



EXAMINING FARMERS AWARENESS ON THE EFFECT OF CHEMICAL FERTILIZER IN SOBA LOCAL GOVERNMENT AREA OF KADUNA STATE.

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Abstract

Farmer's awareness on the effect of fertilizer was carried out in the study area (Soba local government). High concentration of fertilizer can have adverse effect on the environment; excessive use of fertilizer can cause serious ailments as well as inhibit crop growth and potentially affect the dynamics of several vector-borne diseases. The study

Keywords

Awareness, Farmers, effect, chemical, fertilizer.

INTRODUCTION

The Nigerian economic heavily depends on the oil sector of the economy among all other sectors, two third of her labour force is employed in agriculture, but the country depend on the importation of food (Odularu 2008). The attempt to improve the farmers productivity on method is not new because both the state and federal government have concentrated in promoting the diffusion of innovations, especially in agricultural sector, agricultural innovations such as new farming techniques, introduction to input such as fertilizers and new mechanization (machines such as tractors, planter,

reveals that farmers questionnaire, since that almost all the can share their some of the farmers interviewed farmers perception and gain were not literate favored the use of new insight into the enough to complete fertilizer without development and the questionnaire, proper management. It subsequent use of attempt were made to is therefore relevant chemical fertilizer. The translate the for government, NGOs source of the data for questionnaire to them and extension workers this work was the in Hausa language. The to enlighten the primary and study of fertilizer farmers on the safe secondary sources. innovation in Soba management of The basic instrument local government chemical fertilizers. used was the fertilizer area shows

harvesters) the new elected president (General Muhammad Buhari) said (Dawns and Mohr, 2016). However, certain factors have influenced the adaption of an agricultural innovation, the cultural compatibility in terms of similarities to what people are used to, the technological simplicity of an innovation especially among peasant farmers will also go a long way to influence adoption positively, the economic feasibility and profitably in terms of returns expected and the relative advantage of the innovation are crucial for its adoption (Rogers, 2007). The adoption of fertilizer appears to be relatively slow at the early period of introduction (1930) but it increased rapidly in subsequent years.

Chemical fertilizers have aided farmers in increasing plant nutrients in adverse weather conditions or during times when plants need additional nutrients, there are also several harmful effects of chemical fertilizer. Some of the harm chemical fertilizer may cause include waterway pollution, chemical burn to crops, increased air pollution, acidification of the soil and mineral depletion of the soil. The use of chemical fertilizers on crops can have adverse effect on waterways caused by chemical fertilizers, the over abundance of nutrients in the water reduces the amount of oxygen, the result of oxygen depletion causing the fish to die. Research has shown that organic based fertilizers are less leached into the ground water than chemical fertilizer (Sridar and Adeoye, 2003). As a result of this fact, the

use of organic based fertilizer has found favor in boosting crop production in Nigeria, because it is cheap and less likely to pollute the ground water as much as chemical fertilizer (Olowoake 2014).

It has been observed that people cannot live without the adoption of new and improved farming practices which is particularly significant in the developing of many countries, Nigeria in particular. As the population of Nigeria increase, food output has to increase and this requires the productivity of land to increase, the farmers have to increase and they have to accept new farming practices.

This study is not peculiar to the discipline of geography alone; rather it spread across several disciplines. However, the great geographers and in particular agricultural and rural geographers are interested in the diffusion of innovation and its impact; because it is a decision making process that will eventually have an impact on the landscape. (Roeling *et al.* 2009).

The research intends to find out farmers awareness on the effects of chemical fertilizer with particular references to Sabo local government area of Kaduna state and the problems they face and suggest possible solution. There is an increasing concern that the continuous use of chemical fertilizers on soil depletes the soil from essential nutrients, it causes air pollution and eutrophication.

AIM OF THE STUDY

The aim of the study is to examine the awareness of farmers on the effect of fertilizer on the environment in Soba Local Government Area of Kaduna State; the aim can be achieved through the following objective; to assess the awareness of farmer's on the effect of chemical fertilizer in the environment?

STUDY AREA

Soba local government is located along Zaria – Jos road in Kaduna and the area covers approximately 3442 squares kilometers and it lies between latitude 9^o and 11^o north and longitude 7^o - 50 and 8^o 5^o north east . Sabo local government area is one of the local governments in Kaduna state, It was carved out of Zaria local government area, Maigana the administrative

headquarters is about 25 kilometers from Zaria along Jos high way, Sabo local government has undergone notable physical development, many modern buildings have been constructed for the secretariat and staff quarters (Federal Land and Survey Kaduna 2005).

