

CONSTRAINTS ON EFFECTIVE UTILIZATION OF FERTILIZERS FOR IMPROVED CROP PERFORMANCE BY FARMERS IN AKWA IBOM STATE

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ABSTRACT

This study examined the constraints on farmers use of fertilizers for improved crop performance in ibesikpo Asutan Local Government Area of Akwa Ibom State. A sample of 200 contact farmers were studied using mean and Person Product Moment Correlation (r). This paper established a link between agricultural extension education, price of fertilizers, farmers' knowledge of fertilizer use and their utilization of this input. The findings identified a number of constraints on fertilizer usage to include price of fertilizer, area of farm land, transportation cost, agricultural credit availability, illiteracy, farmers' income level, and poor extension education. To eliminate these constraints the paper suggested the intensification of extension education, elimination of the activities of fertilizer merchants (middlemen) and making of agricultural credits available and accessible to farmers in the rural area.

Keywords: Constraints, NGOs, "Black Market", Production Technology, High Price of Fertilizer.

INTRODUCTION

Agriculture is an economic activity which supplies the food to satisfy nutrition necessities. Nigeria, like many other developing countries, is struggling to keep its food production commensurate with its population growth. Basically, agricultural activity is production, rising of livestock with inclined aspect of aquaculture coupled with processing and marketing of farm produce. The Nigerian government, in recognition of the primary role of agriculture is intensifying effort to encourage its citizens to engage in continuous massive food production through provision of agricultural inputs such as fertilizers, herbicides, insecticides, and improved seedlings to farmers at subsidized rate to boost food production. This laudable attempt by government and non-governmental organizations (NGO's) does not sufficiently pay-off as the Nigerian agriculture is afflicted by numerous problems which have made it rather difficult for the country to graduate from the basic subsistence level of agricultural production (Baanjo, 2004). The role of fertilizers in increasing food production has long been recognized by farmers in Nigeria though not all. Increased population coupled with a progressive decrease in soil fertility over the years has made fertilizer usage in the country imperative (Chiezey and Fayock, 1989). Food and Agricultural Organization (FAO, 2000) defined fertilizers as natural or manufactured material which contains at least five per cent of one or more of the three primary nutrients-nitrogen, phosphorous and potassium. The use of fertilizers is needed for all types of crop production in order to increase yield as well as better (nutrition induced)resistance to some diseases and climate stress thereby increasing farmers economic returns in addition, due to more effective production. There is no doubt that judicious application of inorganic fertilizers has been responsible for large increases in crop yield in commercial agriculture throughout Africa as well as the rest of the world (Murwira, 2003). Universally, the problem with fertilizer is their cost (Okpongette, 1996; Tanko and Mbaraso, 2000; Sanchez, 2004). According to Borlaug (2004) the costs of transporting fertilizers is one of the predicament on fertilizer use. He added that to move one ton of fertilizer, 000 kilometers cost about US\$ 15 in United States of America, about US\$30 in India and about US\$100 in Africa. Ayodele and Barau (1997) noted that making fertilizer available as and when needed by farmers has not been smooth engendering frequent modification and reviews. Even when the fertilizer is available and accessible to farmers, fertilizer merchants are price-takers (CBN, 1999). This has created room for fertilizers to be supplied to "non-genuine" farmers who in turn re-sell them at "back markets". Evidently, Appleton (2001) identified a number of factors that have constrained fertilizer use in Africa to include limited financial means and risk-taking capacity of farmers, poor and expensive distribution systems for fertilizers, lack of adequate knowledge of fertilizer application, lack of awareness, attitude of middlemen and government fertilizer policy. Garner and Baanante (1995) enumerated the major factors that determine fertilizer usage to include

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farm size, share of land under cropping, access to credit, farming system, prices of and access to timely and adequate supplies of fertilizer and other variable inputs and access to information about the use of fertilizers and agricultural production technology in general. In consonance with the above findings, World Bank (1997), reported that lack of extension education and illiteracy can be another constraint on fertilizer use.

STATEMENT OF THE PROBLEM

Even though Nigerian farmers are doing their best to raise their level of food production, they are being constrained by poverty, high cost of inorganic fertilizer, illiteracy, poor knowledge of the functional use of fertilizers, lack of adequate incentives (in terms of land and agro-implementation) and poor credit facilities. In spite of government intervention through its agencies in fertilizer procurement, distribution and sales these problems still persist. According to Borlaug (2004) and Seyfeu (2004) the problem with fertilizers is high cost and high transportation cost as well as lack of agricultural training of farmers by extension agents as most farmers do not know how to read fertilizer manuals, let alone acquiring skills on fertilizer application. Although these constraints are numerous, there is obvious need for the farmers to adopt modern fertilizer practices or usage as an integral part of their farming to boost food production.

