

ADOPTION OF IMPROVED FARM PRACTICES AMONG MAIZE (*Zea mays* L) FARMERS IN YOLA, ADAMAWA STATE, NIGERIA

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Abstract

Maize (*Zea mays* L) is among the most widely consumed staples and is also used in the production of livestock feeds. This study analysed the adoption of improved farm practices among maize farmers in Yola, Adamawa State, Nigeria. The specific objectives were to; describe the socio-economic characteristics of the respondents, identify the improved farm practices adopted by the respondents, and identify respondents' sources of information on improved farm practices. Systematic random sampling technique was used to select 117 respondents from whom primary data was collected using structured questionnaire. The data collected was analysed using means, frequency and percentages. The result showed that, majority (67.5%) of the respondents were male, married (76%), educated (70%), and 54.6% were within the economically active age of less than 51 years. Majority (81%) of the respondents were small scale farmers with land holdings of 1-4 ha, 77% of the respondents practiced maize farming for more than 10 years, 56.4% and 43.6% practiced sole cropping and mixed cropping respectively. Radio, friends, and extension agents were most preferred information sources. Use of herbicides, fertilizers, seed dressing, and mechanized farming were respondents' most adopted improved technologies. The study recommends that radio should be used to disseminate information on improved farm practices; farmers should also, be encouraged to form groups that would assist them share information and pool resources together to overcome transitional cost of certain technologies.

Key words: adoption, improved farm technology, maize, Yola, Adamawa State, Nigeria

INTRODUCTION

Maize (*Zea mays* L) is an important staple food crop with great economic significance in Sub-Saharan Africa. It is a cereal crop cultivated in both irrigated and non-irrigated land for food, livestock feed and other industrial uses. The demand for maize in Nigeria is always on the rise due to population increase and diverse uses. The crop is the third most important cereal crop after sorghum and millet [5]. Despite the economic importance of maize to the teeming populace of the nation, it has not been produced to meet the food and industrial needs of the country. This could be attributed to the low productivity from maize farms or that farmers have not adopted improved technologies for maize production [6]. To boost the production of this crop and other crops, the government was able to implement some programmes and projects over the years. However, these programmes have had limited

impact in boosting the local production capacity of the nation's farmers. In the recent past, the Agricultural Transformation Agenda was launched by the federal government in collaboration with the various state governments. Under the initiative, the Growth Enhancement Support (GES) scheme was launched to provide subsidized farm inputs to farmers on some selected crops (including maize). The essence of the initiative is to boost the local production of the selected crops comparable to global standards.

The availability of a sustainable agricultural technology for Nigerian resources-poor farmers is important for the country's effort at achieving food security [4]. Improved agricultural technologies are known to enhance and improve agricultural production among farmers in a nation. Maize production in Nigeria and particularly in the study area has not been sufficient enough to meet the needs of people and livestock feeds. In Adamawa State, the crop has attracted some

studies owing to its prominence in social and economic life of the people [3, 7, 8]. These studies considered economic efficiency of the crop's production. However, there is paucity of literature on the level of adoption of improved farm practices among maize farmers in study area. Hence, it is imperative to examine the adoption of improved farm technologies in maize production so as to initiate and implement policies that would help in boosting the production capacity of the farmers. This will help improve the livelihood of maize farmers and food security in the area. Therefore, this study was undertaken to investigate the adoption of improved farm management practices among maize farmers in the study area. The specific objectives of the study were to:

- (i) Describe the socio-economic characteristics of the respondents
- (ii) Identify the improved farm practices adopted by the respondents
- (iii) Identify respondents' sources of information on improved farm practices.

MATERIALS AND METHODS

The study was carried out in Yola-North and Yola-South Local Government Areas of Adamawa State. The study area has a total land mass of 1,213.3km² and lies between latitude 9° 06' and 9° 29' North and longitude 12° 06' and 12° 38' East [1]. The area shares boundary with Fufore Local Government area to the South and East, Numan, to the West, and Song, to the North. The Area lies within the Sudan savannah region and can be described as having a tropical climate characterized by two well defined seasons, being wet and dry seasons. The dry season starts in the late November and ends in April, while the wet season commences from May and ends in October. The average annual rainfall is about 956mm [2]. The temperature figure in the area is typical African savannah features, the average minimum temperature is 15.2°C, while the seasonal maxima usually occur in March and April with the average maximal temperature of 39.7°C. The high temperatures experienced in the area and long period of dry season of about seven months

characterized by uncertainty in the onset and cessation of rainfall have to some extent serious effect on agricultural production and sustainability.

