

ASSESSMENT OF UTILIZATION OF AGRICULTURAL INFORMATION ON MAIZE PRODUCTION AMONG RURAL YOUTH: PANACEA FOR SUSTAINABLE FOOD SECURITY IN NIGERIA

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Abstract: Rural youth are actively involved in agricultural production in Nigeria but the socioeconomic conditions have constrained them and they lack access to scientific and technological information that could enhance their production capacity. Therefore, for meaningful sustainable agricultural and rural development in Nigeria depends not only on the mobilization of large number of youth as active participants in the developmental process, but also on how accessible and well utilised the agricultural information are made available to this important target group. This study assessed the utilization of agricultural information on maize production among rural youth in southwest Nigeria. A total sample of two hundred and forty and two hundred and fifteen rural youth were randomly selected from both Oyo and Osun respectively making a total of four hundred and fifty- five respondents constituted the sample size for the study. Structured interview schedule was used to elicit information from the respondents. Data analysis was carried out using frequency counts, percentages, mean and standard deviation as descriptive statistics while Pearson Product Moment Correlation (PPMC), Chi square and ANOVA were employed as inferential statistical tools. The study revealed that the most frequently used sources of information by the young farmers are radio, parents, fellow farmers and commercial input dealers and the most often use agricultural information on maize production include:

improved maize varieties (WMS= 3.42); selection and rate of chemical application for weed control (WMS = 3.30); and method of fertilizer application (WMS = 2.50). The result of correlation analysis revealed that positive and significant relationships exists between age ($r = 0.322$, $P < 0.05$), household size ($r = 0.156$, $P < 0.05$) and level of utilization of agricultural information. Conversely, there exists negative and significant relationship between farm size ($r = -0.177$, $P < 0.05$); cosmopolitanness ($r = -0.476$, $P < 0.05$) and level of utilization of agricultural information. The result of Chi square analysis revealed that membership of social organization ($X^2 = 5.235$, $P < 0.05$), extension contact ($X^2 = 13.739$, $P < 0.05$) significantly influenced the level of utilisation of agricultural information on maize production. Also, the study established that significant differences exists in the level of utilization of agricultural information on maize production across the study area ($F=46.14 < p=0.05$).

The study concluded that establishment of information resource centres by the government in the rural areas is of paramount importance to utilization of agricultural information as it would facilitate easy access to agricultural information among rural youth in the study area. Hence, the availability and utilization of agricultural information could bring about increase in maize crop production for sustainable food security in Nigeria.

Keywords: Agricultural, Information, Maize, Rural Youth, Utilization.

INTRODUCTION

Maize (*Zea mays*) is a member of the grass family (gramineae). It originated from South and Central America. It was introduced to West Africa by the Portuguese in the 10th century. Maize is one of the important grains in Nigeria, not only on the basis of the number of farmers that engaged in its cultivation, but also in its economic value. Maize is a major important cereal crop being cultivated in the rainforest and the derived savannah zones of Nigeria. Maize has been in the diet of Nigerians for centuries. It started as a subsistence crop and has gradually become more important crop. Maize has now risen to a commercial crop on which many agro-based industries depend on as raw materials (Iken and Amusa, 2004). Maize is highly yielding, easy to process, readily digested and cost less than other cereals. It is also a versatile crop, allowing it to grow across a range of agro ecological zones (IITA, 2001). It is an important source of carbohydrate and if eaten in the immature state, provides useful quantities of Vitamin A and C. Maize thrives best in a warm climate and is now grown in most of the countries that have suitable climatic conditions.

Rural youth are actively involved in agricultural production in Nigeria but the socioeconomic conditions have constrained them and they lack access to scientific and technological information that could enhance their production capacity. Generally, the adult farmers have more access to agricultural extension services than young able bodied farmers in the rural areas in Nigeria (CTA, 1995). Rural youth are the future farmers who are to carry on farming as a profession for sustainable food production in the nation. Arokoyo and Auta (1992) posited that it is only the energetic, creative, innovative, productive and committed workforce that can bring expected development in agriculture. This group of people is the youth. The word Youth is mostly used to refer to a person who is neither an adult nor a child, but, somewhere in between. Therefore, for meaningful sustainable agricultural and rural development in Nigeria depends not only on the mobilization of large number of youth as active participants in the developmental process, but also on how accessible and well utilised the agricultural information are made available to this important target group. Aina *et al.*, (1995) asserted that information has a vital role to play in improving and sustaining agricultural production of any nation. According to Fawole (2008) information dissemination to farmers in the rural areas is an integral part of the clamor for adoption of innovations and agricultural

development. The effectiveness of sources and frequency of agricultural information availability then become of paramount importance; if any meaningful development is to be achieved.