PURPOSE OF THE STUDY

The purpose of the study was to examine some of the constraints on effective utilization of fertilizers by farmers in Akwa Ibom State as an effort to suggest measures for eliminating them.

Specifically, the study intends to achieve the following objectives:

1. To find out how agricultural extension education influence farmers utilization of fertilizer for improved crop performance in Akwa Ibom State.
2. To assess the impact of price of fertilizer on farmers utilization for improved crop performance in Akwa Ibom State.

RESEARCH QUESTIONS

1. In what way does agricultural extension education affect farmers utilization of fertilizers for improved crop performance in AKS?
2. What is the impact of the price of fertilizers on farmers utilization for improved crop performance in AKS

HYPOTHESES

1. There is no significant relationship between agricultural extension education and farmers utilization of fertilizers for improved crop performance in AKS.
2. There is no significant relationship between the price of fertilizers and its utilization by farmers for improved crop performance in AKS

METHODOLOGY

Akwa Ibom State occupies the south-east corner of Nigeria. The State is bounded in the north by Cross River and Abia States and in the south by the Atlantic Ocean. To the East, it is bounded by Cross River State and in the west by Rivers and Abia States. A survey design was used in this study to obtain information from the samples. The study was conducted in five local government areas of Akwa Ibom State and it covered the two agricultural extension blocks located at Obot Idim and Mbak Ekpe in the study area. A sample size of two hundred (200) contact farmers were randomly selected. The instrument used was structured questionnaire tagged "Farmers Utilization of Fertilizers Questionnaire" (FUFQ) which was developed and used for obtaining relevant information from the respondents for data analysis. The instrument had a four-point rating scale of strongly agreed, Agreed, Disagreed and Strongly Disagreed response options. Data were collected by personal contact with the respondents and with the assistance of extension agents. Data collected were analyzed using mean for answering the research questions and significance of Correlation Coefficient (r) was tested using t-test. All the hypotheses were tested at 0.05 level of significance.

RESULTS

Table I: Mean responses of farmers on the Influence of Agricultural Education on Farmers Utilization of Fertilizers

S/No	Variables	\bar{X}	Remarks
1	I was trained by extension Agents on how to use fertilizers	3.89	Agreed
2	I can read and understand fertilizer manuals	2.46	Disagreed
3	My education status help me to use fertilizer	2.47	Disagreed

S/No	Variables	\bar{X}	Remarks
1	I can apply fertilizer as demonstrated to me by extension agent	2.95	Agreed
2	I crops perform better under fertilizer	2.48	Disagreed
3	Special training programme are provided for farmers on fertilizer use in my area	1.41	Disagreed

N= 200; cut off point for agreed is X = 2.50 and above.

The data in table 1 above revealed that the respondents rated most of the items on agricultural extension education above the cut-off point of X = 2.50. this means that extension education on fertilizer usage is effectively carried out thus creating awareness on the existence and use of fertilizers in Akwa Ibom State despite the fact that there is no special training for farmers on fertilizer usage.

Table II: Mean responses of farmers on the Influence of Price of fertilizers on farmers utilization

S/No	Variables	\bar{X}	Remarks
1	My income is low, I cannot buy fertilizer	3.80	Agreed
2	I have manure from livestock so I don't need fertilizer	2.96	Agreed
3	I buy manure cheaper than fertilizers	4.0	Agreed
4	The size of my farm is small, I don't want fertilizers	3.75	Agreed
5	Access to credit facilities enable me to use fertilizers	1.98	Disagreed
6	The types of crop grown is responsible for use of fertilizer in my farm	2.23	Disagreed
7	The price of fertilizer is cheaper for the farmers to buy	2.0	Disagreed

N = 200; cut off point for agreed is X = 2.50 and above.

The data in Table II indicated that most of the respondents agreed on 3 items above the cut-off point on income of farmers, price of manure and availability of livestock droppings as substitute to fertilizers, and size of the farms. Also the respondents disagreed below cut-off point on access to credit, price of fertilizer and cropping system. By implications some farmers do not use fertilizer due to high cost and availability of animal manure.

