



ANALYSIS OF THE ACTIVITIES OF EDO STATE AGRICULTURAL DEVELOPMENT PROGRAM (ADP) EXTENSION SERVICES AMONG SMALL-SCALE CASSAVA FARMERS.

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ABSTRACT

This study assessed the expectations of cassava tuber farmers from the agricultural extension service providers in Edo State, Nigeria. It examined the support presently given to cassava farmers by the extension service *viz-a-viz* the needs of the farmers. To achieve these objectives, data were collected from 196 cassava tuber producers, randomly sampled from the three agricultural zones in the State. Data were analysed using descriptive and inferential (multiple regression, Friedman and Cochran tests) statistics. Cochran test ($\chi^2 = 596.35; p < 0.01$) revealed that information delivery on available improved varieties (0.939), land clearing/preparation methods (0.878), cassava stem treatment (0.872), recommended planting distance/spacing (0.867) and fertilizer application methods (0.857) were significant areas in which farmers have been supported by the extension service. Friedman test results ($\chi^2 = 135.52; p < 0.05$) revealed that linking farmers to input suppliers (mean rank = 9.17) and training on proper cutting of cassava stems (mean = 9.10) were among the most significant needs. Multiple regression revealed that farm size ($p < 0.05$) was the only variable significantly correlated with the extension needs of the farmers. The major constraints facing cassava tuber producers included high cost of improved varieties (mean = 3.85) and farming inputs (mean = 3.82) as well as poor access roads for transportation of cassava tubers. Taking advantage of group formation and linkage to credit were recommended.

Keywords: Cassava, extension needs, role, support, agricultural development programme

BACKGROUND TO THE STUDY

According to Otekunrin and Savicka, (2019) cassava (*Manihot esculenta*) among the root and tuber crops, is the most important, as source of food in the tropics. Cassava is believed to have originated in northern Brazil and Central America, and introduced to Africa by Portuguese traders from Brazil in the 16th century (Roger, 2003). Cassava is now an important staple food, replacing native African crops. Cassava is sometimes described as the "bread of the tropics" or the African breadfruit (*Treculia africana*) (Ikuemonisan, .Mafimisebi, .Ajibefun and Adenegan,.(2020). This popular crop is now grown in almost every tropical country. In Nigeria, it was introduced into Warri in the then Bendel State of Nigeria, by Portuguese explorers in the 16th-17th century (Lean, 2005). Since then, Nigerians have accepted cassava as one of their main non-cash (staple) crop within the domain, with a large population of the country depending on it daily as their main dish (Olukosi and Erhahor, 2009).

The cassava crop has been described as a crop with potential to alleviate poverty and enhance rural livelihood because of its dominance in the production portfolio of framers in the nation (Nwankor and Nwankor, 2012). Any effort or research geared towards developing its production, either directly or indirectly, will ultimately have impact on the rural economy. This explains the focus of this research on the cassava crop, and specifically, the tuber production component of the cassava value chain.

For the agricultural sector to develop to the point of satisfying the demand of the ever-increasing population for both human, industrial and livestock consumption, will require the

development of the food and livestock sub-sectors and its associated value chain (FAO, 2005). This is the thrust of the agricultural policies of the government of Nigeria. However, performance deficiencies in knowledge, skills and ability among the actors involved in the value chain process, in this case the cassava value chain, can constitute serious limitations to the attainment of the national agricultural development goals, with ultimate consequences on the performance of the agricultural sector in the country (IFAD and FAO, 2005). The extension service, by virtue of its mandate to develop the knowledge and skills of farmers, is one of the critical agencies that hold potentials to contribute to the attainment of the national agricultural development goals. Hence, the focus of the study on the agricultural extension service.

The concept of value chain has received attention both at the international and national levels (Nzeh,Ugwu and Ogbodo,2017). Agricultural value chain issues are currently being emphasized by the Nigerian government, as was the case in the then Agricultural Transformation Agenda (ATA). It is strongly believed that development of the agricultural value chain holds the key to the transformation of the agricultural sector (Nwankor and Nwankor, 2012). Highlighting the need of the actors (farmers) involved in the cassava value chain process (production in particular) will serve as a guide to the agricultural extension service in terms of knowing how to effectively serve the tuber production component of the cassava value chain process.

