

Assessment of Sources of Agricultural Information on Adoption of Maize Production Technologies in Ardo-Kola local Government Area, Taraba state, Nigeria

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ABSTRACT: *The study assessed the sources of agricultural information on adoption of maize production technologies in Ardo-Kola Local Government Area, Taraba State, Nigeria. Multi-stage sampling techniques were used to select respondents for the study. In the first stage, Agricultural Development Programme (ADP) block in the local government area is known as Iware block were considered for the study. Stage two, all the cell in the extension block were considered for the study. Stage three, it involve systematic sampling of twenty (20) respondents from each of the eight (8) cells were selected by taking respondents randomly. In all, a total of one hundred and sixty respondents as mummarized and 150 filled questionnaires were returned. Descriptive statistics and multiple regressions were used to analyse the information collected from the area. The result showed that many (67.33%) of the sampled farmers sourced their information from extension agents. The result of the socio-economic characteristics of maize framers revealed that 39.30% of the respondents falls within 36 – 50 years of age, most of them are on active and productive. Regression result shows that the coefficient of determination (R^2) was 0.89, implying that (89%) of the variations in sources of Agricultural Information in the adoption of maize technologies were explained by the variables in the model. The result revealed that eight out of the twelve variables estimated positive and economic, economentive and statistically significant at 5 level. The study recommends that provision of information resources center in the rural area is of paramount important in order to facilitate easy access to agricultural information among farmers in the study area.*

KEY WORDS: Adoption, Extension, Technologies

INTRODUCTION

Information is very vital to human and societal development. Specifically extension information is relevant to agricultural practices and development. Consequently, rural farmers play prominent role in dissemination of and utilization of extension information (Fadiji et al, 2005).Agricultural information is conceived as a productive resources potentially limiting and influencing the efficiency of production Agbamu (2006) opined that farmers sources of information fundamentally shape the kind of decision they make. Access to adequate information is vital to increased agricultural productivity Mbada,(2006). Introduction to improve maize production technologies by farmers are needed in such areas as plant spacing, fertilizer application, weeding, land preparation. The importance of maize for human ,animal and industrial consumption cannot be overemphasize as it touches the lives of a larger percentage of the population of the world. This calls for improved maize farming technologies and other production level. Education influences farmers information utilization. Educated people are expected to perform certain jobs and functions with higher efficiency and are also more likely to utilize information and new technologies in shorter period of time than uneducated people Agbamu (2006). This may be because educated people can gather, process and interpret all available information,

differentiate between promising and unpromising investment area and also make decision more easily with relatively small error. Ofuoku et al (2006). Corroborated in their studies that the level of education of farmers has significant relationship with information utilization by them, because educational level influences information utilization. According to Bawa et al, (2014) conducted it research on influence of sources of agricultural information on maize farmers in Southern Borno, Nigeria. The result reveals that, agricultural extension workers constitute the most important sources of information to the respondents, followed by friends and neighbours, contact farmer radio, television, newspapers and then posters/pamphlets and leaflets. Extension agents contact farmers and friends and neighbours were the most source of information used by the respondents. This could be because they are the cheapest means of sourcing information, and it does not require much effort to get information from these sources. Since the extension agents met with farmers on the farm.

Farmers meet with their friends and neighbours mostly in the evening after the day's work. Likewise, the contact farmers live together with the farmers in the vicinity. Newspapers, poster, pamphlets, leaflets were the lead sources of information used by the respondents respectively. Newspapers as a sources of information many times could carry information that many not be relevant to the framers, while posters, pamphlets and leaflets may carry incomplete information. Obinna and Uche (2001) found that small-scale farmers preferred homophilous sources of farm communication and would thus, rely on them for needed innovation (homophilous) relationship has to do with people of similar characteristics, particularly of social and economic standing). The most preferred sources in rank order according to Obinna and Uche (2001) were neighbours, relatives, opinion leaders and extension agents. They stated that newspapers, radios, television, extension bulletin and film shows had very low factor loading analysis on information sources preference. Asiabaka et al (2010) found out in their research that fellow farmers ranked their farmers and friends as the most available sources of information. The finding of this study therefore, corroborate the result of Adekoya (2000) who found that extension agents were the major sources of agricultural information used by farmers in Iddo Local Government Area of Oyo State, Nigeria. Maize (*Zea mays*, L.) is one of the main cereal crops of West Africa and the most important cereal food crop in Nigeria. Maize is produced in all agro-ecological zones of Nigeria. The total estimated land devoted for maize production in Nigeria is about 5, 995,420 ha (NERLS, 2012). It comes after wheat and rice in terms of world importance and is becoming the miracle seed for Nigeria's agricultural and economic development. It is an important cereal being cultivated in the rainforest and the derived savannah zones of Nigeria (Tijjani and Oshotimehin, 2007).

