okorji and Okereke, 1987).

Fresh peeled cassava tubers are eaten as vegetable after boiling or roasting, or fermented, processed, boiled and pounded to form an elastic dough called *fufu* which is eaten with soup. Other products of cassava consumed include garri, tapioca, starch and so on. Despite this, cassava production is still in the hands of small scaled farmers especially in Imo State where the crop is a very important one.

The introduction of improved cassava varieties into the agricultural environment in Imo State is a booster to the production level and capacity of the farmers. This is especially so for farmers to produce reasonable quantities to meet the teeming population. However, documented research findings of improved production techniques and scientifically selected strains of both crop

and livestock materials that are capable of raising farmers agricultural; production abound in the archives of the Nigerian Agricultural Research Institutes. Farmers access to adoption and use of these impressive results at the rural farm level is still limited (Nweke, 1981). Also, literature on farmers' adoption and use of improved farm technologies in sub-Saharan Africa is replete. There remains wide discrepancies between what research findings show to be feasible or available, and what farmers know and are ready to adopt in order to increase their crop and livestock outputs.

Improved cassava production technologies have been recommended to farmers in Imo State to replace the local yielding varieties. But the adoption of innovation by farmers have been low despite the potential economic and agronomic benefits from adoption (Asiabaka, 1994; Nweke, 1996; Obeta and Nwagbuo, 1990; Onyenweaku et al, 1989). Available evidence show low and differential adoption rates of the technology component by the different farmer categories (Nweke, 1981; Polson and Spencer, 1992; Obinne and Anyanwu, 1989). From literature, part of the problem of low and differential adoption of improved cassava production technologies seem to stem from the fact that new technologies developed from research are not closely linked to transfer through extension communication systems that are in consonance with farmers socio-economic circumstances. This study on its addresses the relationship between farmers personal and farm enterprise characteristics and

their adoption of improved cassava production technologies in Imo State, Nigeria.

METHODOLOGY

The study area is Imo State, which is located in the South Eastern part of Nigeria. It lies between lat. 5^{O} 11' to 5^{O} 57'N and long. 6^{O} 35'E to 7^{O} 28'E (Geographical Survey of Nigeria, 1994). It is bordered on the North and North West by Anambra State, on the south and South West by Rivers State, on the East by Abia State. the major occupation of the rural population is agriculture.

Structured questionnaire was developed and used to collect data from the respondents in the study area. A multi-stage sampling procedure was employed in this study. Two autonomous communities were selected from one local government randomly chosen from each of the three ADP Agricultural zones in the State namely Okigwe, Orlu and Owerri zones, giving a total of six autonomous communities namely Nsu, Okigwe, Oguta, Mgbidi, Egbeada, and Lagwa. A stratified sampling technique was used to select 25 farmers from each village chosen to give a total of 150 farmers per zone, and a total 450 farmers in all.

Descriptive statistics such as frequencies and percentages were used to describe the socio-economic and farm enterprise characteristics, while Ordinary Least Square regression was used to determine the degree of association among variables. Four functional forms (semi log, Cobb Douglas, exponential and linear)

were tried, to determine the model that best fit. The lead equation therefore chosen was the linear regression model. The model is specified implicitly thus:

Yn = f(AGE, EDU, ATC, SP, AFI, FS, CIS, UI, e)
Where Yn = Adoption of improved cassava production technologies
AGE = age of respondents (years)
EDU = level of formal education
ATC =Attitude towards change in agric
SP = Social participation
AFI = Annual Farm Income
FS = Farm size (ha)
CIS = Perception about credibility of technology information sources
UI = Perception of usefulness of Information
e = Error term

RESULTS AND DISCUSSION

Table 1: Socio-economic and farm enterprise characteristics of respondents

Age (yrs)	**f**	**%**
Young (18-34)	18	18.0
Middle aged (35-65)	203	45.1
Old (66 and above)	166	36.9
Educational level		
No formal education	32	7.1
Incomplete Primary	26	5.8
Complete primary	268	59.1

Incomplete secondary	79	17.6
Complete secondary	40	8.9
Higher institution	5	1.1
Farm size (Ha)		
1-1.99	168	37.3
2-3.99	165	36.7
4-5.99	58	12.9
6-7.99	37	8.2
8-9.99	19	4.2
10 and above	3	0.7
Annual income (N)		
80, 000-120, 000	218	48.4
130, 000-170, 000	160	35.6
180, 000-220, 000	67	14.9
230, 000-270, 000	4	0.9
280, 000 and above	1	0.2
Social participation		
High	266	59
Low	184	41
Attitude towards change		
Favourable	338	75
Unfavourable	112	25

Sources of information*

Farmers/friends	392	87.2
Extension agents	327	72.6
Village heads	121	26.9
Cooperative societies	106	23.6
Staff of research institute	74	16.3

*Multiple response

Table 1 shows that 45.1% of the respondents are in the middle age bracket. A relatively high percentage (59.5%) of the respondents received primary education which means that a reasonable proportion are literate. Also, about 74% of the respondents have farm size of between 1 and 3.99 hectares. This is in line with Olayide (1980) who reported that most farms in Nigeria are small scaled and fall under 5.99 hectares. From Table 1, 48.4% of the respondents have annual income of between ₦80, 000 and ₦120, 000, with a mean annual income of ₦134, 000. Social participation was identified to be relatively high as farmers participated in church/mosque activities, age grade activities, credit union, farmers' cooperative societies, social clubs and village council. The study also found that attitude towards change was high. The sources of information varied from Fellow farmers/friends, Extension agents, Village heads, Cooperative societies, to Staff of research institute. A large proportion of

respondents found information sources such as poster, extension agents, and fellow farmers/friends very useful.