Studies on the extension service role in the cassava value chain process are scanty, and even more so are studies that

explore the agricultural extension needs of cassava tuber farmers or their expectations of the agricultural extension service. Most studies on the cassava value chain and extension role have focused on needs of cassava processors and marketers, processing and marketing of cassava products in South-East Nigeria (Nweke, 2010), and adoption of cassava processing innovations (Adisa *et al.*, 2013). These studies did not address the agricultural extension needs of the tuber production arm of the cassava value chain in the study area. It is the research gap this study seeks to bridge.

Objectives of the study

The major aim of the study is to assess the support given cassava farmers by the ADP and the agricultural extension needs of these farmers in Edo State, Nigeria. The specific objectives are to:

- examine the socio-economic characteristics of cassava (tuber) farmers in the study area;
- identify the present support of the agricultural extension service in the tuber production of the cassava value chain in the study area;
- ascertain the farmer's needs or expectations of the agricultural extension service in cassava tuber production;
- examine the constraints associated with cassava tuber cultivation in the study area.

Hypotheses of the study

The following null hypotheses were tested in the study.

Ho₁: There is no significant relationship between the socio-economic characteristics of cassava tuber farmers and their agricultural extension needs.

Ho₂: There is no significant differences in the roles of the agricultural extension service in cassava tuber production.

Ho₃: There is no significant differences among the agricultural extension needs of the farmers.

METHODOLOGY

Study Area: This study was conducted in Edo State of Nigeria. Administratively, the state is structured into 18 Local governments (LGs), distributed across three political zones namely Edo south, Edo Central and Edo North. The State is home to an estimated population of 5,025,200 in 2020, computed or projected from the 2006 population figure of Edo State (3,233,366) and an a national annual population growth rate of 3.2% (NPC, 2010); it occupies a land mass of 19,794km². The research design is quantitative in nature, relying on survey procedure and primary data, sourced directly from cassava tuber cultivators.

$$Q = \frac{12}{nk(k+1)} \sum_{j=1}^k R_j^2 - 3n(k+1) \dots \dots \dots (1)$$

Where: R_j^2 = Sum of square ranks for group j ($j = 1, 2, \dots, c$); n = number of blocks (subjects/ respondents); k = number of groups/factors or variables being tested

Multiple Regressions: Multiple regressions is used to predict a dependent variable based on continuous ordinal and /or categorical independent variables (Hosmer *et al.*, 2013). It was used to analyse the relationship between the socioeconomic characteristics of the cassava tuber farmers and their extension needs. The mathematical representation of the regression model is specified as follows (Hosmer *et al.*, 2013):

$$Y = b_0 + b_1X_1 + b_2X_2 + \dots + b_nX_n + e \dots \dots \dots (2)$$

Where:

Y=the dependent variable

a=the coefficient on the constant term

b= the coefficient on the independent variable(s)

X= the independent variable(s)

e=error term

The variables are operationalized as follows:

Y= Extension needs of cassava farmers (Total or aggregate need score)

X₁ = Age (measured in years)

Population and Sampling Techniques: This study was based on the population of registered cassava tuber farmers, also called contact farmers, in the State. The figure was 234, distributed as follows - In Edo South ADP zone, the total registered/ contact farmers was 100 of which 84 were cassava farmers; in Edo Central ADP zone, the total registered farmers were 156 of which 110 were cassava farmers; in Edo North ADP zone, the total registered farmers were 180 of which only 40 were cassava farmers.

Multi-stage sampling procedure was used in the selection of the respondents. This selection was based on list of registered / contact farmers with the Edo State ADP given above. In the first stage, all the agricultural zones (i.e., Edo South, Edo Central and Edo North) in the state were purposively selected to give the study a state-wide focus. Stage 2 involved the random selection of registered (contact) cassava farmers from each of the zone based on the list made available by the State ADP. To do this, the recommended sample size for each sub-population (agricultural zones), was first determined – this determination of the sample size was based on the Table of sample proportion (Ingawa *et al.*, 2004) which gave 85, 72 and 9 for Edo Central, Edo South and Edo North, respectively. However, given the small size of Edo north zone farmers, the researchers decided to target all the registered/contact farmers for questionnaire administration. Thus, the total sample used for this study was 197..