METHODOLOGY

Population and Sample

Ardo-Kola is one of the sixteen (16) local government area in Taraba State which was created on 4th December, 1997 under the adm⁹inistration of late general Sani Abacha. The local government area is in Taraba State Agricultural Development Programme (TADP) zone (1) which has one extension block known as Iware block with eight extension cells, these are: Iware, Abare, Malam Aligora, Zango Kombi, Mallum, Mayo-Renewo, Bakin Dutse and Tau. The local government area lies within the geographical coordinate of longitude 80° 35" - 90° 8" North and latitude 10° 25" East areas evenly were distributed into block areas. It is bounded to the North by Karim-Lamido local government area, to the east by Jalingo local government, to the west by Gassol local government area and Bali local government area to the south.

Ardo-Kola local government area have a projected population census figure of 13, 896.9622 (2015 projected population census figure) and covers land mass of 2,262 square kilometers. The major

occupation of the people in the area is agriculture. The population of the study comprises maize farmers in Ardo-Kola local government area of Taraba State, Nigeria. Multistage sampling technique were used to select respondents from the study. Stage one, agricultural development programme (ADP) block in the local government area known as Iware block were considered. Stage two, all the cells in the extension block were considered and stage three involve systematic sampling of twenty (20) respondents from each of the eight (8) cells were selected by taking respondents randomly. In all, a total of one hundred and sixty (160) respondents as summarized and 150 filled questionnaire were returned.

Data Collection

Data for the study were collected from the respondents through the use of structured questionnaire, because of the predominant maize production in the area. It contained relevant questions based on the objective of the study. The respondents were asked to indicate whether yes or no available maize production technologies on information of adoption, sources of agricultural information as well as constraints in adoption of maize production technologies.

In order to ascertain the available maize production technologies, sources of agricultural information on maize production technologies and constraints in adoption of maize production technologies, adopted strategies employed by these farmers a three-point Likert-type scale with responses as: to a great extent (3), to a little extent (2), to no extent (1) was used. Variables with a mean score higher or equal to $Z \geq 1.5$ was regarded as had used the technologies while $x \leq 1.5$ had not used the technologies and $x > 2.0$ means the constraints in adoption of maize production technologies was very severe while $x \geq 2.0$ is severe and $x < 2.0$ is equal to not severe. Data generated were analyzed with percentage and mean score.

RESULTS AND DISCUSSIONS

Sources of agricultural information on maize production technologies Table 1 shows that majority (67.33%) sourced their information on improved seed from extension agents, 33.33% from their friends, 6.67% newspapers, 15.33% from radio and television, 10.67% from bulletin. Sources of agricultural information on herbicides revealed that majority (64.67%) from extension agents, 41.33% from salesmen, 30.67% from neighbours, 23.33% from friends, sources of agricultural information on soil testing shows that majority (58.67%) from extension agents, 40.00% from salesmen, 32.00% from neighbours, 9.33% from bulletin. Sources of agricultural information on spacing and lplanting shows that majority (56.67%) from extension agents, 42.67% from salesmen, 32.67% from neighbours, 26.00% from friends, 6.67% from newspapers, 13.33% from radio and television, 10.00% from bulletin.