One of the pre- requisites for information use is its accessibility. Information may be physically accessible but may not be intellectually accessible (Opara, 2010). Neelemaghan (1981) posited that illiteracy and poverty are important factors militating against information use. Mere provision of agricultural information to farmers does not guarantee its use. This is because a host of social, economic and psychological factors influence the rate of agricultural information use (Akande, 1999).

Recent literature search on utilization of agricultural information, most of the empirical studies on the subject matter has not focused its attention on the important segment of the rural population (youth) in relation to utilisation of agricultural information. Hence, the need to examine the utilisation of agricultural information among rural youth becomes very imperative for effective policy formulation on agricultural development programmes in Nigeria especially for youth.

Specifically, the study identified the personal characteristics of the respondents; ascertained the sources of information available for rural youth; and categorised the respondents based on the level of use of agricultural information on maize production in the study area.

HYPOTHESES

(a) There is no significant relationship between selected personal characteristics of the respondents and level of utilization of information on maize production. (b) There is no significant difference in the level of utilisation of agricultural information on maize production across the selected local government areas of southwest Nigeria.

MATERIALS AND METHODS

The study was carried out in selected states of Southwest Nigeria. This lies between latitude 5⁰N and 9⁰N of the Equator and longitudes 2.5⁰ and 6⁰ East of the Greenwich Meridian. It is bounded by the Atlantic Ocean in the South, Kwara and Kogi states in the North, Anambra state in the Eastern Nigeria and Republic of Benin in the West. The study area has a land area of about 114,271km² representing about 12 percent of the country's total land area. The zone comprised of six states viz: Lagos, Ogun, Osun, Oyo, Ondo and Ekiti States. The climate in southwestern Nigeria is predominantly humid with rainfall from 1500mm to 3000mm per annum. The mean monthly temperature ranges from 18⁰C to 24⁰C

during the raining season and 20°C to 35°C during the dry season (Sahib *et al.*, 1997).

Multistage sampling technique was adopted in the selection of the respondents for the study. Firstly, a purposive selection of two states from the constituents states of Southwest Nigeria. In this case, Oyo and Osun states were selected based on the fact that they are major producers of maize in the zone. Secondly, fifteen percent of the total (33 and 30) local government areas in each state was randomly selected, making five local government areas from each state respectively, making ten local government areas altogether. The third stage, from the village lists provided by the two states Agricultural Development programmes (ADPs), five percent of the total villages in the selected local government areas from the selected states were randomly selected. The last stage, at the village levels the researcher and six other trained enumerators developed sample frame for rural youth according to age criteria 18- 35 years (NYP, 2001) in the two selected states. This involved the determining the total number of rural youth in each village. A total population of nine hundred and nine rural youth formed the sample frame and fifty percent of the total was randomly selected. A total sample of two hundred and forty and two hundred and fifteen rural youth were selected from both Oyo and Osun respectively making a total of four hundred and fifty-five respondents. Structured interview schedule was used to elicit information from the respondents. Data analysis was carried out using frequency counts, percentages, mean and standard deviation as descriptive statistics while Pearson Product Moment Correlation (PPMC), Chi square and ANOVA were employed as inferential statistical tools.

Measurement of variables

The dependent variable is the rural youth's utilisation of agricultural information on maize production. The respondents were asked to indicate the number of times the respondents' use the information on maize production in the past five planting seasons. The total score of the respondents for the number of items indicated were expressed with the maximum score obtained being 124 points while the minimum score is 0 points. Z score was used to make comparison of the utilization scores obtained and convert the score into standard score with the formula below:

$$Z = \frac{X - \bar{X}}{S} \quad \text{where } Z = Z \text{ scores, } X = \text{raw}$$

utilization scores, \bar{X} = Mean Scores and S = Standard deviation. Categorization of young maize crop farmers was made on the basis of level of utilization of agricultural information using the scores

which gave rise to a continuum from high to low users of agricultural information. Farmers' raw scores were transformed into standard Z – scores. It is the Z – scores that qualifies a respondent into any category from their utilization of agricultural information scores.