Data source and instrument: Questionnaire was used to source information directly from the respondents (cassava tuber farmers). The reliability of the question instrument was determined by collecting data from a sample of 20 producers from areas that were not included in the final sample. The data were collected at two time periods and the correlation coefficient determined. The correlation value obtained was 0.899, which was higher than the 0.70 considered to be acceptable benchmark for reliability test (Smith, 2013)

Data analysis: Descriptive statistics, multiple regression, Cochran and Friedman tests were employed in the analysis of the data.

Model Specification

Friedman rank test: The Friedman test is a non-parametric statistical test applied to ranked data, and used to detect significant differences in treatments across multiple test attempts (Bortz, *et al.*, 2010). The test was used to determine significant differences among the expected services of the agricultural extension service by the cassava tuber farmers. The formula is given as:

X₂= Education (years of formal school education)
 X₃ = Family size (number of persons living together under same roof)
 X₄= Farming experience (measured in years)
 X₅= Farm size (hectare)
 X₆= Income (annual income from cassava enterprise in ₦)
 X₇= Contact with extension agent (dummy variable: Yes = 1; No = 0)

Cochran Test: The Cochran Q test is used to determine if there are differences on a dichotomous dependent variable between three or more related groups. Cochran Q test, a non-parametric test that is applied to the analysis of two-way randomized block designs with a binary response variable (Garbin, 2014). The formula is given as:

$$Q = \frac{(k - 1)[k \sum_{j=1}^k x_j^2 - N^2]}{kN - \sum_{i=1}^n x_i^2}$$

Where: Q=Test statistics; K=Number of columns (treatments/variables or services provided by the ADP); x_j=Column total; N=Number of rows (sample size); x_i=row total; N = grand row or column total

The Q statistics follows the Chi-Square distribution (with; df = k-1).

This test was used to analyse the present roles of or services provided by the agricultural extension service in cassava tuber production. It was employed because the respondent's response to questions on benefits provided by the extension service (the dependent variable) was captured as a dichotomous variable i.e., Yes or No.

Measurement of variable

Present roles of the agricultural extension service in cassava tuber production: Respondents were asked to indicate the service support they have received from the agricultural extension service in their tuber production enterprise and their responses were scored as either 'Yes' or 'No'.

Agricultural extension needs of farmers: The respondents were asked to indicate areas in which the extension service can assist or support them in their enterprise, and their responses measured on a four-point Likert type scale of 'very important' (coded 4), 'important' (3), 'little important' (2) and 'not important' (1). Any need with a score below the weighted mean (2.50) indicate a less important need, while a score above 2.50 indicate otherwise.

Constraints associated with the cassava tuber production: This was measured by rating constraints on a four-point Likert-type scale of 'very severe' (coded 4), 'severe' (3), 'little severe' (2) and 'not severe' (1). A constraint score below the weighted mean (i.e., 2.50) is considered not serious while a score above 2.50 indicate otherwise. The weighted mean was obtained as follows: (4+3+2+1)/2 = 2.50

RESULTS AND DISCUSSION

Socioeconomic Characteristics of Value cassava tuber cultivators

Although 197 instruments were administered, only 196 responses were retrieved and considered useful for data analysis. Thus, subsequent discussion was based on this response. Table 1 shows the age distribution of the cassava value chain actors. The pooled result shows that majority of the actors were 41-50 years old. The result for the producers shows that the highest proportion (44.39%) were 41-50 years old while the mean age was about 43 years. This finding indicate that majority of the respondents belonged to 41-50 years age category while the average age varied from 41 to 43 years. Thus, the respondents were relatively young and have the energy to engage in cassava tuber production activities. Other studies have reported similar findings; for example, Nsoanya and Nenna (2011) reported a mean age of about 38 years for cassava tuber producers in Anambra State. The result for the producers shows that majority (55.1%) were males while females constitute 44.9%. This implies that most of the cassava producers in the study area were male. Other studies have reported similar findings obtained in this study. For example, low female participation in cassava production was reported in Delta State by Ngbakor, Uzendu and Ogbumiuo (2013).