Sources of agricultural information on fertilizer application indicated that majority (58.67%) from extension agents, 39.33% salesmen, 35.55% from neighbours, 23.33% from friends, 6.67% from newspapers, 13.33% from radio and television, 9.33% from bulletin. This findings agrees with Oyesola (2008) that farmers preferred extension agents as their first hand sources of information means they are doing well in disseminating production technologies to farmers. It therefore shows that extension agents are preferred in dissemination maize production technologies to farmers in the study area. Efforts of the government at the state and local government levels are highly needed in motivating the extension agents in order to put in their best in extension work. This will ensure appropriate dissemination of agricultural information to the end users. These agrees with the findings of Roger (1995), sources of information have also been an important stimulus to individuals in the adaption

process. The implication of sourcing information from fellow friends, farmers and radio/television is that some information may be wrong, while shortcoming related to radio and television includes short duration of the programme, inappropriate scheduling inability to ask questions and getting feedback from the radio presenter simultaneously. This finding also agrees with the work of Dia et al., (2009) that the use of information sources is significantly related to the adoption behavior of farmers. The findings shows that majority sources of information on soil test technologies of maize production preferred extension agents, salesmen, neighbours, friends, radio and television. The findings gave credence to Ogunbameru (2001) who reported that sources of information used by farmers varies with stages in the adoption process, mass media are more important in creating awareness and interest, friends and neighbours are first important in the evaluation, trial and adoption stages. Soil is an important natural resources on which we all are dependent. Finding shows that farmers preferred extension agents because they believe that they knows the study of soil as a medium for plant growth. Spacing and planting, majority of the farmers preferred extension agents, salesmen, neighbours. This result agrees with the work of Akinpelu (1997) who reported that large extension agents farmers' ratio of 1:400 in Nigeria made it impossible to reach all farmers at the right time resulting to low frequency of contacts, as the extension agents have the professional idea on the crops performance is affected when it is planted on stale seed beds are prepared to a depth 5 – 7.5cm at an intra-row spacing of 25cm and inter-row spacing to 75cm giving a plant population of about 53, 000 plants/ha. This finding also agrees with Asiabaka (2002) reported that the use of modern information technology such as CD-ROM and the internet could form the basis of teaching new technologies to rural farmers on maize production practices. The use of modern information technologies has potentials for communities and rural farmers as the force that energize behavior, given direction to it, and underlies the tendency to persist.

Sources of agricultural information on fertilizer application shows that majority of farmers preferred extension agents than any other sources of information, this means that the Nigerian extension services needs to be improved for more effectiveness. Motivation is an important concept in extension as well as the clientele (farmers). At each point in time, there is an attempt by the extension staff and the rural farmers to satisfy the various hierarchy of needs. Failure to satisfy such needs may result to not adoption of the production technologies, frustration and exhibition of some deviant behaviours. For example, rural farmers who are hungry and thereby has been unable to satisfy his physiological need may not have the patience to listen to an extension agent who has come to teach him improved farm practice.

Extension personnel would want to satisfy the various needs, especially the safety needs. He would want the security of his job to be guaranteed to that on retirement, his gratuity and pension can be paid. If he gets injured when performing his official functions, he would want to be reassured that the organization have need to be loved. They should be loved. They should be made to feel that they really belong to the extension organization and that they have best sources of agricultural information on the application of fertilizer and should be respected for what they are. The extension organization should recognize and reward merit. Motivation and psychological awards should be given to those who deserve them. The finding also agrees with World Bank (1996), reported that Nigeria presents a paradox. The country is rich but the people are poor. It is necessary for Nigerians to reexamine the entire extension setup with a view to ensuring continued functionality and goal-orientation. The extension system we are currently operating is the training and visit (T & V) system. The T & V system has been criticized in a number of ways, firstly, its top-down operational system where technologies are generated from research in institutions and universities and sent down to the farmers.

Table 1: Distribution of the Respondents Sources of Agricultural information.

