

Soil Fertility And Management, A Sure Way Towards Food Production In Ogoja South-South Nigeria.

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Abstract: - Ogoja is an agrarian community endowed with vast acres of agricultural land, human and material resources needed for agricultural development, poverty reduction and sustainable food production. But the challenges posed by soil problems in agricultural production have been an issue of general concern among farmers in the study area. This concern is attributed to the soil management practice adopted in agricultural production at various levels. This study was conceptualized to investigate on soil fertility and management as a sure way towards food production in Ogoja local government area (LGA) of Cross River State. A well structured questionnaire were employed to collect vital information from 80 respondents sampled from each of the five communities that make up Ogoja LGA, using multistage sampling techniques. Data collected from the study were analyzed using descriptive statistical tools. The result showed that majority (80%) of farmers agreed that fertile soil promote crop yield, 60% of the farmers accepted that fertile soil do not exist in Ogoja. While 80-98% of the farmers agree that various soil management practices are necessary, for improving crop yield in the studied area. Finally some implications for crop production were drawn from the, overall result of the study. It was suggested among other things that farmers should be encouraged by the government on the need and importance of soil fertility and management and adopt those practices that will ensure sustainability of the soil fertility. This will help them to contribute meaningfully to food production through enhanced productivity.

Key word: - Ogoja, soil, fertility, management,

INTRODCUTION

The rate and growth of a nation is determined by its sufficiency in food production. Thus the ability of any nation to adequately feed her populace determines her strength, wealth and position in the committee of nations. In Nigeria, about 6% of the citizens are undernourished especially in the rural areas, where poverty incidence seems to be relatively higher than in the urban centers (AigboKhan, 2008). Hence the challenges' facing the farmer is how to produce adequate food to meet the food needs of the ever-increasing population. Generally the problem of food production world over and particularly in Nigeria has been attributed to many factors, some of which are man made while others evolve naturally. Adejuwon (2006) identified extreme weather-induced conditions such as drought and flood as one of the food production woes of the world, which have been observed as long-term and cumulative consequences of number of human activities such as deforestation and the release of ozone layer-depleting gases through industrial processes (IPCC, 2010). Another identified and major problem hampering food production world over, is the issue of soil nutrient depletion, caused by a myriads of problems. Soil the greatest nation's possession of a farmer is a natural heritage endowed unto man by God, hence His words go yee into the world inherit and subdue the earth (Gen 1²⁸), showing that man, his crops and animals are dependent on soil.

All the parameters required by a crop to complete its life cycle are obtained from the soil except Sunlight (energy), Carbon, Hydrogen and Oxygen. Thus soil as a medium for the growth of plants. This soil is liable to depletion in plant nutrients resulting to poor growth of crops. The indices that can cause a soil to deplete in nutrients are bound and they include, Soil acidity (soil PH), Leaching, Oxidation, Burning, Crop removal, Erosion, Overgrazing, Continuous cropping, Mono cropping, etc. Any of these factors is capable of hampering the fertility status of any soil where it is paramount. Though most of these factors do not work in isolation of the other, makes their impact to vary in Soils. As a result the fertility status varies from soil to soil and region to region. Therefore the ability of a soil to produce high crop yield is referred to as Soil Fertility. Though a soil could be fertile but may not promote or increase crop yield due to some factors like Soil PH, Soil Pathogens, and deficiency of some soil nutrients and environmental factors like rainfall. This calls for proper management and care, to treat the soil in order to reduce to the beeriest minimum all those factors that will cause soil infertility as well as destroying soil borne Pathogens in order to boost up bumper harvest. For any soil to keep on producing high yield certain farm management practices must be taken into consideration such as addition of organic matter and inorganic manure, planting cover crops, control burning and over grazing, good tillage, strict application of anti-erosion and good drainage measures, a suitable crop rotation system and mixed farming were practicable will help in the maintenance of soil fertility. Therefore, soil fertility management is the care, protection and maintenance of the soil to enable the soil provide sufficient nutrient for plant growth. The activity is aimed at boosting the yield of crops and the same time maintains the fertility of the soil. So for a soil to continue supplying the available nutrient needed by the plants, it must be properly maintained. A farmer is motivated towards farming when the yearly harvest is high and for the harvest to be high, the soil must be well maintained and conserved. Nigeria as a whole is faced with a problem of soil management and in particular to the people of Ogoja local

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government Area of Cross-River state, Nigeria, which are faced with a problem of poor crop yield due to the inability of carrying out soil management practices for maintaining the fertility of the soil. So any measure taken to manage the soil for its fertility will go a long way in improving the fertility of the soil for the growth of crops and general well being of the people. Hence this study was undertaken to find out soil fertility and management practices that will encourage crop production in Ogoja LGA, of Cross-River state, Nigeria.