Soba local government also have over one hundred and fifty two villages. The main ethnic groups in these areas include Hausa and Fulani. In addition to these ethnic groups, there are various settlers from other parts of the country such as Igbos (mostly business men and women) Yorubas, Nupes, Gwari and lot more (Hore P.N. 2008).

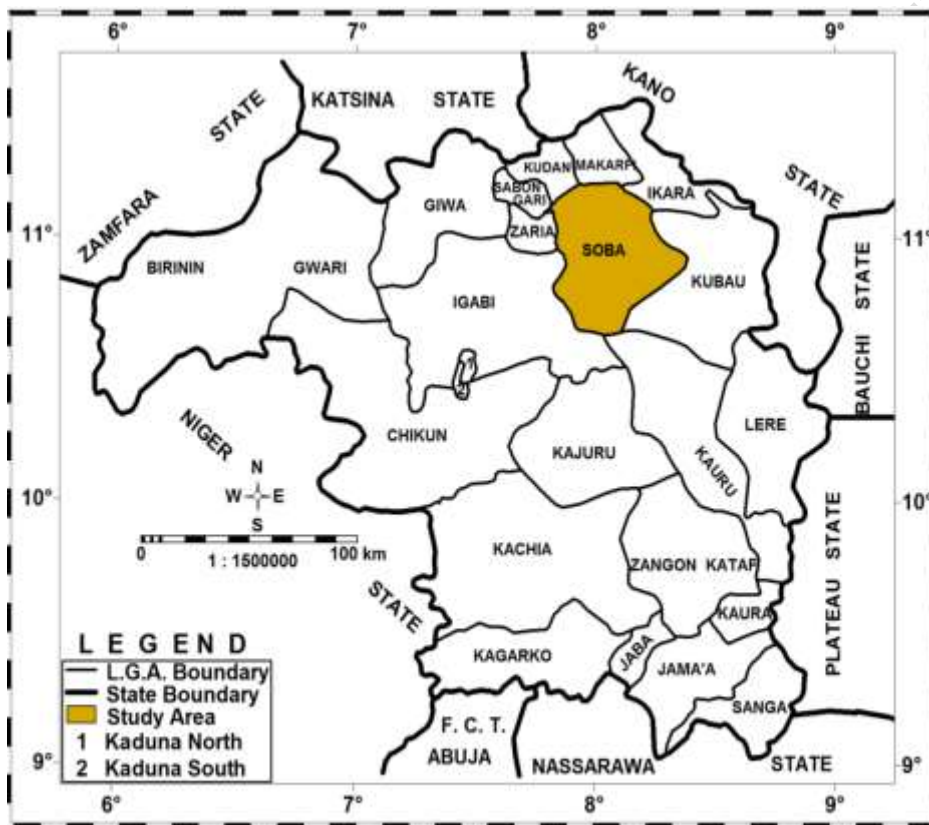


Fig 1: Kaduna State Showing Soba Local Government Area.
Source: Geography Department Federal College of Education Zaria.

Figure 1 Map of Kaduna state showing the study area

This is mainly tropical ferruginous type with some sand deposits. The fadama black soil type is restricted to the major river valleys where irrigation takes places (Mortimer, 2009). This is of savannah and woodland type with shrubs such as isobema, doka and tress like mango, baohab, shea butter and locust beans. The grass is luxuriant in the wet season but became dry and brownish in the dry season. The trees are of economic

importance and are used for domestic and commercial purposes. They include shea butter, baobab and locust bean tress (Mortimer, 2009). The major occupation Soba local government area is farming, the main agricultural produce obtainable here includes maize, sorghum, millet, cassava and tobacco which is produced in commercial quantities (Drost, *et al* 2009). There are small scale industries such as the Maigana rice mill, which takes care of products from various rice fields scattered in an around the local government. There are also commercial activities such as trading, where products like guinea corn, rice and yams are exchanged with manufactured goods (Drost,*et al*2009)

METHODOLOGY

The study population for this study are farmers in Soba local government area specifically the sample farmers within the stratified locations. Based on the population size, the researchers used stratified sampling technique that is, the population was first divided into two or more groups called strata and then random selection was made within each stratum.

