

Small-Scale Maize Farmers' Access to Farm Inputs in Abuja, Nigeria

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ABSTRACT

The study evaluated small-scale maize farmers' access to farm inputs in Abuja, Nigeria because one of the most limiting factors in the development of agriculture in Nigeria is inadequate access to farm inputs. To cover the study area, a multi-stage sampling technique was adopted while structured questionnaires were used for data collection. A total of 160 maize farmers were interviewed in four agricultural zones (40 farmers from each zone). Data were analysed using mixed factorial analysis of variance; mean separation was carried out at the 5 percent probability level. The results showed that maize farmers' access to the different types of farm input differed significantly ($p < .05$). Of all the farm inputs, land was the most accessible with a mean access value of 3.03 while the least accessible farm inputs were tractor services (0.64) and loans (0.58). Furthermore, the location of the farmers in Abuja had a significant ($p < .05$) interaction effect on farmers' access to farm inputs. On the contrary, there were no significant differences ($p > .05$) in the mean responses of the maize farmers' in the four different agricultural zones with respect to access to farm inputs. Generally, the grand mean access value (1.73) indicated that the maize farmers had poor access to all the farm inputs. Based on the grand mean access value, it was concluded that access to the farm inputs was poor; hence it was recommended that Input and Farm Information Service Centres should be established under a public-private partnership to increase farmers' access to inputs, especially the most limiting inputs.

Keywords: farm inputs, maize farmers, mean access value

INTRODUCTION

Maize is a staple food of great socio-economic importance in Sub-Saharan Africa, which includes Nigeria, where it has been a part of the diet of Nigerians for centuries (Iken & Amusa, 2004). The cultivation of maize was formerly for subsistence purposes but it has gradually become an important commercial crop on which many agro-allied industries depend as a source of raw material (Iken & Amusa, 2004). It has great dietary and economic importance

and since the nineteenth century, maize has been the prime source of grain for feeding animals (Guy, 2001). According to Fasoranti (2008), apart from animal feeding, it is one of the keys to agro-allied industrial raw materials from which many products are manufactured. With regards to food, processed maize is used in several ways; it can be eaten roasted or boiled, and can also be cooked with beans. In some local areas, it can be pounded with yam, cocoyam and water yam (Fasoranti, 2008).

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Thus, while there is no doubt that maize is a very important crop, since January 2006 according to Nwajiuba and Ejiogu (2008), the international prices of maize and other food crops have more than doubled. This is discouraging because Nwajiuba and Ejiogu (2008) observed that staple foods like rice, maize and wheat account for a larger share of the food budget in developing countries than in developed countries. With the increase in prices, every nation now faces the challenge of improving the productivity of maize which has been ranked as the third most important cereal crop in Nigeria after sorghum (Philip, Kehinde, & Ganiyu, 2006). This is a vital task because the basic thrust of the economics of agricultural production at the micro level is to assist farmers to attain their objectives through the efficient allocation of farm resources over a given period of time. However, the efficient allocation of farm resources is dependent on the farmer's accessibility to the resources. In other words, an increase in the production of maize is difficult without adequate access to the farm inputs that are needed. Hence, the main objective of this research was to evaluate small-scale maize farmers' access to farm inputs in Abuja, Nigeria. Similar studies have been conducted by Ajah, Unamma, and Nwachukwu (2010), Amber, Behraman, and Quisumbing (2011) and Yemisi and Aisha (2009), but there is still need for a comprehensive study of farmers' access to farm inputs because the available evidence indicated that most of the authors placed more emphasis on a few inputs like land, fertilizer, and credit. This research will not only contribute to the information available on farmers' access to farm inputs but also provide information to national and international agencies seeking a way of improving farmers' access to farm inputs especially the most limiting farm inputs. The choice of Abuja is very important because Abuja lies in the transitional zone between the grain-dominated agriculture of the North and the predominantly root-crop farming of the forest zone; it lies in the transitional zone between the savannah in the North and forest vegetation in the South, so that it is

endowed with tremendous potential to support agricultural production. Its good location makes it possible for root, grain, and other crops to grow in the area. Maize is the dominant grain crop in most parts of Abuja (Dawan, 2000).