Table 4.1: Socioeconomic characteristics of respondents

| Characteristics | Options | Producers (n=196) | |
|-------------------|---------------------|-------------------|-------|
| | | Freq | % |
| Age range (years) | 21-30 | 11 | 5.61 |
| | 31-40 | 58 | 29.59 |
| | 41-50 | 87 | 44.39 |
| | 51-60 | 34 | 17.35 |
| | 61-70 | 6 | 3.06 |
| Sex | Female | 88 | 44.9 |
| | Male | 108 | 55.1 |
| Marital status | Single | 24 | 12.24 |
| | Married | 160 | 81.63 |
| | Divorced | 8 | 4.08 |
| | Widowed | 4 | 2.04 |
| Household size | 1-4 | 98 | 50 |
| | 5-8 | 76 | 38.78 |
| | 9-12 | 19 | 9.69 |
| | >12 | 3 | 1.53 |
| Educational level | No formal education | 12 | 6.12 |

| | | | |
|-------------------------|---------------------|-----|-------|
| | Primary education | 45 | 22.96 |
| | Secondary education | 18 | 9.18 |
| | Tertiary education | 121 | 61.73 |
| Farm experience (years) | ≤10 | 69 | 35.2 |
| | 11-20 | 92 | 46.94 |
| | > 20 | 35 | 17.85 |
| Farm size (ha) | 1 & below | 73 | 37.24 |
| | 1.1 - 2.00 | 67 | 34.18 |
| | 2.01 - 3.00 | 33 | 16.84 |
| | 3.01+ | 23 | 11.73 |
| Income (N) | 200,000 & below | 109 | 55.62 |
| | 200,001-400,000 | 72 | 36.73 |
| | 450,001-500,000 | 15 | 7.65 |

Most (81.63%) respondents were married, suggesting the major motivation for their engagement in cassava tuber farming is to cater for their families. This supports the result of Nsoanya and Nenna (2011) who reported 100% of the cassava producers in their study as married. Household size for majority of the cassava tuber producers was 1-4 persons (50%) followed by household size of 5-8 persons (38.78%). The average size was 5 implying that the respondents had people they need to cater for, which can serve as a motivation to engage in cassava tuber farming. Nsoanya and Nenna (2011) reported a household size of 5-9 persons (62.5%) for cassava tuber producers in Anambra State, Nigeria.

The modal educational status was tertiary education (61.73%). The educational attainment of the respondents was relatively high and can facilitate their adoption of improved technologies since education encourages people to make use of farm innovations (Ngbakor *et al.*, 2013). Majority (35.2%) had 5-10 years farming experience, with the average being 14. This implies the respondents were quite experienced in tuber production and this might help the farmers better to know the needs and problems associated with farming

activities. Similar findings have been reported by Nsoanya and Nenna (2011), who reported majority (67.5%) of cassava tuber producers having a farming experience of 5-10 years of farming.

The modal farm size was 1.1-2.0ha (34.18%), with the average being 2.08ha, which implies the respondents were small scale in their operations. Adisa *et al.* (2013), in their study, reported 82% of the cassava tuber producers having 1-2 hectares of cassava farm. The income distribution reveals a modal range of ₦200,000 & below (55.62%), with an average of ₦195,408 per annum. This is quite low, and it aligns with the finding of Adisa *et al.* (2013), who reported majority (40%) of cassava farmers earning ₦151,000 - ₦200,000 per annum.

Extension Contact with respondents

Figure 1 shows majority of the respondents (97.45%) had contact with extension agents at least once in the last six months. This contact can help improve on farmers knowledge and adoption of improved farm technologies, contributing to increased income and better their livelihood.

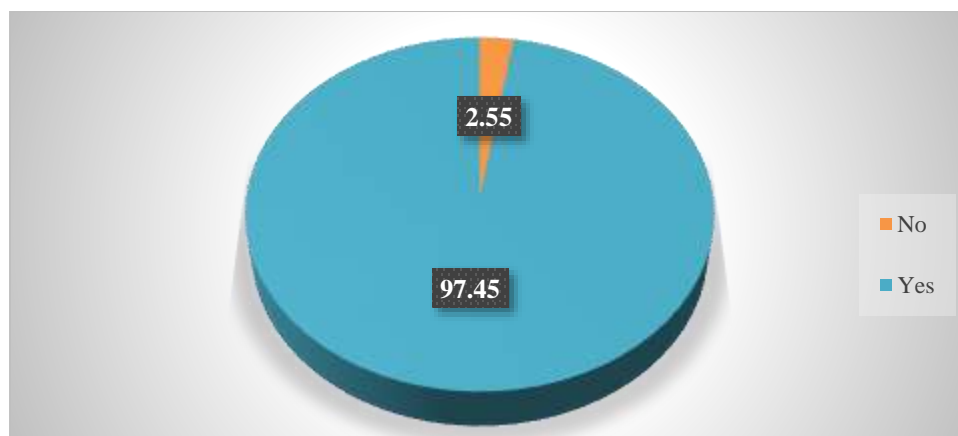


Figure 1: Extension contact with producers (%)