RESULTS AND DISCUSSION

Personal characteristics of the respondents

Age

From Table 1 it was revealed that 58.5% of the sampled rural youth are within the age of 30 to 35 years while more than one-quarter (28.1%) are within the age category of 24 to 29 years and 13.4% of them fell within the age range of 18 to 24 years. The mean age of the respondents was 29.2 years. The result of this finding shows that older youth were more involved in the agricultural activities in the study area. This result follows the assertion of Durston (1996) who had earlier reported that this category of youth is considered to be matured and more productive in economic enterprises.

Years of education

The mean year of formal education of the respondents was 8.3 years. The results shows that majority (87.5%) of the respondents are literate who had between 1 and 18 years of formal education and the remaining (12.5%) of them had no formal education as shown in Table 1. The implication of this finding is that there is high level of literacy among rural youth in the study area. High level of literacy among rural youth in the study area would immensely contribute to their innovativeness and adoption of various farm technologies as well as influence the use of agricultural information.

Farming experience

About 57.0% of the sampled rural youth had between more than 11 years of farming experience, 32.1% had between 6 and 10 years, and 11.2% of the respondents had between 1 and 5 years of farming experience. The mean farming experience was 12.2 years. This implies that the respondents have acquired much experience in farming enterprise.

Farm Size

Majority (71.0%) of the respondents cultivated land areas of a size between less than 1 and 2.99 hectares, 17.4% had farm size between 3 and 4.99 hectares while 11.6% of them had farm size of 5 and 6.99 hectares and 7 hectares and above respectively. The average cultivated land was 2.1 hectares. The implication of this finding is that majority of the respondents are small scale farmers which is a characteristic of an African farmer.

Table 1: Distribution of Respondents according to personal Characteristics

Age (Years)	Frequency	Percentage
18- 23	61	13.4
24- 29	128	28.1
30- 35	266	58.5
Educational level	Frequency	Percentage
0	56	12.5
1 – 6	140	30.8
7 – 9	71	15.6
10 – 12	102	22.4
13 and above	86	18.9
X = 8.25yrs		
Farming Experience	Frequency	Percentage
1- 5	51	11.2
6 – 10	146	32.1
11 and above	258	56.7
X = 12. 2 yrs		
Farm size (ha)	Frequency	Percentage
< 1	51	11.2
1 – 2.99	272	59.8
3.0 – 4.99	79	17.4
5.0 – 6.99	42	9.2
7 and above	11	2.4
X = 2.12(ha)		
Household size	Frequency	Percentage
1- 3	184	40.4
4 -6	227	49.9
7 – 9	38	8.4
10 and above	06	1.3
X = 4.00		
Membership of social organisation	Frequency	Percentage
Yes	239	52.5
No	216	47.5
Contact with Extension agent	Frequency	Percentage
Yes	287	63.1
No	168	36.9

Source: Field survey, 2010

Table 2: Distribution of respondents by Frequency of contact with outside communities (Cosmopolitaness)

Cosmopoliteness	Daily F (%)	Weekly F (%)	Fortnightly F (%)	Monthly F (%)	Annually F (%)	Total
Other states	36 (7.9)	42(9.2)	122(26.8)	49(10.8)	206(45.3)	455(100.0)
Other local Government Area in the State	20(4.4)	75(16.5)	123(27.0)	71(15.6)	166(36.5)	455(100.0)
Other local Community outside the Local Government Area	36(7.9)	118(25.9)	189(41.5)	111(24.4)	1(0.2)	455(100.0)
Other community within the Local Government Are	38(8.4)	158(34.7)	191(42.0)	68(14.9)	0(0.0)	455(100.0)
Major Towns within the Local Government Area	45(9.9)	221(48.6)	152(33.4)	37(8.1)	0(0.0)	455(100.0)
Neighbouring Communities	204(44.8)	144(31.6)	97(21.3)	10(2.2)	0(0.0)	455(100.0)

Source: Field Survey, 2010.

