

ADOPTION OF IMPROVED MAIZE PRODUCTION PRACTICES BY FARMERS IN AKINYELE L G A OF OYO STATE, NIGERIA.

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ABSTRACT

The study was carried out to determine the farmers' adoption of improved maize production practices in Akinyele local government area of Oyo state, Nigeria Primary data was used in collecting data for this study through a well-structured questionnaire. A total of 120 respondents were selected using multi-stage sampling techniques. Data for this study were analyzed using descriptive statistics such as frequency, mean and percentage while the inferential statistics such as chi square were used to analyzed the hypothesis From the findings of this study, the result revealed that 74.0% of the respondents were male while 72.5% of the respondents were married and 54.2% of the respondents practices Christianity while 63.3% of the respondents had secondary education, 70.8% of the respondents had trading as their secondary occupation and majority 90.8% of the respondents were belong to cooperative society. 75.8% of the respondents had no access to extension services. The result on awareness of improved maize production practice shows that 96.7% of the respondents were highly aware of land preparation, closely followed by use of improved seed 95.8%, 94.3% were aware of correct use of farm manure, 92.5% of the respondents were aware of appropriate planting technique, 90.8% of the respondents were equally aware of both correct use of herbicide and correct use of fertilizer and finally 86.7% were aware of irrigation system.

Moreover, based on the result of adopted technologies the correct use of manure had the highest of 94.2% and was highly adopted by the respondents closely followed by use of improved seed 91.7%, appropriate land preparation 90.8%, appropriate planting techniques 90.0%, irrigation system 89.2% and correct use of fertilizer 85.8%. Appropriate harvesting 41.7% and Seed dressing 33.3% had the least percentage, the constraints to adoption of improved maize production practices. The result indicates that inadequate capital with (mean=1.96) had the highest mean and was ranked 1st as the most severe constraints to adoption of improved maize production practices and other constraints includes high cost of labour (mean=1.87), high cost of inputs (mean=1.86), non-profitability of maize (mean=1.77) and prevalence of pests and diseases (mean=1.72) which were ranked 2nd, 3rd and 4th respectively and were also the constraints faced by the respondents in adoption of improved maize production practices. From the findings of this study, it is recommended that policy options that enhance public and private financial institutions in providing loans to farmers at a reduced interest rate in order to be able to purchase improved seeds for increased production.

Key Words: Adoption, Improved maize Practices, production practices

1.0 INTRODUCTION

Nigeria is the largest producers of maize in Africa. In 2018 ,Africa produced around

75million tons of maize, accounting for 7.5 percent of global maize production. Maize account for approximately 24 percent of

farmland in Africa, with an average yield of around 2tons/hectare/year.(Poultry Association of Nigeria.PAN,2020).Maize was ranked as the third place cereal consumed in the world after wheat and rice(Olaniyan,2015), It is an important food crop in sub-Saharan Africa,300million people in Sub-saharan Africa consider maize as a primary source of food and livelihood(Macauley,2015. Is a staple food of great economic importance in the sub-Saharan Africa of which Nigeria is inclusive.Though, maize production is still very low especially when considered in relation to the growing feed needs of the country. About 20% of the global maize harvested is consumed directly as food and the remaining 80% is processed for secondary uses. Growth in maize utilization has been driven by the rapidly increasing demand for maize as livestock feed and industrial food and nonfood products. Direct food uses of maize tend to decline as per capital income, milk, meat and egg consumption increase. The population of Nigeria is expected to grow at a rate of more than 3% per year, while food production is likely to grow at a rate of 2% or less a year. Closing this gap and increasing food production will require intensive agriculture based on use of modern technologies such as the use of improved seed varieties (FAO STAT, 2005). Despite the economic importance of maize to the teeming populace in Nigeria, its production is insufficient to meet food and industrial needs of the country. This could be attributed to low productivity from maize farms due to non-adoption of improved technologies for maize production by farmers. Maize production in Nigeria has not been sufficient enough to meet the needs of people and livestock. Supply has not been able to meet demand despite the introduction of improved packages (Babatunde et al., 2008).

Oyelade and Awanane (2013) reported that a major limitation to maize production in Nigeria is the declining soil fertility which is exacerbated by the high cost and/or unavailability of chemical fertilizer. Low soil fertility especially of Nitrogen and Phosphorus, is the prime factor limiting maize growth which subsequently affects grain yield. The other production constraints associated with maize production include drought, shortage of rainfall, and pest and diseases(Babatunde et al 2008). In Nigeria, despite the development and introduction of the maize improved practices by prominently International Institute of Tropical Agriculture (IITA) and National Cereal and Research

Institute (NCRI), Ibadan in collaboration with Nigeria government, yet average farmer's yield per hectare remain low compared to its potential yield, (1/3 tons/ha) compared to its potential yield of 6 tons per hectare in the united state . (Babatunde *et al.*, 2018) based on this statements . Therefore, despite so many literatures listed above and many others, there seem to be dearth in empirical knowledge on the Adoption Of Improved Maize production Practices by farmers In Akinyele L G Area Of Oyo State .Thus, this research will be conducted with the broad objective of analyzing the Adoption Of Improved Maize production Practices by farmers In Akinyele L G A Of Oyo State. Specifically, the study :(i)describe the socio economic characteristics of the respondents in the study area; (ii.)determine farmers awareness of improved maize farming practices;(iii.) determine the adoption level of improved maize farming practices;(iv). determine factors affecting adoption of maize production practices in the study area.