The population of the study comprised of all maize farmers in Yola North and South Local Government Areas (LGAs) of Adamawa State. The Area falls within the Yola Agricultural Development Programme Extension block. The extension block consists of six cells, namely, Yolde-pate, Njoboliyo, Malkohi, Bachure, Bole and Mbamba. A total of 117 respondents were selected from the six cells using systematic random sampling technique. This was done by selecting every other fourth farmer after the first until the needed number was obtained.

Descriptive statistics involving the use of means, percentages and frequency counts were used to analyse the data.

RESULTS AND DISCUSSIONS

Respondent's Socio-economic Characteristics

The socio-economic characteristics of the respondents is presented in Table 1. The sex distribution of the respondent shows that, majority (67.5%) of the respondents were male while the females constituted 32.5%. This implies that, male farmers dominated the cultivation of maize in the area. This can be attributed to cultural/religious factors that gives the males more access to resources (both social and economic) than the female. Similarly, the tediousness and labour intensiveness of maize cultivation might have contributed to the sheer dominances of the male farmers in the cultivation of the crop. Based on the age distribution of the respondents, the Table indicated that, majority (54.6%) were less than 51 years of age while respondents above 60 years of age were 13.7%. This implies that, bulk of the respondents are economically active and can be able to provide the needed resources necessary for maize production. The Table also showed the distribution of the respondents based on their marital status. According to the Table, most of the respondents are married (87.7%) while,

single, divorced and widowed people made up 10.3% collectively. This is not surprising for the fact that the married people are known to have dependents that they have to cater for their basic needs. Hence, engaging in farming activities may be a means of meeting their family responsibilities. Further, education plays an important role in the farming profession. In the study area, about 29.9% of the respondents had no form of formal

education, 31.6% attended primary school, while, 25.7% attended senior secondary school. Similarly, only about 4.3% of the respondents attained tertiary level of education. The implication of it is that, access to information may be limited by the respondents' level of education (especially from newspapers or those being transmitted using English Language).

Table 1. Socio-economic Characteristics of the Respondents (N=117)

Variable	Frequency	Percentage
Age (Years)		
20 – 30	15	12.8
31– 40	19	16.2
41 – 50	30	25.6
51-60	37	31.6
60 and Above	16	13.7
Gender		
Male	79	67.5
Female	38	32.5
Marital Status		
Married	105	87.7
Single	6	5.2
Widowed/Divorced	6	5.1
Educational Attainment		
No formal Education	30	29.9
Adult Education	5	4.3
Primary School	37	31.6
Senior Secondary School	30	25.7
Tertiary	10	8.6

Source: Field Survey, 2015.

Respondents' Farm Size, System of Farming, Variety of Maize Cultivated and Years of Farming Experience

Farm size which determines the scale of farming is presented in Table 2. From the result obtained, 81% of the respondents were small scale farmers (have land holdings of 1-4ha), while respondents with farm sizes up to 5ha constituted only 19%. The large number of small-scale farmers could be attributed to the high competition between the use of land for farming and its use for other developmental activities common in most urban and *peri*-urban areas. Farming experience can affect the decision of farmers to adopt certain technologies or packages. Farming experience of the respondent presented in the Table revealed that, majority (77%) of the respondents have practiced maize farming for more than 10 years. The

long standing involvement of farmers in maize cultivation is not unconnected with the importance of this staple crop in the diet of communities in the study area. This is further supported by the suitability of the crop to the climate of the study environment and its use for wide variety of purposes such as food in various forms for example, *Tuwo*, cooked or boiled maize, roasted maize, popcorn, animals feeds for both livestock and chickens and medicinal uses among others. Respondents practice two systems of cropping, sole cropping (56.4%) and mixed cropping (43.6%). Further, the variety of maize cultivated mostly were the improved variety (62.4%), while 37.6% cultivated local variety of seeds. The high usage of improved maize varieties among the respondents may be attributed to the high yield associated with the variety and its provision by the government at

subsidized rate by the government under the GES scheme in recent past.