Table 3: Distribution of respondents according to availability of sources of information

Sources of information	Available Frequency (%)
Radio	451 (99.1)
Television	210 (46.2)
Newspaper	280 (61.5)
Extension agent	366 (80.4)
Parent	321 (70.5)
Fellow young farmer	405 (89.0)
Commercial input dealer	326 (71.6)
Internet	132 (29.0)
Mobile phone	276 (60.7)
Folk music	109 (24.0)
Role play	137 (30.1)
Town crying	230 (50.5)
Friends / Neighbour	279 (61.3)
Agric. Show	232 (51.0)
Cooperative society	354 (77.8)

Source: Field survey, 2010 * parenthesis indicates percentage

Table 4: Distribution of Respondents according to Utilisation of agricultural information on maize production

Agricultural information on maize	WMS	SD	Rank
Improved maize varieties	3.42	1.82	1 st
Selection and rate of chemical application for weed control	3.30	1.97	2 nd
Method of fertilizer application e.g. foliar, ring, broadcasting and type of fertilizer	3.25	1.96	3 rd
Treated maize seeds for planting	3.24	1.98	4 th
Improved method of preventing pests and diseases of maize	3.05	2.06	5 th
Improved method Controlling of pests and diseases of maize	3.04	2.10	6 th
Use of tractor for harrowing	3.00	1.99	7 th
Use of tractor for ploughing	2.99	2.06	8 th
Use of tractor for ridging	2.98	2.02	9 th
Use of tractor for land clearing	2.91	2.19	10 th
Availability of input on maize at subsidized rate	2.84	2.15	11 th
Improved plant spacing for maize	2.80	2.09	12 th
Loan acquisition / credit facilities	2.57	2.72	13 th
Mechanized method of shelling of maize grains/cobs	2.56	2.23	14 th
Storage of maize in modern cribs / silo	2.56	2.24	14 th
Soil management practices	2.53	2.25	15 th
Mechanized method of harvesting maize	2.52	2.10	16 th
Market outlet for harvested Maize	2.45	2.23	17 th
Prevailing maize crop prices in the market	2.44	2.16	18 th
Soil fertility testing	2.24	1.90	19 th
Weather forecast information on maize planting	2.02	1.17	20 th
Information on loan interest rate	1.97	1.78	21 st
Better record keeping on sales of maize produced	1.78	1.66	22 nd
Payment of compensation for crop grown on government acquired land	1.65	1.52	23 rd
Marketing of maize produce through cooperatives	1.51	1.51	24 th
Environmental protection on land	1.51	1.44	24 th
Government policies on land acquisition	1.36	1.35	25 th

Source: Field survey, 2010 WMS- Weighted Mean score, SD- Standard Deviation

Table 5: Categorization of respondents according to level of utilization of agricultural information in maize production

Z – score	Category of information users	Frequency	Percentage
-1.52 to -0.60	Low	162	36.0
-0.61 to 0.25	Moderate	97	21.6
0.26 to 1.25	High	191	42.4

Source: Field survey, 2010

Table 6: Summary of correlation analysis establishing relationship between personal characteristics of rural youth and level of utilisation of agricultural information on maize production

Variable	r	P – value	Remark
Age	0.322**	0.000	Significant
Years of Education	-0.012	0.796	Not Significant
Farming experience	0.080	0.089	Not significant
Household size	0.156**	0.001	Significant
Farm size	-0.177**	0.000	Significant
Cosmos politeness	-0.476**	0.000	Significant

Source: Field survey, 2010 ** Correlation is significant at the 0.01 level (2 tailed)

Table 7: Summary of Chi – square test establishing relationship between personal of rural youth and utilisation of agricultural information on maize production

Variable	X ² value	Cc	df	P – value	Remark
Membership of social organization	5.235	0.108	1	0.021	Significant
Extension contact	13.739	0.171	1	0.000	Significant

Source: Field survey, 2010 cc- contingency coefficient, df- degree of freedom

Table 8: Summary of Analysis of Variance (ANOVA) showing differences in level of utilisation of agricultural information on maize production across selected local government areas.