Present roles of the extension service in cassava tuber production

Table 2 shows the respondents had received several services from the extension service. The major ones included disseminated information/knowledge to farmers on the following: improved varieties (93.9%), land preparation methods (87.8%), cassava stem treatment (87.2%), recommended planting distance/spacing (86.7%) and proper cutting of cassava stem (85.2%). In terms of training, the major trainings the farmers have gained from the extension service were fertilizer application methods (85.7%),

pest/disease application methods (85.2%) and harvesting methods (85.2%). Other areas where the extension service had supported cassava producers were linkage to markets (55.1%), input suppliers (49.5%) and credit (43.4%).

Table 2: Service provided by the extension service in cassava tuber production

| Services | Freq | % |
|---|------|------|
| Knowledge/Information Disseminated | | |
| Information on available improved varieties | 184 | 93.9 |
| Land clearing / preparation methods | 172 | 87.8 |
| Cassava stem treatment | 171 | 87.2 |
| Recommended planting distance/Spacing | 170 | 86.7 |
| Proper cutting of cassava stem | 167 | 85.2 |
| Type of pesticides/ herbicides | 167 | 85.2 |
| Planting technique | 167 | 85.2 |
| Type of fertilizers | 161 | 82.1 |
| Training Received | | |
| Fertilizer application methods | 168 | 85.7 |
| Pest/Disease application methods | 167 | 85.2 |
| Harvesting methods | 167 | 85.2 |
| Weeding technique | 166 | 84.7 |
| Herbicides application | 108 | 55.1 |
| Others | | |
| Linkage to markets or where to sell tubers | 108 | 55.1 |
| Linking farmers to input suppliers | 97 | 49.5 |
| Linkage to credit sources | 85 | 43.4 |

Agricultural extension needs of respondents.

Table 3 shows the services expected of the agricultural extension service by respondents. Results show all the sixteen listed services were highly needed by the respondents. The major expectations regarding information needs include cassava stem treatment (mean= 4.73), land preparation methods (mean=4.64), proper cutting of cassava stems (mean = 4.63), recommended planting distance/spacing (mean=4.49). The major trainings needed by the producers included pests/disease application methods (mean =4.58), fertilizer application methods (mean= 4.56), harvesting methods (mean= 4.51), weeding technique (mean=4.43) and herbicides application (mean= 4.40). Other areas of need were linkage to credit sources (mean=4.64), input suppliers (mean=4.62) and markets or where to sell tubers (mean=4.45).

Table 3: Respondent's expectations of the agricultural extension service

| Needs | Mean | SD |
|---|------|------|
| Information needed | | |
| Cassava stem treatment | 4.73 | 0.57 |
| Land clearing / preparation methods | 4.64 | 0.78 |
| Proper cutting of cassava stem | 4.63 | 0.60 |
| Recommended planting distance/Spacing | 4.49 | 0.61 |
| Type of pesticides/herbicides | 4.46 | 0.61 |
| Type of fertilizers | 4.43 | 0.62 |
| Planting technique | 4.41 | 0.71 |
| Information on available improved varieties | 4.27 | 1.37 |
| Training Needs | | |
| Pest/Disease application methods | 4.58 | 0.66 |
| Fertilizer application methods | 4.56 | 0.66 |
| Harvesting methods | 4.51 | 0.64 |
| Weeding technique | 4.43 | 0.66 |
| Herbicides application | 4.40 | 0.70 |
| Others | | |
| Linkage to credit sources | 4.64 | 0.60 |
| Linking farmers to input suppliers | 4.62 | 0.66 |
| Linkage to markets or where to sell tubers | 4.45 | 0.79 |

*Needed (mean \geq 3.00)

Relationship between the socio-economic characteristics of cassava value chain actors and their extension needs.