Hence from the major agricultural villages, 30 farmers were selected randomly as seen in the table.

Table 1 number of sample selected from the stratified locations.

S/N	Village	Sample Size
1	Maigana	30
2	Sabuwa	30
3	Yakasai	30
4	Rahama	30
Total		120

Source; Field survey 2016

The source of the data for this study was the primary and secondary sources. The basic instrument used was the questionnaire, some of the farmers were not literate enough to complete the questionnaire attempt were made to translate the questionnaire to them in Hausa language. Permission to undertake the study was taken from the Sarkin Noma i.e. the head of farmers in each of the sampled villages to ensure smooth and clear administration of questionnaires. One hundred and twenty (120) questionnaires were randomly distributed to the farmers, that is, 30 copies

of questionnaire were distributed to the farmers in each of the four (4) sampled villages.

Data presentation and discussion

The data represented in this chapter were collected and processed using both qualitative and quantitative techniques. A total of one hundred and twenty (120) copies of questionnaire were administered to farmers in Soba local government area.

Table 2: Socio-economic status of the respondents

Status	Frequency	Percentage (%)
Married	76	63
Single	34	28
Divorced	3	3
Widow(er)	7	6
Educational Qualification		
Non formal	11	9
Primary	51	43
Secondary	40	33
Tertiary	18	15
Years of Farming Experience		
0-5yrs	4	3
6-10yrs	14	12
11-15yrs	33	28
16-20yrs	54	45
21- above	15	12
TOTAL	120	100

Source: Field Survey, 2016

Table two shows that 76(63%) of the respondents are married, while 3(3%) are divorcees. This implies that the highest percentage of the respondents are married therefore most of them are engage in farming activities to carter for the needs of their family while the lowest percentage are divorcees. The table also shows that majority of the respondents stopped at primary level of education 51(43%) while minority have non-formal education. This implies that most of the farmers are not well educated, it is generally believed that one's educational attainment

determine ones level of exposure. It also shows that 54 (45%) of the respondents have being into farming for about 16-20yrs while 4(3%) of the respondent have less experience about it. This implies that majority of the farmers are not novice to farming activities, they have been into farming for decades so they have much experience on farming.

Table 3; factors that influences the adoption of fertilizers in the study area.

	Frequency	Percentage%
Type of fertilizer mostly used		
Organic manure	44	37
Chemical fertilizer	76	63
Years of using Chemical Fertilizer		
0-5yrs	11	9
6-10yrs	19	16
11-above	90	75
Yield Outcome after using the Fertilizer		
Best yield	65	54
Better yield	45	38
Fair yield	10	8
Factors leading to fertilizer decision		
Price	26	22
Environmentally friendly	2	2
Nutrient content	53	44
Brand	34	28
Odour	5	4
Awareness on negative effect of fertilizer		
Yes	51	43
No	69	57
TOTAL:	120	100

Source: Field work 2016

Table three indicates that most of the farmers 76(63%) use chemical manure in their farms only 44(37%) use organic manure, it also shows that 90(75%) of the survey population have been using chemical fertilizers for about 11years and above, it is assumed that having been using fertilizer for many years therefore they have experience on both its advantage and disadvantage. The table shows that majority 65(54%) of the respondents attest to the fact that they have the best of yield when fertilizer is administered while few of the farmers 10 (8%) have fair yields when they administered chemical fertilizer, this is in line with (Hunt, 2017) that

chemical fertilizers have aided farmers in increasing plant nutrients in adverse conditions or during times when plants needs additional nutrients. The most important factor of the farmers leading to fertilizer decision is the nutrient content while environmental friendliness is the least factor considered. There is an increasing concern that continuous use of the fertilizers on the soil depletes the soil of essential nutrients. According to findings, 57% of the farmers are not aware of the negative impact of chemical fertilizer on the environment, this can be as a result of the farmers not been well educated and enlightened even with their experience of been into farming for decades, it is generally believed that at least one's educational attainment determine ones level of exposure .