METHODS OF STUDY

The study was conducted in Ogoja local government area of Cross River State, Southern region of Nigeria. The area has a humid sub equatorial climate with long wet season lasting from March to October. The vegetation is deciduous and ever green forest. The occupation of people in the area mainly is farming. The questionnaire forms used in the survey embodied various issues relating to the Soil fertility and management practices in the area of study. The survey was conducted in each of the five communities that make up Ogoja local government Area. These communities are Nkum Iborr, Nkum Irede, Nkum Mbube and Akajuk. The populations of those involved in farming in the communities mentioned above dominate other work force in the area. Respondents were randomly selected from all the youths and adults who engaged in farming activities, both subsistence and commercial farmers including their educational level were interviewed. The questionnaire was administered to Eighty (80) respondents for each community summing up to four hundred (400) respondents. The respondents were only required to indicate their option by ticking Yes or No on the space provided for them in the questionnaire. These were to test the farmers on the extent of soil fertility and management practices in their communities. To determine perceived attitude of these farmers towards soil fertility and management practices fifteen item statements were presented and assessment based on data generated from the field survey was analyzed using percentage. A score of 50% and above was accepted as in being positive side while a score below 50% was regarded as being on the negative side.

Results

Respondents strongly indicated that soil fertility and management practices that will ensure food production in Ogoja hinged on the following: Fertile soil is essential for the growth of crop, good soil management practices promote crop yield and boost food production and that proper soil treatment increase the production of food.

Table 1. Distribution of farmers according to fertile soil is essential for the Growth of crop (n=400)

Variable	Number of respondents		Percentage	
	Yes	No	Yes	No
Fertile soil promote crop yield.	320	80	80	20
Fertile soil exists in Ogoja LGA.	160	240	40	60
All fertile soil increases the yield of crop.	140	260	35	65
Soil is the only medium for the growth of plant.	360	40	90	10
Fertile soil yield high produce.	0	400	0	100

Source: field survey, June / July 2012

Table 2. Percentage distribution of farmers according to good soil management Practice promote crop yield and boost food production (n=400)

Variable	Number of Respondents		Percentage	
	Yes	No	Yes	No
The use of organic manure improve the fertility of the soil.	380	20	95	5
The use of cover cropping is a good soil management practice.	360	40	90	10
The practice of crop rotation is good way of preserving the soil for high crop yield.	370	30	92.5	7.5
Mixed farming is a good practice of managing the soil.	384	16	96	4
The use of fertilizer increases the nutrient content of the soil for high crop yield.	364	36	91	9
The farmers who carry out soil management Practices increased their productivity.	392	8	98	2
Bush burning is a good farming practice towards soil fertility management.	12	388	3	97
The practice of mulching and fallowing Improve the fertility of the soil for high Food production.	320	80	80	20

Source: field survey, June / July 2012

Table 3. Distribution of farmers on the basis that proper soil treatment increases The production of food (n=400).

Variable	Number of Respondents		Percentage	
	Yes	No	Yes	No
The use of lime material reduce the acidity of the soil.	344	56	86	14
Soil treatment a good way of maintaining the soil for its fertility towards food production.	356	44	89	11

Source: field survey, June / July 2012

The result of the study presented in table 1 showed that 320 respondents affirmed that fertile soil promote crop yield in Ogoja, while 240 respondents showed that fertile soil does not exist in Ogoja LGA. 260 respondents refute that all fertile soil increase the yield of crop, however a total of 400 respondents randomly chosen from the communities, all agrees that fertile soil yield high produce. A great number of respondents which range from 320-392 respondents (table2) affirmed that the use of organic manure, cover cropping, crop rotation, mixed farming, mulching/fallowing and the use fertilizer are good soil management practices that can promote crop yield and boost food production. 392 respondents indicated that farmers who carry out soil management practices increased their productivity, while 388 farmers refuted the idea of using bush burning as a practice towards soil fertility management. Furthermore, the result presented in table 3 indicated that 344 and 356 respondents respectively affirmed the use of lime materials and soil treatment as a way of maintaining the fertility of the soil towards food production.