Variable	Source of Variation	Sum of Squares	Degree of freedom	Mean Square	F value	P value	Remark
Utilisation of agricultural Information	Between Local government areas	19726.511	9	2191.835	46.10	0.000	Significant
	Within Local government areas	211389.278	445	47.504			
	Total	23115.789	455				

Source: Field Survey, 2010

Household Size

Close to half (49.9%) of the rural youth surveyed had between 4 and 6 members. About 40% had between 1 and 3 members while 8.4% had between 7 and 9 members and (1.3%) had between 10 and above members. The mean household size was 4. The result of this finding indicates that there is relatively small household size among the respondents in the study area. This had implication on level of dependants and hence the level of poverty in the household since the larger the household size the higher the number of mouths to be feed and vice versa. On the other hand it has positive implication on family labour availability for farming enterprises.

Membership of social organization

The result of the analysis reported in Table 1 further revealed that majority (52.5%) of the rural youth surveyed claimed that they belong to social organization their within community while (47.5%) were not members of any social organization. This implies that majority of the respondents did have social affiliations within their communities. Membership of social organization however, tend to favour rural youth level of participation in community life in the rural area. This therefore has implication for both governmental and Non-governmental agencies in reaching out to rural youth in terms of aids and financial assistance for increased agricultural production.

Contact with Extension Agents

The finding of this study revealed that majority (63.1%) of the respondents indicated that they have contact with extension agents while others (36.9%) did not have contact. This implied that majority of the

young farmers were reached with adequate information from the extension agents. Contact with extension agent may probably increase the knowledge of young farmers on farm technologies. This is in line with Ogunwale (2005) assertion that contact with extension agents under T and V system brings about remarkable increase in knowledge of farmers about farm technologies and practices.

Cosmopolitaness

Data presented in Table 2 shows the frequency of contact of respondents with other places apart from their immediate environment. It was revealed that close to half (45.3%) of the respondents made contact with other states annually, while more than one – third (36.5%) made contact with other local government area in the state annually and 27.0% made contact with other local government area within the state fortnightly. About 42.0% of the respondents made contact with other communities outside their local government areas fortnightly, while about one – quarter (25.9%) had contact with other communities outside their local government area on weekly basis and few (8.1%) had contact with other communities outside their local government area daily and annually respectively.

The finding shows that the respondents do frequently have external orientations apart from their immediate environment. As a matter of fact it could have various implications on rural youth staying back in the rural areas and encourage rural – urban migration.

Availability of sources of agricultural information

Table 3 shows that majority (99.1%) the respondents accessed agricultural information from radio, followed by fellow young farmers (89.0%); extension

agent (80.4%); commercial input dealers (71.6%); cooperative societies (77.8%); parent (70.5%); mobile phone (GSM) (60.7%); newspapers (61.5%); town crying (50.5%); friends/ neighbour (61.3%) and agricultural shows (51.0%). Others sources of information include: Television (46.2%); role play (30.1%) and internet (29.0%) and folk music (24.0%). The result of this finding shows that the respondents accessed agricultural information through electronic media, interpersonal and modern information technology as well as indigenous media in the study area in order to satisfy their agricultural information needs.

Utilisation of agricultural information on maize production

This result of data analysis reported in Table 4 revealed that the sampled rural youth most often use agricultural information on improved maize varieties (WMS= 3.42); selection and rate of chemical application for weed control (WMS = 3.30); and method of fertilizer application (WMS = 2.50). These were ranked first, second and third respectively. Other agricultural information used by the respondents include: Treated maize seed for planting (WMS = 3.24); improved method of controlling pests and diseases of maize (WMS = 3.05); Availability of input on maize at subsidize rate (WMS = 3.04); Use of tractor for harrowing (WMS = 3.00); Use of tractor for ploughing (WMS = 2.99); use of tractor for ridging (WMS = 2.98); use of tractor for land clearing (WMS = 2.91); Improved spacing for planting maize (WMS = 2.84); mechanized method of harvesting maize (WMS = 2.80); marketing of maize through cooperatives (WMS = 2.57); Prevailing maize crop price in the market (WMS = 2.56); Market outlet for harvested maize (WMS = 2.56); Soil management practices (WMS = 2.53); Storage of maize in modern cribs/ silos (WMS = 2.52); Information on loan interest rate (WMS = 2.45). Loan acquisition / credit facilities (WMS = 2.44); Soil fertility testing (WMS = 2.24); Weather information on maize planting (WMS = 2.02); Environmental protection (WMS = 1.97); Mechanized method of shelling maize grains /cob (WMS = 1.78); Better record keeping on sales of maize (WMS = 1.65); Government policies on land acquisition (WMS = 1.51); and payment of compensation for crop grown on government acquired land (WMS = 1.51). The agricultural information least used by the respondents are majorly legal and economic information on maize production. The pattern of utilisation of agricultural information could be linked to the availability of agricultural information on maize production in the study area.