The regression results (Table 5) revealed the F-value ($F = 2.154$; $p < 0.050$) was significant, meaning that the independent variables have significant influence on the dependent variable (extension needs). The adjusted coefficient of determination ($R^2 = 0.037$) implies that the independent variables explained or accounted for 3.7% of the dependent variable (extension needs). The t-value showed that for the producer model, only farm size was significant ($p < 0.050$). The coefficient was negative ($b = -0.065$), which means cassava tuber producers with smaller farm size had higher need for the services of the agricultural extension services. The non-significant results for other independent variables imply that the extension needs of the respondents are not significantly related to other socioeconomic characteristics. The coefficient for contact with extension agents was negative though not significant. This means that respondents with less contact with extension agents had higher extension needs than those with higher contact. This can be explained by the fact that those with more contacts are already benefiting from the services of the extension service hence their lower need for extension. Studies by Adisa, Olatinwo and Shola-Adido have shown that farmers in contact with extension workers generally benefit from information and training on improved practices (Adisa *et al.*, 2013).

Table 5: Relationship between the socio-economic characteristics of cassava value chain actors and their extension needs

| Independent variables | Coefficient (b) | t | Prob. level |
|-------------------------------|-----------------|-------|-------------|
| Constant | 0.68 | 4.82 | 0.000 |
| Age | 0.04 | 1.187 | 0.237 |
| Sex | 0.017 | 1.132 | 0.259 |
| Household size | 2.70E-04 | 0.017 | 0.987 |
| Education | 0.008 | 0.498 | 0.619 |
| Experience | 0.004 | 0.241 | 0.810 |
| Farm size | -0.065* | 3.477 | 0.001 |
| Income | 0.008 | 0.969 | 0.334 |
| Contact with Extension agents | -0.034 | 0.752 | 0.453 |

F-value = 2.154; $p < 0.050$; Adjusted $R^2 = 0.037$;

Test of difference in present role of the extension service in cassava tuber production.

Cochran test result ($\chi^2 = 596.35$; $df = 15$; $p < 0.01$) is significant, meaning that a significant difference exists among the present services the respondents have received from the agricultural extension service in the study area (Table 6). The post-hoc test reveals that information delivery on available improved varieties (0.939), land clearing/preparation methods (0.878), cassava stem treatment (0.872), recommended plant spacing (0.867), and fertilizer application methods (0.857) were the most significant areas in which the farmers had benefitted most from the extension service. The least significant were linkage to input suppliers (0.495) and credits sources (0.435).

Table 6: Test of difference in present role of the extension service in cassava tuber production

| Extension roles | Response proportion |
|---|---------------------|
| Information on available improved varieties | 0.939 ^a |
| Land clearing / preparation methods | 0.878 ^a |
| Cassava stem treatment | 0.872 ^a |
| Recommended planting distance/Spacing | 0.867 ^a |
| Fertilizer application methods | 0.857 ^a |
| Proper cutting of cassava stem | 0.852 ^{ab} |
| Type of pesticides/herbicides | 0.852 ^{ab} |
| Planting technique | 0.852 ^{ab} |
| Pest/Disease application methods | 0.852 ^{ab} |
| Harvesting methods | 0.852 ^{ab} |
| Weeding technique | 0.847 ^{ab} |
| Type of fertilizers | 0.821 ^{ab} |
| Linkage to markets or where to sell tubers | 0.551 ^c |
| Herbicides application | 0.551 ^c |
| Linking farmers to input suppliers | 0.495 ^d |
| Linkage to credit sources | 0.434 ^d |

$\chi^2 = 596.35$; $df = 15$; $p < 0.01$

Test of difference in farmers' expectations of the extension service

The Friedman test result ($\chi^2 = 135.52$; $df = 15$; $P < 0.05$) was significant implying that a significant difference existed among the agricultural extension needs of the farmers (Table 7). The post-hoc test revealed that training farmers on cassava stem treatment (mean rank = 9.99), land clearing/preparation methods (9.69), linkage (credit sources (9.18) and linking farmers to input suppliers (mean rank = 9.17) were among the most significant expectations of the farmers from the extension service in the study area. The least significant were trainings on planting technique (mean rank = 7.57), type of fertilizers to use on the farm (mean = 7.53) and herbicide application methods.