Discussion

Fertile soil is essential for the growth of crops

The result analysis obtained from the farmers showed that a fertile soil is essential for the growth of crops because majority of the farmers (80%) indicated that fertile soil promote the yield of crops. The natural soil fertility is the ability of the soil to supply the growing crops with plant nutrients, water and oxygen, free from toxicity and good drainage. As long as these are achieved a soil, will continue to yield high produce.

Good soil management practices promote crop yield and boost food production

Continuous cropping leads to the depletion of soil nutrient with the resultant poor performance of the cultivated crops (Corsky and Ndikwa, 2008). With this trend soil nutrient that will boost crop growth and yield decline progressively unless the nutrients are replenished through the use of organic matter (natural manure) or mineral fertilizer or practically through the use of fallow system that allows restoration of nutrients and soil organic matter (Nweke and Nsoanya 2012). Furthermore, Singh and Singer, (2001) reported that recycling of crop residues has been found useful in improving soil materials availability and crop yields. While Nweke and Nsoanya, (2012) observed that crop residues such as rice mill waste are a good soil amendment management practice that improves crop yield and soil fertility. The data findings showed that 95% of the farmers accepted that organic manure improved the fertility of the soil, in the same manner majority of farmers also responded positively towards crop rotation; bush fallow and mulching, mixed farming, as good soil management practices and use fertilizer to increase crop yield.

Proper soil treatment increases the production of food

For any good and adequate management practice care should be taken to treat the soil in order to bring the PH to a tolerable level for the crops and improve the activities of the soil organisms for rapid break down of organic matter and liberation of plant nutrients therein. Haynes and Naidu (1998) observed that in tropical regions large increase in crop yield could be achieved with mineral application of lime due to alleviation of Al toxicity and or Ca deficiency. The response from 86% of the farmers are in agreement that lime material reduce soil acidity, while 89% of the farmers agreed that soil treatment is a good way of maintaining the soil for its fertility towards food production.

Conclusion

The data findings based on the stated hypothesis confirmed that fertile soil is essential for crops growth, good soil management practices boost food production and soil treatment increased the production of food. Therefore, for any farmer to ensure that his/her soil does not loss its nutrient, various farming practices like fallowing, liming, mixed farming, cover cropping, crop rotation should be carried out to maintain its fertility in the studied area. While government are advised to provide improved materials to the farmers and ensure through the local authorities that farmers adopt management practices that will ensure food sustainability without endangering the environment.

References

- [1]. Adejuwon J. (2006). Food Security, climate variability and climate change in Sub-Saharan West Africa. A final report submitted to Assessments of impacts and Adaptations to climate change (AIACC), Project No. AF23 published by the international START Secretariat Florida Avenue, NW Washington.
- [2]. Aigbikhan, B. E. (2008). Growth, inequality and poverty in Nigeria. ACGS/MPAMS Discussion paper No. 3 prepared for United Nations Economic Commission for Africa (UNECA) Addis Ababa, Ethiopia February, 2008, P. 15.
- [3]. Corsky, R. J. and Ndikawa R. (1998). Screening multiple use cover crop for the Sudan Savannah of N/Cameroon D Bukies Canada PP79-187
- [4]. Haynes, R. J. and Naidu R. (1998). Influence of lime, fertilizer and manure application on soil organic matter content and soil physical conditions. A review. *Nutr. Cycl Agro ecosyst.* 51: 123-127.
- [5]. IPCC, (2010). Integrating water and Agricultural management under climate change. *Science of the total Environment* 408, 23: 5667-5687.
- [6]. Nweke, I. A. and Nsoanya L. N. (2012). Effect of Different rates of Rice mill waste on the maize (*Zea mays L.*) at Igbariam South East, Nigeria, in proceedings of International Agricultural conference held at Anambra state University, Igbariam Campus 6th-9th May 2012, P. 441-444.
- [7]. Singh, U. and Singer, k. (2001). Effect of Sulphur and Zinc on yield and utilization of nutrients by wheat Indian J. *Plant physiol*, 29, 219-224.