The null hypothesis state that there is no significant relationship between the socio economic characteristics of the respondent's and the adoption level of improved maize farming practices.

2.0 METHODOLOGY

2.1 Study Area: The study was carried out in Akinyele Local Government Area of Ibadan Oyo State, Nigeria. Its one of the eleven Local Governments that makes up Ibadan suburb. It headquarters are at Moniya. Akinyele local government area was created 1976 and it shares boundaries with Afijio local government to the North, Lagelu local government to the East, Ido local government area to the west and Ibadan North local area to the South. The town is located on Latitude 7°21'-80N and Longitude 4°02' - 4°28'E, It occupies a land area of 464.892 square km with a population density of 516 persons per square kilometre. Using 3.2% growth rate from 2006 census figures, the 2010 estimated population for the local government is 239,745. The major crops grown in the study area include cassava, maize and yam while the major livestock reared in the area include cattle, sheep, goat, fish production and poultry production.

2.2 Sampling techniques :Multi-stage sampling techniques were used for this study. In the first stage purposively random sampling was selected due to the predominance of maize farmers in the area. In the second stage, out of 12 wards in Akinyele Local Government Area 6 wards were randomly selected. In the third stage 2 villages each were randomly selected from the 6 wards to give a total number of 12 villages. In the fourth stage 10 maize farmers were finally selected from each village to give a total number of 120 respondents. The selected wards were Ikereku, Olanla/Oboda/Labode, Arulogun/Eniosa/Aroro, Olode/Amosun/Onidundu, Ojo-Emo/Moniya, Akinyele/Isabiyi/Irepodun

2.3 Data Collection

Data for this study were obtained from primary sources using well-structured questionnaire to obtain the relevant information needed for the study.

2.4 Data Analysis: Descriptive statistics and inferential statistics such as multiple regression and Tobit model were used, a multiple regression model was used to determine the adoption of maize production by farmers, the model is implicitly represent below as:

2.5 Multiple Regression Model

The model is implicitly represented below as;

$$Y = F(X_1, X_2, X_3, X_4, X_5, X_6, X_7) \dots \dots \dots 3.1$$

The explicit from the model is represented thus;

$$Y = a_0 + a_1X_1 + a_2X_2 + a_3X_3 + a_4X_4 + a_5X_5 + a_6X_6 + a_7X_7 + ut \dots 3.2$$

Where;

Y = Adoption of improved maize production practices

X₁ = Age of respondent (years)

X₂ = Marital status (dummy)

X₃ = Household size (dummy)

X₄ = Level of education (Year spent)

X₅ = farming experience (dummy)

X₆ = Annual farm income (naira)

X₇ = Extension service (dummy)

a₁ – a₈ = parameters

a₀ = the constant

The result of the socio-economic characteristics of Adoption Of Improved Maize production Practices by farmers are presented in Table 1 below. The result base on the objective one of the study . 75.0% of the respondents were male while 25.0% of them were female. This implies that most of the respondents were male who are capable of carrying out the rigorous activities involved in maize production. 29.2% of the respondents were within the age range of 41-50years, 24.2% of them were between 31-40years old, 16.7% were between 51-60 years old, 15.0% were less than 30 years or equal to 30 years, 7.5% of them were between 61-70years while few 6.7% were within the age range above 70 years of age . The mean age of the respondents was 42 years. The result further revealed that 63.3% of the respondents had secondary education, 21.7% had tertiary education, 11.7% had primary education while 3.3% had no formal education. This is an indication that most farmers in the study area had the highest form of education or the other. This conforms to the observation by Oladejo et al. (2012) that most farmers had secondary education had the capacity to handle any technical work in the farm.