Table 2. Farm Size, System of Farming, Variety of Maize Cultivated and Years of Farming Experience (N=117)

Variable	Farm size (ha)				Total/Percent (%)
	1-4	5-8	9-12	13-16	
Years of Farming Experience					
1-10	24	3	0	0	27 (23)
11-20	32	5	1	0	38 (32.4)
21-30	22	4	0	0	26 (22.2)
31-40	10	3	0	2	15 (13)
41-above	7	3	0	1	11 (9.4)
Total/Percent (%)	95 (81)	18(15)	1(1)	3(3)	117 (100)
System of Farming					
Sole cropping	51	12	1	2	66 (56)
Mixed cropping	44	6	0	1	51 (44)
Total/Percent (%)	95 (81)	18(15)	1(1)	3(3)	117 (100)
Maize Varieties					
Improve variety	58	13	0	2	73 (62)
Local variety	37	5	1	1	44 (38)
Total/Percent (%)	95 (81)	18(15)	1(1)	3(3)	117 (100)

Source: Field Survey, 2015

Adoption of Modern Farming Techniques by the Respondents

Table 3 reveals the respondents' adoption of improved farming technologies. Most of the respondents adopted improved technology, the calculated ranking of means show that herbicides, fertilizers, seed dressing, and mechanized farming were the most widely practiced in order of 1st, 2nd, and 3th respectively. Similarly, the use of standard spacing, insecticides and high breed seeds were the least used in order of 6th, 5th, and 4th. Means for herbicide and fertilizer use were 3.87 and 3.58 respectively being 1st and 2nd are high adopters, seed dressing, and mechanized farming system and high breed seeds with means of 2.93, 2.68, and 2.27 ranking 3th, 5th, and 4th respectively are medium adopters. While, means for the use of insecticides and standard spacing are 2.26 and 1.83 which ranked 6th and 7th thus classified as the low adopters. The result also shows that there are non-adopters.

Respondents' Sources of Information for Modern Farming Practices

Respondents received information about modern farming techniques from varied sources such as the radio, television, farmers' associations, friends, extension officers as

well as newspapers (Table 3). The result revealed that, information from radio (96%) and friends (82%) were the most readily available in the area. Further, information from extension officers (48%), farmers' associations (37%), television (36%) and newspaper (22%) were among the other information sources being utilized by the respondents. The high reliance on radio and friends may be attributed to the educational status of farmers in the study area. As earlier noted (Table 1), majority (69%) of the respondent had either no any form of formal education or had only obtained adult or primary education. This might have been the reason for very few of them accessing information from newspaper. Higher level of education is believed to be associated with access to information on improved technologies and higher productivity.

Respondents' Preferred Source of Information

In terms of the respondents' preferred information source (as presented in Table 3), the result obtained based on ranking showed that, radio had the highest mean of 4.7, friends 4.22 extension officers 3.44. Newspaper with mean of 1.43, associations 2.85 and television 2.90 were the least preferred on the order

listed. The preference may not be information through these media in terms of unconnected to the ease of access accessing both cost and convenience.

Table 3. Adoption of Modern Farming and Sources of Information in order of Preference (N=117)

Use of modern technology	Mean	Rank
Herbicide	3.87	1 st
Fertilizer	3.58	2 nd
Seed Dressing	2.93	3 rd
Mechanize Farming System	2.68	4 th
High Breed Seeds	2.27	5 th
Insecticides	2.26	6 th
Standard Spacing	1.83	7 th
Source of Information		
Radio	1.96	1 st
Friends	1.82	2 nd
Extension Officer	1.48	3 rd
Association	1.37	4 th
Television	1.36	5 th
Newspaper	1.22	6 th
Preference for Information		
Radio	4.70	1 st
Friends	4.22	2 nd
Extension Officer	3.44	3 rd
Association	2.90	4 th
Television	2.85	5 th
Newspaper	1.43	6 th

Source: Fieldwork, 2015

CONCLUSIONS

Access to information plays a very significant role in ensuring that farmers were able to adopt improved technologies that will boost their production. However, there is the need for the farmers to access this information with ease in terms of both cost and convenience. This will enable the farmers to adopt modern farming technologies in good time. Based on the findings of the study, the following recommendations are suggested to improve the adoption of improved technologies by maize farmers in the area:

- (i) Agriculture related innovations or technologies should be made available to farmers on their most preferred information source, especially on the radio. The contents of such information should be appropriate and suitable to the needs of the farmers.
- (ii) Government should prioritize the use of extension workers to reach farmers with relevant agricultural information. The ADPs should be adequately funded to meet the financial demands of reaching farmers with information and demonstrating it to them.

(iii) Farmers should be encouraged to form groups through which they will be able to share ideas and pool their resources together to reduce the transition cost of adopting some the innovations.

(iv) Farmland is a limiting factor to the adoption of modern technologies in the study area therefore, government policy should focus on addressing this problem by allocating significant portion of land for permanent farming purpose.

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