Improved Seed	Frequency	Percentage (%)
Extension Agent (EA)	101	67.33
Sales Man (S/M)	50	33.33
Neighbor (NB)	47	31.33
Friends (FR)	39	26.00
Newspaper (NP)	10	6.67
Radio & Television (R&TV)	23	10.67
Bulletin (BUL)	16	13.33
Herbicide Use		
Extension Agent (EA)	97	64.67
Salesman (S/M)	62	41.33
Neighbor (NB)	46	30.67
Friends (FR)	35	23.33
Newspaper (NP)	10	6.67
Radio & Television (R&TV)	21	14.00
Bulletin (BUL)	16	10.67
Seed Treatment		
Extension Agent (EA)	98	65.33
Salesman (S/M)	59	39.33
Neighbor (NB)	50	33.33
Friends (FR)	37	24.67
Newspaper (NP)	10	6.67
Radio & Television (R&TV)	26	17.33
Mechanize Farming		
Extension Agent (EA)	90	60.00
Salesman (S/M)	59	39.33
Neighbor (NB)	46	30.67
Friends (FR)	35	23.33
Newspaper (NP)	10	6.67
Radio & Television (R&TV)	21	14.00
Bulletin (BUL)	14	9.33
Soil Testing		
Extension Agent (EA)	88	58.67
Salesman (S/M)	60	40.00
Neighbor (NB)	48	32.00
Friends (FR)	34	22.66
Newspapers (NP)	09	6.00
Radio & Television (R&TV)	20	13.33
Bulletin (BUL)	14	9.33
Spacing and Planting		
Extension Agent (EA)	85	56.67
Salesman (S/M)	64	42.67
Neighbor (NB)	49	32.67
Friends (FR)	39	26.00
Newspapers (NP)	10	6.67
Radio & Television (R&TV)	20	13.33
Bulletin (BUL)	15	10.00
Fertilizer Application		
Extension Agent (AG)	88	58.67
Salesman (S/M)	59	39.33
Neighbor (NB)	53	35.33

Friends (FR)	35	23.33
Newspapers (NP)	10	6.67
Radio & Television (R&TV)	20	13.33
Bulletin (BUL)	14	9.33

Source: Field Survey, 2016

Adoption of Available Maize Production Technologies

The available maize production technologies in the study area include improved seed varieties, herbicides used, pesticides used, seed treatments, application of modern machineries, planting and spacing.

Table 2 revealed that (68.67%) of the respondents had no available improved seed varieties of maize production technologies while 31.33% had all the varieties of improved seeds. The high level of unavailability of the improved seed varieties implies that the farmers are not fully aware of the advantage of using improved varieties over the local varieties. Also, 55.33% had access to availability of herbicides while 44.67% had no access to available herbicides use, 54.00% had available access to pesticides use and 46.00% of the respondents had no available technologies. High cost and untimeliness of the herbicides and pesticides might be possible for this.

Majority 85.33% of the respondents do not treat seeds before planting, while 14.67% adopted seed treatment before planting, 82.67% had no availability access to modern farm machineries such as farm tractor, trails, equipment, combine harvester, while 17.33% had available access to some modern machines. Majority 100% of the respondents had no availability of soil test equipment, therefore did not use the technologies, while 84.00% of the farmers had not use spacing and planting technologies, only few about 11.67% that use the technologies. This implies that respondents are expecting huge outcome for the available maize production technologies used. The non-available improved maize production technologies among farmers could lead to decrease in production and reduce food security in the study area.

Table 2: Distribution of Respondents Based on Available Maize Production Technologies Adopted

Variable	Frequency	Percentage (n=150)
Improved Seeds		
Yes	47	31.33
No	103	68.67
Total	150	100
Herbicides Used		
Yes	83	55.33
No	67	44.67
Total	150	100
Pesticides Used		
Yes	81	54.00
No	69	46.00
Total	150	100
Seed Treatment		
Yes	22	14.67
No	128	85.33
Total	150	100
Mechanize Farming		
Yes	26	17.33
No	124	82.67
Total	150	100
Soil Testing		
Yes	-	-
No	-	-
Total	-	-
Spacing and Planting		
Yes	24	16.00
No	126	84.00
Total	150	100

Source: Field Survey, 2016

The respondents in table three were highly constrained with high cost of fertilizer (Mean = 2.97), lack of improved seeds (Mean = 2.95), lack of technology (Mean = 2.94), price fluctuation (Mean = 2.93), high cost of input (Mean = 2.90), poor management technology (Mean = 2.85), poor knowledge of cultivation (Mean = 2.83), pests disease control (Mean = 2.71), poor marketing facilities (Mean = 2.32), low maize price (Mean = 2.03). Other constrains include; low soil facilities (Mean = 1.54), sandstorm (Mean = 1.86), soil erosion problem (Mean = 1.83), drought (Mean = 1.73), and fake fertilizer (Mean = 1.63). The finding gave credence to Ekong (2003) who reported that availability of farm inputs and supplies and good management technologies, source of agricultural information networks contributes to agricultural development, thus having incentive for more production.