Categorisation of respondents based on level of utilization of agricultural information

From Table 5, it was revealed that 42.4% of the respondents were classified as high users of agricultural information on maize production while 36.0 percent were of low category and about 22.0 percent were moderate users of agricultural information on maize production with the Z – score ranged from -1.52 to 1.25. Generally, a high proportion of the sampled rural youth fell into moderate and high users' categories of agricultural information on maize production in the study area. The finding of the study is similar to that of Fakoya *et al.*, (2002) that a high percentage of farmers were categorised as medium to high level of sustainable land management practices in southwest Nigeria.

TEST OF HYPOTHESES

Hypothesis 1: There is no significant relationship between personal characteristics of rural youth and level of utilization of agricultural information.

Table 6 shows that positive and significant relationship exists between age ($r = 0.322$, $P < 0.05$), household size ($r = 0.156$, $P < 0.05$) and level of utilization of agricultural information. This implies that the more the respondent advances in age, the higher the level of utilization of agricultural information. Also the larger the household size of the respondents, the higher the level of utilization of agricultural information. Conversely, there exists negative and significant relationship between farm size ($r = -0.177$, $P < 0.05$); cosmopolitanness ($r = -0.476$, $P < 0.05$) and level of utilization of agricultural information. This indicates an inverse relationship among the variables hence, the smaller the farm size, the higher the level of utilization of agricultural information. This implies that utilisation of agricultural information acquired by the respondents does not necessarily lead to increase in farm size. This may probably be due to some inherent constraints to utilization of agricultural information. Also, the more the respondents have external orientation about their immediate environment, the lower the level of utilization of agricultural information. This implies that external orientation of rural youth is not in favour of utilization of agricultural information. This could have implication on the rural youth staying back in the rural areas and sustainable food security in the study area.

Finally, it was revealed from the same Table 6 that there is no significant relationship between farming experience, years of formal education and level of utilization of agricultural information.

The result of Chi square analysis reported in Table 7 revealed that membership of social organization ($X^2 = 5.235$, $P < 0.05$), extension contact ($X^2 = 13.739$, P

<0.05) significantly influenced the level of utilisation of agricultural information on maize production. Membership of social organization and extension contact has weak contingency coefficient values of 10.8% and 17.1% respectively.

Hypothesis 2: There is no significant difference in the level of utilisation of agricultural information on maize production across the selected local government areas of southwest Nigeria.

The result Analysis of variance (ANOVA) in Table 8 shows that significant differences exist in the level of utilisation of agricultural information across the selected local government Areas in the study area ($F = 46.14$, $P < 0.05$). Hence the null hypothesis is rejected.

CONCLUSION AND RECOMMENDATIONS

The result presented here shows that rural youth utilised agricultural information moderately especially those of technical information category. However, the respondents utilised less of information on economic and legal issues. This may probably be attributed to the availability of agricultural information on maize production through the identified sources of information. For sustainable food security in Nigeria, rural youth should be targeted with relevant and timely agricultural information in order to boost their maize production capacity. However, there is need for the Nigerian government to intensify her efforts on rural development programmes in order to reduce the menace of rural urban migration among rural youth in Nigeria. Dissemination of agricultural information on economic and legal issues should be highly promoted by the extension institutions in order to enhance high level of utilisation of these categories of agricultural information by the respondents. Also, provision of information resource centres in the rural areas is of paramount importance in order to facilitate easy access to agricultural information among rural youth in the study area.

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