FINDINGS AND DISCUSSION

The study as shown on Table I revealed that agricultural extension education of farmers on fertilizer utilization was not accorded much priority by extension agents in five Local Government Areas. The study also indicated that those farmers trained on fertilizer use actually appreciate the importance of this in part by applying it on their crops. Based on the result what is lacking is government organized training for farmers. The study also identified high cost of fertilizer as another constraint on fertilizer use by farmers. It also revealed that farm size, access to credit facilities and price of manure hindered effective use of fertilizers by farmers (see table II). Most of the farmers therefore preferred manure from livestock to fertilizers because they were cheaper. Some farmers there do not use fertilizers because of their cropping system. A survey design was used in this study to obtain information from the samples. The study was conducted in five (5) Local Government Areas of Akwa Ibom State and it covered two agricultural extension blocks located in each of the study area. A sample size of two hundred (200) contact farmers were randomly selected on the whole consisting of twenty (20) from each block in the five Local Government Areas randomly selected. The Local Government Areas were Ibesikpo-Asutan, Ikot Ekpene, Etinan, Abak and Eket Agricultural Zone of the State.

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HYPOTHESIS I

A t-test of hypothesis I revealed a high positive relationship between agricultural extension education and farmers utilization of fertilizers. This is in consonance with the findings of World Bank (1997) that lack of extension education and illiteracy poses a constraint on fertilizer use. Thus, the calculated t-value of 2.85 on hypothesis I table being higher than the critical t-value of 2.015 totally rejects the null hypothesis and confirms the fact that most farmer's inability to read and understand instruction on fertilizer packages has discouraged a lot of farmers on the use of inorganic fertilizers.

HYPOTHESIS II

The test of hypothesis II also revealed a high positive relationship between the price of fertilizers and farmers utilization. When t-test was conducted, the null hypothesis was rejected because t-calculated 2.98 was higher than t-critical (2.13). This finding is in agreement with Appleton (2001) who identified limited financial means of farmer, expensive distribution system as major constraints on fertilizer use. The analysis also agrees with Borlaug (2004) who suggested that farmers should use organic manure alongside with inorganic fertilizers as organic manure improves soil organic matter.

Table I: Analysis of relationship between Agricultural Extension Education for farmers and their utilization of fertilizers.

X	Y	X ²	Y ²	XY
184	16	33856	256	2944
119	81	14161	6561	9639
189	11	35721	121	2079
178	22	31684	484	3916
40	160	1600	25600	6400
109	91	11881	8281	9919
60	140	3600	19600	8400
$\Sigma X = 879$	$\Sigma Y = 521$	$\Sigma X^2 = 132503$	$\Sigma Y^2 = 6090$	$\Sigma XY = 43297$

$$R = 2206$$

Since the calculated t-value (2.85) is higher than the critical t-value (2.015) at N = 5 degrees of freedom at 0.05 level of significance, the null hypothesis is rejected. It means therefore, that there is significant relationship between agricultural extension education and farmers utilization of fertilizers for improved crop performance.

Table 2: Analysis of relationship between the price of fertilizers and farmers utilization for improved crop performance:

X	Y	X ²	Y ²	XY
186	14	34596	196	6400
90	110	8100	12100	9900
80	120	6400	14400	16800
119	81	1416	656	9639
95	105	9025	11025	9975
40	160	1600	25600	6400
$\Sigma X = 610$	$\Sigma Y = 590$	$\Sigma X^2 = 61137$	$\Sigma Y^2 = 63977$	$\Sigma XY = 59114$

t- calculated = 2.85; t-critical = 2.015; $p > 0.05$ and $df = N-2 = 7-2 = 5$.

The analysis revealed that the value of t-calculated (2.98) is higher than the critical t-value (2.13) at 0.05 level of significance at df of 4. The null hypothesis of no significant relationship between the price of fertilizer and farmers utilization is rejected indicating a high level of relationship between the price of fertilizer and farmers utilization of the product.

CONCLUSION

Based on this study, it can be concluded that the constraints on effective utilization of fertilizers are high transport cost, high price of fertilizer, lack of technical knowledge of fertilizer use, poor extension system, farm size, late arrival of fertilizer, price of manure and farmers' income. The study revealed that majority of farmers only heard of availability of fertilizers on radio during the cropping season.

RECOMMENDATION

Since the study is an attempt towards removing obstacles to increased food production in Agricultural Zones of Akwa Ibom State generally, it is recommended that:

1. Government through the Ministry of Agriculture should train and retain extension agents and send them to the rural areas to train farmers on effective utilization of fertilizers.
2. Non-governmental organizations, Women-in-Agriculture as well as members of farmers Cooperative Societies should be involved in the sales and distribution of fertilizers to the rural farmers.
3. Government through Micro-Credit Schemes and Cooperatives should finance the farmers to meet the challenging cost of fertilizers.
4. Ministry of Agriculture should ensure that the right types of fertilizers are supplied to the farmers at the right time.
5. Government through the Ministry of Agriculture should check the activities of fertilizer middlemen as it adds to the high cost of this agricultural input.

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