Table 3: Mean Score Distribution of Respondents' Constraints in Adoption of Maize production technologies

Constraint	Total Score	Mean
Pest disease	407	2.17
High cost of input	436	2.90
Drought	260	1.83
Soil erosion problem	274	1.82
Sandstorm	279	1.86
Low soil facility	231	1.54
Poor knowledge of cultivation	425	2.83
Poor management Techniques	428	2.85
Lack of technology	441	2.94
Lack of improved seeds	443	2.95
Low maize price	245	2.03
Poor marketing facilities	348	2.32
High cost of fertilizer	446	2.97
Fake fertilizer	248	1.63
Price fluctuation	439	2.93

Source: Field Survey, 2016

CONCLUSION

The study concluded that majority of the respondents preferred extension agents, salesmen, neighbours as first hand sources of information on maize production technologies, result also revealed that majority had no available improved seed varieties. Pest disease, high cost of input, poor knowledge of cultivation, poor management technologies, lack of improved seeds, poor marketing facilities, high cost of fertilizer were the major constraints militating against adoption of maize production technologies.

These technologies could reach them through sources of agricultural information such as the extension agents, researchers, religious leaders and lecturers with the aid of methods and results demonstration using vernacular.

RECOMMENDATION

The study pointed out the need to formally and informally acquaint maize farmers with available production technologies such as improved seeds, herbicides, pesticides, seed treatments, mechanized farming, soil tests, spacing and planting, fertilizers application for improved productivities. Sources of funds and timely distribution of inputs be encouraged for faster and widespread of adoption. Also, provision of information resources center in the rural area is of paramount importance in order to facilitate easy access to agricultural information among farmers in the study area.

References

- Chekene M.B and Chencellor, TSB (2015). Factors Affecting the Adoption of Improved Maize Varieties in Borno State, Nigeria. *Journal of Agricultural Extension Vol. 19 (2)*.
- Donye, A.O., Ja'afar-Furo, M.R., and Obinner CPO (2013). Improving Small Holder Farming and Extension in Nigeria; the Sasakawa Africa Fund for Extension Education Strategy. *Agriculture and Biology Journal of North American, 4 (2), 97-102*.

- Dugje, I. Y Onyibe, J.F Ekeleme, F Kamara, A.Y Tegbaru, A., Omoigui, L.O and Bassi S.A (2008). Guide to Certified Seeds Production in Borno State, Nigeria. ITA Ibadah Nigeria. 20pp. Education Published. 2nd Edition pp 223 224
- Ekong E.E; (2003). An Introduction to Rural sociology Oyo Nigeria Dove FAO (2003) Food and Agricultural Organization Processing of the mini Round Table meeting and Agricultural Marketing and Food Security, Bangkok Thailand 1st and 2nd November, 2001.
- FAOSTAT (2003) Food and Agriculture Organisation Statistics.
- FAOSTAT. (2014). Crop Production and Trade. Maize Production Importation, IITA (2007) Maize: IITA Research to Nourish Africa IITA (2008) Increasing Maize Production of Nigeria West Africa.
- Influencing Adoption of Sasakawa Global 2000 Maize Production Technology in Selected Communities of Kaduna State Nigeria. Proceeding of the Agricultural Extension of Research. Liaison Services NAERLS, Ahmadu Bello University Zaria (15th-17th May, 2015) pp.212-222
- International Institute for Tropical Agriculture IITA. (2002). Competiveness Workshop. Opportunities for maize in Nigeria Bokanga IITA-Ibadan International Institute for Tropical Agriculture IITA. Ultune IITA. 2004. Nigeria Maize Industry Statistic Hand Book. *Journal of Central European Agriculture*. 6:3:246-254.
- Mahmood, A.M. and A.D. Sheikh (2001) New Agric Technologies. www.2000pakissan.com
- Mustapha, S.B., Undiandy, U.C., Sanusi, A.M. and Bakari, S. (2012). Analysis of Adoption of Improved Maize Production Technologies in Jeer.
- Ogunniyi, I.T (2011) Determinants of Profit Efficiency Among Small Scale Maize Farmers in Oyo State Nigeria. *ARNP Journal of Agricultural and Biological Sciences* 6(1) 11-17.
- Okereke C.O (2012). Socio-economic Evaluation of Maize Production by Women Farmers in Igbo-Eze North Local Government Ala of Enugu State Nigeria. *Int. J. Agric. SCI, Res. And Technol.*, 23: 129-136.