Table 7: Test of difference in prospective/expected role of the extension service in cassava tuber production

| Extension needs | Mean rank |
|---|------------------------|
| Cassava stem treatment | 9.99 ^a |
| Land clearing / preparation methods | 9.69 ^{ab} |
| Linkage to credit sources | 9.17 ^{abc} |
| Linking farmers to input suppliers | 9.17 ^{abc} |
| Proper cutting of cassava stem | 9.09 ^{abcd} |
| Pest/Disease application methods | 8.8 ^{abcdef} |
| Information on available improved varieties | 8.89 ^{abcdef} |
| Fertilizer application methods | 8.65 ^{abcdef} |
| Harvesting methods | 8.24 ^{bcdef} |
| Linkage to markets or where to sell tubers | 8.09 ^{bcdef} |
| Recommended planting distance/Spacing | 8.04 ^{cdef} |
| Type of pesticides/herbicides | 7.78 ^{def} |
| Weeding technique | 7.66 ^{ef} |
| Herbicides application | 7.51 ^f |
| Planting technique | 7.56 ^f |
| Type of fertilizers | 7.53 ^f |

$$\chi^2 = 135.52; df = 15, p < 0.05$$

Constraints facing cassava tuber producers

Table 4 shows the constraints facing the cassava tuber producers in the study area. The major constraints included high cost of improved varieties (mean = 3.85), high cost of farming inputs (fertilizers and chemicals) (mean = 3.82), poor access roads for transportation of cassava tubers (mean = 3.78), high cost of agro-chemicals (herbicides and insecticides) (3.78), and lack of or inadequate finance/capital (mean = 3.78), inability to access credit (mean = 3.77).

The high cost of improved varieties, farming inputs, agro-chemicals and inadequate finance/capital as the major constraints may be as a result of the fact that most cassava tuber producers do not have access to formal credit (Lawal, 2009). Other authors have reported similar constraints facing cassava tuber producers, which included high cost of fertilizer, agro-chemical and inadequate finance (Nsoanya and Nenna, 2011).

Table 4: Constraints facing cassava tuber producers

| Constraints | Mean* | SD |
|---|-------|------|
| High cost of improved varieties | 3.85 | 0.37 |
| High cost of farming inputs (fertilizer chemicals) | 3.82 | 0.46 |
| Poor access road for transportation of cassava tubers | 3.78 | 0.43 |
| High cost of agro-chemical (herbicides and insecticides) | 3.78 | 0.50 |
| Lack of or inadequate finance/capital | 3.78 | 0.48 |
| Inability to access credit | 3.77 | 0.46 |
| Scarcity of improved planting materials | 3.76 | 0.46 |
| Post-harvest losses due to infestation by pest/rodents | 3.76 | 0.53 |
| Unavailability of chemical | 3.74 | 0.45 |
| High cost of transport | 3.66 | 0.61 |
| Distance to market | 3.49 | 0.69 |
| Inadequate /high cost of labor | 3.45 | 0.63 |
| Low soil fertility \ infertility of soil | 3.44 | 0.57 |
| Low price of cassava tubers | 3.41 | 0.58 |
| Lack of information about improved varieties | 3.40 | 0.58 |
| Inadequate market information | 3.36 | 0.58 |
| Inability to expand or get more farmland to expand production | 3.36 | 0.72 |
| Non-availability of market to sell tubers | 1.87 | 1.03 |

*Serious (mean ≥ 2.50)

Recommendations

Based on the findings of the study, the following recommendations were made:

- i. Inadequate finance/capital was the major constraint faced by the cassava tuber farmers in the study area. We therefore suggest that the farmers be linked to credit providers such as microfinance

bank or funding bodies to access fund to enable them finance and expand production.

- ii. Scarcity of improved planting materials and other inputs was identified as a serious constraint by the farmers. It is therefore recommended that the extension (ADP) should link the farmers to input

suppliers and institutions developing improved inputs.

- iii. Farmer should be trained on improved farming practices in accordance with their needs or training gaps. Such trainings should focus on cassava stem treatment, land clearing/preparation methods, credit sources, and excursions to processing industries, market opportunities and cassava product marketing.

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