Table 2: Distribution of respondents by adoption levels

Adoption levels	**f**	**%**
Low (0-12)	304	67.55
Medium (13-25)	97	21.56
High (26-38)	49	10.89
Total	**450**	**100.0**

From table 2, a generally low adoption was identified among most respondents (67.55%). The mean adoption score was 16.2 while the adoption index was 0.49. Out of 8 recommended improved cassava production technologies identified to include appropriate spacing, planting improved variety, fertilizer application, use of biological control, use of pesticides, weeding, rouging, and use of resistant varieties, only 3 were mostly used by respondents. This result suggests that farmers in the study area are yet to take full advantage of improved cassava production technologies, confirming Raj and Knight (1977) and Keith (1968).

Table 3: Regression analysis

Variables	coefficient	Standard Error	t-ratio
AGE	-0.4895	0.2082	-2.3511**
EDU	1.3955	0.7001	1.9935**
ATC	0.5340	0.2107	2.5351**
SP	0.3486	0.1165	2.9912*
AFI	0.3911	0.2265	1.7264
FS	2.0267	0.8694	2.3312**
CIS	0.3911	0.1603	2.4398**
UI	0.1852	0.0807	2.2949**

Constant = 1.00697
R^2 = 0.8876
F-value = 68.5276
N = 450
* Significant at 1%
** Significant at 5%

Table 3 shows the summary of regression result among variables. It can be seen that 88.7% of the variation in the adoption of improved cassava production technologies was explained by the independent variables. Age showed a negative but significant relationship with of improved cassava production technologies. The relationship is significant at 5% level. The inverse relationship implies that younger farmers are more likely to adopt more than older farmers. This situation is very good for improved cassava productivity in the study area.

Education showed a positive and significant relationship with adoption. The implication is that better educated farmers will tend to adopt more improved cassava production technologies advocated by the extension agents in the State. this finding is consistent with those of Uwakah (1983), and Ogunwale (1991) that education is one of the most important factors that influence the acceptance of new ideas to farmers. In their view, educated farmers can interpret information properly, understand demonstrations clearly and would be ready to implement new agricultural knowledge.

The relationship between attitude towards change in agriculture and adoption of improved cassava production technologies was positive and significant at 5% and 1% levels. The implication of this is that when other variables were controlled, a favourable disposition towards agricultural innovations encourages the adoption of farm practices such as cassava production. This finding agrees with those of Coughnour (1960) and Williams and Williams (1971) who indicated that attitude is a factor which predisposes a farmer to learn about and adopt new ideas. This suggests that a change agent should understand the personal inclination of his clienteles before planning and directing programmes aimed at changing his behaviour.

Social participation was positively and significantly related to adoption at 5% and 1% levels. This result implies that social organizations serve as forums fro farmers exchanging ideas and learning about new

practices. Such knowledge and interaction leads to adoption. Abd-Ella and Hoiberg (1981) reported that learning and adoption of improved farm practices tend to be facilitated by the existence and participation of farmers in organized groups.

The relationship between annual farm income and adoption of improved cassava production technologies was positive and significantly related at both 5% an 1% levels. This implies that farmers could still adopt new technologies irrespective of their economic situations.

Farm size showed positive and significant relationship with adoption at 5% level. This implies that as farmers farm sizes increase they tend to adopt more improved cassava production technologies. The relationship between perception of farmers on credibility of technology information source and adoption was positive and significant at 5% level. This indicates that the more the farmers have confidence in the sources of the technologies, the more they tend to adopt the technologies.

The relationship between farmers perception of the usefulness of technologies and adoption of improved cassava production technologies was positive and significant at 5% level, implying that the more the farmers perceived the technologies discussed by the information sources as useful, the more they are likely to adopt the technologies.

CONCUSION AND RECOMMENDATIONS

In this study, it was found a relative change in attitude and adoption behaviours of the cassava farmers in Imo State. Despite this change, the levels of adoption behavioural change is still unsatisfactory to cope with the increasing food shortage problem or ensure sustainable cassava productions especially in the long run. The study revealed that cassava farmers adoption decisions were associated with their personal, farm enterprise and social characteristics.

Based on the findings of the study the following recommendations are made:

1. The adoption and incorporation of improved food production technologies is necessary by farmers in the State to guarantee continuity and sustainable cassava production.
2. Exposure to and frequency of use of information sources are crucial for farmers decision. Extension personnel should take advantage of the interpersonal communication systems among farmers for increased adoption of cassava production technologies.
3. The use of social groups as vehicles of change and possible channels for adoption options should be given serious attention by Extension.

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