Fig1, Effect of excessive use of chemical fertilizer can pollute

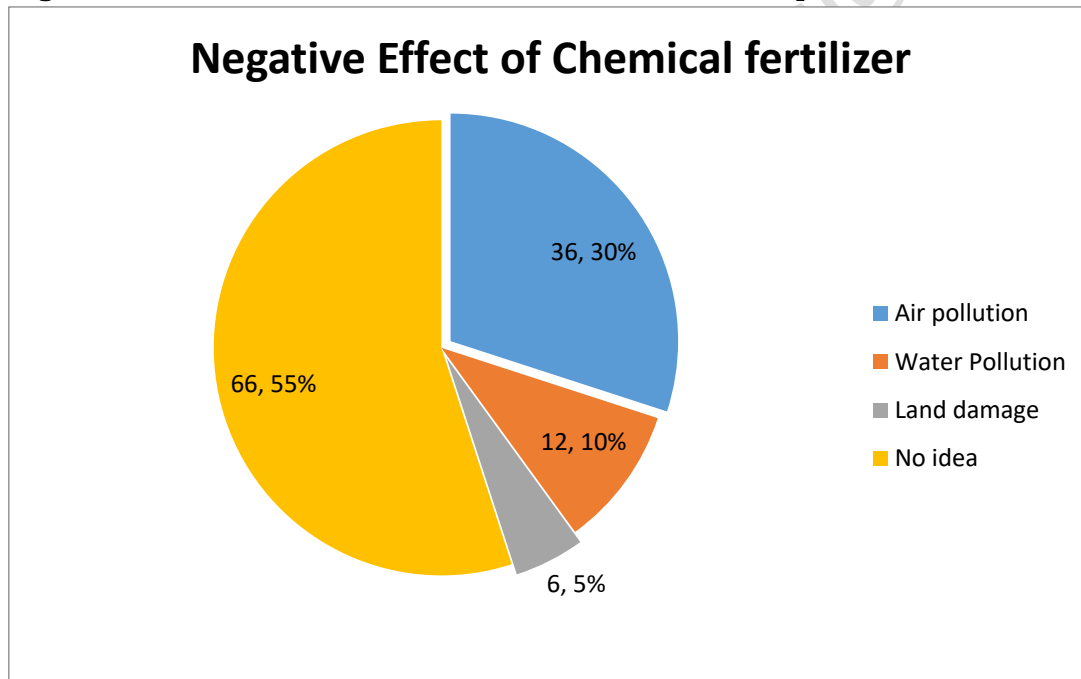


Fig 1 above shows tend to give emphasis on how aware are the farmers on the effect of chemical fertilizers, More than half 55% of the sampled farmers are not aware of the effect of chemical fertilizers, they totally don't have idea on how chemical fertilizers negatively affects the environment. The Sum total of 45% have little idea on the effect of chemical fertilizer, out of which 30% mentioned air pollution to be an effect, 10% are of the view that chemical fertilizer can affect water quality while the remaining 5% think it can cause damage to the soil. This strongly implies that most of the farmers are not aware of the negative effects of chemical fertilizers. The

excessive use of chemical fertilizer on crops can have adverse effect on waterways caused by chemical runoff of the excess fertilizer, over application can also cause the leaves of the plant to wither and may cause plant to die, the excess nitrogen used can contribute to the release of green house gases such as carbon dioxide and nitrous oxide into the atmosphere, increased air pollution, acidification of the soil and may cause respiratory ailments, cardiac diseases and several cancers (Hunt, 2017).

Conclusion

This implies that fertilizer is the best innovation because it brings out positive yield to the respondents of Soba local government, majority have tested and they have seen the great impact after using it while only few of the respondent gave a negative answers toward the use of fertilizer. This implies that fertilizer innovation has greatly influenced and increased the agricultural output of the respondents because of its functional role, but it is quite worrisome to note that the farmers are not aware of its implications when used excessively. The most important factor of the farmers leading to fertilizer decision is the nutrient content while environmental friendliness is the least factor considered. There is an increasing concern that continuous use of the chemical fertilizers on the soil depletes the soil of essential nutrients. If properly managed, fertilizers benefit crop production without causing environmental problems, in any management the manager must be aware of the possible negative consequences of mismanagement.

Recommendation

The use of fertilizer is an accepted technique of farming in Soba Local Government area and this technique despite limitations brought about by the physical conditions of the area diffuse in a contagious manner to remotes areas of the locality. It is therefore significant for government, NGOs and extension workers to enlighten the farmers on the safe management of chemical fertilizers.

Intensive and extensive research should develop general principles concerning innovation diffusion in Nigeria and this is why government should invest more money in the establishment of more research institutions and the development of the existing ones.

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