2.0 Results and Discussion

Table 1: Socio economic characteristics of the respondents

Variable	Frequency	Percentage	Mean
Sex(dummy)			
Male	90	75.0	
Female	30	25.0	
Marital status (dummy)			
Single	20	16.7	
Married	87	72.5	
Divorced	5	4.2	
Widowed	8	6.7	
Age (years)			
≤30	19	15.8	
31-40	29	24.2	
41-50	35	29.2	46years
>50	37	30.9	
Religion(dummy)			
Islam	52	43.3	
Christianity	65	54.2	
Traditional	3	2.5	
Household size(no of person)			
Less than or equal 5	58	48.3	
6-10	55	45.8	
11-15	5	4.2	5
>16	2	1.7	
Educational status(years spent)			
Primary	14	11.7	
Secondary	76	63.3	11
Tertiary	26	21.7	
No formal education	4	3.3	

Table 1: Socio economic characteristics of the respondents (Contd)

Variable	Frequency	Percentage	Mean
Secondary (dummy)			
Farming	25	20.8	
Trading	85	70.8	
Artisan	9	7.5	
Others	1	0.8	
Mode of land ownership(dummy)			
Purchased	12	10.0	
Inherited	67	55.8	
Rented	20	16.7	
Gifted	7	5.8	
Lease	14	11.7	
Cooperative society (dummy)			
Yes	109	90.8	
No	11	9.2	
Extension services(dummy)			
Yes	29	24.2	
No	91	75.8	
Annual income(naira)			
<200,000	63	52.5	198,232
200001-400,000	42	35.0	
400,001-600,000	8	6.7	
600,001-800,000	5	4.2	

> 800,001	2	1.7	
Farm Size(ha)			
≤2	64	53.3	2
3-5	45	37.5	
>6	11	9.2	

Source: Field survey, 2020

4.0 Farmers awareness on improved maize production practices

The result in Table 2 shows that the appropriate land preparation had the highest percentage of; 96.7% and was highly aware by the respondents, closely followed by used of improved seed; 95.8%, correct use of farm manure ;94.3%, appropriate planting techniques; 92.5%, correct use of herbicide and correct use of fertilizer with the same percentage of; 90.8% and finally

irrigation system; 86.7%. Furthermore appropriate harvesting; 35.0% and seed dressing; 23.3% had the least percentage as farmers' awareness on improved maize production practices. This is corroborates with the findings of Cotonou, (2012) reported that majority of the maize farmers had full awareness about the use of manure, certified seed, need for fertilizer application in maize production.

Table 2: Farmers awareness on improved maize production practices

Awareness	Aware	Not aware
Use of improved seed	115(95.8)	5(4.2)
Appropriate land preparation	116(96.7)	4(3.3)
Correct use of farm manure	113(94.2)	7(5.8)
Appropriate planting techniques	111(92.5)	9(7.5)
Seed dressing	28(23.3)	92(76.7)
Appropriate harvesting	42(35.0)	78(65.0)
Correct use of herbicide	109(90.8)	11(9.2)
Correct use of fertilizer	109(90.8)	11(9.2)
Irrigation system	104(86.7)	16(13.3)

Source: Field survey, 2020

Figures in parenthesis are in percentage

4.1 Adoption of improved maize production practices

The result shows that correct use of manure had the highest of; 94.2% and was highly adopted by the respondents as shown in table 3 closely followed by Correct use of spacing; 92.0%, Use of improved seed; 91.7%, while appropriate land preparation; 90.8%, irrigation system; 89.2%

and correct use of fertilize; 85.8%. Appropriate harvesting; 41.7%, Seed dressing ;33.3% had the least percentage. This findings corroborates with the work of Olubande *et al* (2010) that farmers in Oyo state adopt the practices which include use of fertilizer and manure for planting and top dressing, appropriate land preparation and irrigation system among others.

Table 3:Adoption of improved maize production practices

Adoption	Adopted	Not Adopted
Use of improved seed	110(91.7)	10(8.3)
Appropriate land preparation	109(90.8)	11(9.2)
Correct use of manure	113(94.2)	7(5.8)
Appropriate planting techniques	108(90.0)	12(10.0)
Seed dressing	40(33.3)	80(66.7)
Appropriate harvesting	50(41.7)	70(58.3)
Correct use of herbicide	99(82.5)	21(17.5)
Correct use of fertilizer	103(85.8)	17(14.2)
Irrigation system	107(89.2)	13(10.8)
Correct use of spacing	110(92.0)	9(8.0)

Source: Field survey, 2020
Figures in parenthesis are in percentage

4.2 Level of Adoption of respondents on the improved maize production practices

The level of adoption of the various practices in maize production practices and the mean adoption score shown in table 4. The table shows that the level of adoption of the improved maize farming practices was high between 1-6 with

percentage 80.8% of the rural farmer in the study area, while it was low between 7-10 with percentage 19.2%. The result is in consonance with the finding of Odeyinka *et al*, (2007) that high level of improved maize adoption was noticed among the farmers in Oyo state

Table 4: Level of Adoption of respondents on the improved maize production practices

Level of Adoption	Range of Score	Frequency	Percentage	Mean	Standard deviation	Minimum	Maximum
High	1.0-6.0	97	80.8	6.992	1.2401	3.00	10.00
Low	7.0-10.0	23	19.2				