METHODOLOGY

The study was conducted in Abuja, Nigeria which is located between latitudes $8^{\circ} 25'$ and $9^{\circ} 25'$ North of the equator and longitudes $6^{\circ} 45'$ and $7^{\circ} 45'$ East of Greenwich. The population for the study comprised all small-scale maize farmers in Abuja. The sampling technique adopted was multi-stage sampling and a semi-structured questionnaire was used for data collection. The multi-stage sampling was based on the pattern of the Agricultural Development Programme (ADP) in Abuja, with the area delineated into 4 agricultural zones—namely, Central, Eastern, Northern and Western—with 12 agricultural blocks and 93 cells (Abuja Agricultural Development Programme, 2009). In each of the four agricultural zones, two agricultural extension blocks were randomly chosen giving a total of eight agricultural extension blocks in the study. From each of the chosen agricultural extension blocks, 10 cells were randomly chosen to give a total of 80 cells. In each of the cells, three maize farmers were randomly selected and interviewed. From the questionnaires that were returned, two properly completed ones from each cell were used for the analysis, resulting in a total of 40 respondents per agricultural zone. For the four agricultural zones, a total, of 160 respondents were used for the analysis. An equal number (40 from each of the agricultural zones) was used in order to fulfil the data requirement of the factorial analysis. By implication, there were 40 replications in each of the four agricultural zones. The farm inputs considered were land, labor, loan, improved maize variety, herbicide, insecticide, rodenticide, fertilizer, tractor services, storage materials, and processing equipment. Combinations of these inputs and the locations produced a 4×11 mixed factorial

design. This analysis was consistent with the methodology used by Andy (2005), David (2004), Fredrick and Wallnau (2004), Harry and Steven (1995), Edward and Bruce (1993), and Fred (1977). The model specification for the analysis is provided in Equation 1:

$$Y_{ij} = \mu + L_j + T_i + TL_{ij} + e_{ij} \quad (1)$$

Where:

Y_{ij} = Individual maize farmers' response regarding his/her access to each of the farm inputs,

μ = General mean,

T_i = Refers to the different types of farm inputs,

L = Refers to the locations of the four agricultural zones in Abuja stated above,

TL_{ij} = Interaction effects of location and access to input type, and

e_{ij} = Error term.

The farmers' levels of access to each of the 11 inputs were verified using a scale where 4 = very

highly accessible, 3 = highly accessible, 2 = fairly accessible; 1 = very low access, and 0 = not accessible at all.

These scores were used for data analysis in line with the study conducted by Shah and Madden (2004) and a statistical package (SPSS 15.0; SPSS Inc., Chicago, IL, USA) was used to run the analysis and mean separation was done using the Bonferroni model (Andy, 2005) with testing at the 5% probability level.

RESULTS AND DISCUSSION

Table 1 shows the mean responses of the farmers with regard to their access to farm inputs. The data revealed that irrespective of agricultural zone, access to land was the highest with a mean access value of 3.03 followed by access to improved maize variety with a mean access value of 2.54. The inputs that maize farmers had least access to were

Table 1 Mean responses of the maize farmers on their access to farm inputs

Input type	Abuja Agricultural Zones				
	Northern Zone	Western Zone	Central Zone	Eastern Zone	Pooled data
Access to land	2.68	3.13	3.10	3.20	3.03
Access to labor	2.08	2.18	2.80	2.18	2.31
Access to loan	0.55	0.85	0.55	0.35	0.58
Access to improved maize seed	2.28	2.53	2.65	2.70	2.54
Access to herbicide	1.95	2.20	2.00	2.20	2.09
Access to insecticide	2.05	2.55	1.93	2.48	2.25
Access to rodenticide	2.03	2.53	1.70	2.03	2.07
Access to fertilizer	1.23	1.43	1.35	1.68	1.42
Access to tractor services	0.45	0.75	1.03	0.35	0.64
Access to storage materials	1.55	1.65	1.08	1.78	1.51
Access to equipment for processing maize	1.25	1.22	1.20	1.05	1.18
Grand mean access value	1.65	1.91	1.76	1.81	1.78

Source: Survey data, 2010

loan and tractor services with mean access values of 0.58 and 0.64, respectively. Poor access to loan by farmers has been reported by Mohammed, Idi, Malumfashi, and Katikpo (2007), Mohammed, Idi, Malumfashi, and Musa (2005), and Omoregbe and Okoedo-Okojie (2009). Poor access to loan does not encourage farmer expenditure in farm production as discussed by Frank (2007) who stated that farmers that lack adequate access to loan cannot purchase needed inputs such as pesticides, herbicides, and improved planting materials nor can they replace worn-out farm inputs, amongst other items.

On the other hand, irrespective of the type of farm input considered, the agricultural zone that had the highest level of access ("highly accessible") to all the farm inputs was the Abuja West Agricultural Zone (1.91) followed by the Abuja East Agricultural Zone (1.81). Based on the pooled data, none of the inputs was "very highly accessible" to the maize farmers. The mean response values indicated that the maize farmers had "fair" access to labor, improved maize variety, insecticide, herbicide, and rodenticide. On the other hand, access to fertilizer, storage materials, and processing equipment was "very low" while access to loan and tractor services tended towards "very low". Generally, the grand mean access value was 1.78 implying that maize farmers' access to the inputs in Abuja was poor. Since Abuja is the capital of Nigeria, the *a priori* expectation was that access to inputs by farmers will be high because this area is the center of all intervention programmes designed to improve rural communities; but this was

not indicated by the mean responses. This is not encouraging as according to Adeyemo (1990), the existence of differential access to production resources like capital hinders farmers participation in agricultural development and this inevitably tends to reduce both productivity on the farms and the overall expansion of the agricultural sector.