Source: Field survey, 2020

4.3 Constraints to adoption of improved maize production practices

The result of the constraints in table 5 shows the adoption of improved maize production practices. The result indicated that inadequate capital with mean(x=1.96) had the highest mean and was ranked 1st as the constraints to adoption of improved maize production practices and other constraints includes high cost of labour mean(x=1.87), high cost of inputs mean(x=1.86), non-profitability of maize mean(x=1.77) and prevalence of pests and diseases mean(x=1.72) were ranked 2nd, 3rd and 4th respectively and were also the constraints faced by the respondents in

adoption of improved maize production practices. Furthermore, inadequate market for produce and poor extension contact with the same mean of (x=1.14), inadequate technical know-how and low level of information with the same mean of (x=1.13) were ranked 9th and 11th respectively and were the least constraints. The findings support the work of Kudi, T.M.; Bolaji, M.; Akinola, M.O. and Nasa, I.O.H. (2010). that major constraints to adoption of improved maize production practices were found to be inadequate capital, high cost of labour, fertilizer and inadequate market for produce.

Table 5: Constraints to adoption of improved maize production practices

Constraints	Very severe	Severe	Not severe	Mean	Rank
Inadequate capital	116(96.7)	4(3.3)	0(0.0)	1.96	1 st
inadequate market for produce	19(15.8)	99(82.5)	2(1.7)	1.14	9 th
high cost of inputs	105(87.5)	13(10.8)	2(1.7)	1.86	3 rd
High cost of labour	106(88.3)	12(10.0)	2(1.7)	1.87	2 nd
Inadequate technical knowhow	18(15.0)	100(83.3)	2(1.7)	1.13	11 th
Non profitability of maize farming	96(80.0)	20(16.7)	4(3.3)	1.77	4 th
Prevalence of pests and diseases	91(75.8)	24(20.0)	4(4.2)	1.72	5 th
Poor soil fertility	20(16.7)	98(81.7)	2(1.7)	1.15	8 th
Poor extension contact	18(15.0)	101(84.2)	1(0.8)	1.14	9 th
Illiteracy of the farmers	26(21.7)	91(75.8)	3(2.5)	1.19	7 th
Inadequate farm land	87(72.5)	25(20.8)	8(6.7)	1.65	6 th
Low level of information	27(22.5)	82(68.3)	11(9.2)	1.13	11 th

Source: Field survey, 2020

4.4 Regression analysis showing the relationship between the socio economic characteristics and the adoption of improved maize production practices

The result in Table 6 shows that sex was positive and not statistically significant, this shows that sex of farmers does not influence the adoption of improved maize farming varieties among the rural farmers in the area. This does not align

with a prior expectation given that both male and females has equal opportunities to adoption the result also shows that the Correlation analysis relationship between the socio economic characteristics and the level of improved maize production practices, the result revealed that there were negative, high and significant relationship between age, household size, farming experience and adoption of maize practices. This implies that increase in age, household size, farming experience will lead to

slight increase in adoption level. The result also revealed that there were negative, low and significant relationship (correlation) between farm size ($r = 0.766$) and adoption level of maize practices. This implies that as farm size increases there will be corresponding increase in the level of adoption. However, household size, farm size, farming with the level of adoption of maize practices. This implies that increase or decrease these variables has no effect on the level of adoption on maize practices.

Table 6: multiple regression analysis showing the relationship between the socio economic characteristics and the adoption of improved maize production practices

Variable name	Regression coefficient	Standard error	T-value	Level of significant
Constant	2.278	0.401	5.680	xxx
Age	0.499	0.087	5.736	xxx
Sex	0.060	0.117	0.518	Not Significant
Educational status	0.013	0.011	1.180	x
Secondary occupation	0.014	0.009	1.555	xx
Cooperative society	0.472	0.053	8.905	xxx
Land ownership	0.321	0.400	0.803	x
Access to extension services	-0.005	0.007	-0.714	Not Significant
F-ratio	108.31			
R ²	0.819			
AdjR ²	0.827			
Standard Error of Estimates	0.303			
Durbin-Watson Constant	1.420			

Source: Field survey, 2020

Note xxx at 1% xx at 5% x at 10%

5.0 CONCLUSION AND RECOMMENDATION

The study therefore concludes that socio-economics characteristics of the farmers has significant relationship with the adoption of improved maize production practices in the study area. Hence the following were recommended:

- i. Public and private financial institution should provide loan with low interest rate to the farmers so as to adopt many improved farming practices on maze production.
- ii. Farmers should encourage labour by providing good remuneration such as provision of food and other welfare package for them as this will encourage them on the farm and will reduce the cost of labour
- iii. Government should subsidize the cost of input such as planting

materials so that farmers can easily procure them

- iv. Government and farmers association should subsidize the cost of insecticides and herbicides for farmers for the control of pests and diseases

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