Table 2 shows the ANOVA result of the maize farmers' access to farm inputs and indicates that there was a significant difference in maize farmers' access to the different farm inputs. In addition, there was a significant interaction effect between location and access to the farm inputs. The implication of the interaction effect (location \times access to farm inputs) is that access to some of the farm inputs depended on the location of the farmer in Abuja. Furthermore, the mean responses of the maize farmers in the four agricultural zones did not differ significantly from each other, indicating that the problems faced by the maize farmers in accessing farm inputs were common to all agricultural zones. Based on the results, mean separation was done or carried out using a Bonferroni model (Andy, 2005) to determine the mean responses that were significantly different from each other.

Table 3 shows the mean separation of maize farmers' responses regarding access to farm inputs. The table reveals that maize farmers' access to land was significantly higher than other inputs (3.03). Access to improved maize variety (2.54), labor (2.31), and insecticide (2.25) did not differ significantly. Statistically, access to labor (2.31), insecticide

Table 2 ANOVA results of maize farmers' access to farm inputs

Source of Variation	Df	SS	MS	F-cal	P-value	Sig
Input types	10	976.51	97.65	125.53	0.00	S
Interaction	30	68.34	2.28	2.93	0.00	S
Error	1560	1213.51	0.778			
Location	3	1.45	0.493	1.35	0.26	Ns
Error	156	57.18	0.307			
Total	1759	2317				

Source: Survey data, 2010. Df = Degrees of freedom, SS = Sum of squares; MS = Mean sum of squares; F-cal = F test calculation; Sig = Significance of the F test, S = significant, Ns = Not significant.

(2.25), and herbicide (2.09) were equal but significantly higher than the other remaining farm inputs. Access to storage materials (1.51) did not differ significantly from access to fertilizer (1.42). Although the mean access value for storage materials did not differ significantly from fertilizer, it was significantly different from that of processing equipment (1.18), tractor services (0.64) and loan (0.58). Furthermore, access to tractor services (0.64) and loan (0.58) did not differ significantly from each other but were significantly different from the other inputs. The mean access values for tractor services and loan were the least among all the farm inputs.

The observed significant differences were expected because all the inputs are not the same and are not always readily available at all times and all places in rural communities. Apart from this, the costs of acquiring these inputs are not the same. Another issue that may have caused the differential access to the farm inputs is education because according to Adeyanju (1993), education aims at providing people with opportunities to acquire knowledge and skills necessary to cope with the changing environment throughout their lives. Spore (1993) further stated that one of the obstacles that hindered women farmers' access to credit was that

they could not complete bank forms because they were illiterate. This is a clear indication that education can cause differential access to farm inputs; hence, farmers that are not well educated may not have adequate access to those inputs that require filling out forms or official documentation.

CONCLUSION AND RECOMMENDATIONS

One of the greatest challenges facing small-scale farmers in Abuja, Nigeria is access to farm inputs for maize production. The challenge has posed a serious threat to the production of maize and other cereal crops. Consequently, this study evaluated small-scale maize farmers' access to farm inputs in Abuja, Nigeria. The study was necessary because the overall objectives of agricultural development in Nigeria are to ensure adequate food supplies, to expand export crop production, to produce raw materials for domestic industries, and to create rural employment opportunities. (Koyenikan, 2008). Maize is one of the crops that Nigeria must produce in order to achieve these objectives, since it is a source of food to humans and also is an important raw material

Table 3 Mean separation of maize farmers' access to farm inputs

Input types	Mean access value
Access to land	3.03 ^a
Access to improved maize seed	2.54 ^b
Access to labor	2.31 ^{bc}
Access to insecticide	2.25 ^{bc}
Access to herbicide	2.09 ^c
Access to rodenticide	2.07 ^c
Access to storage materials	1.51 ^d
Access to fertilizer	1.42 ^{de}
Access to equipment for processing maize	1.18 ^e
Access to tractor services	0.64 ^f
Access to loan	0.58 ^f
Grand mean	1.78

Note: Values with the same lower case superscript are not significantly different.

Source: Survey data, 2010

for a number of agro-based industries which are rapidly increasing throughout the country. From the findings, it was noted that the most accessible (least limiting farm input) was land while the least accessible farm inputs (most limiting farm inputs) were tractor services and loans. However, since the grand mean access value was less than 2 and was the same in all the agricultural zones, it can be concluded that maize farmers' access to farm inputs in Abuja is poor. Consequently, it is recommended that efforts should be intensified to improve the access to farm inputs by small scale farmers especially as part of the transformation agenda of the present administration. In particular, farmers should be involved in the procurement and distribution process and even encouraged to form co-operatives that will establish distribution companies. The government may also consider the establishment of Inputs and Farm Information Service Centres under the existing Public Private Partnership Framework so that access to farm inputs can be improved, especially for the most limiting farm inputs like tractor services and credit facilities.

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