

# THE INTERNATIONAL JOURNAL OF SCIENCE & TECHNOLEDGE

## Fertilizer Use and Kola Production in Southern Nigeria

**Dr. M. O. Ogunlade**

Assistant Director, Cashew /Kola, Cocoa Research Institute of Nigeria, Nigeria

**Dr. O. S. Ibiremo**

Assistant Director, Cocoa Research Institute of Nigeria, Nigeria

**C. I. Iloyanomon**

Principal Research Officer, Cocoa Research Institute of Nigeria, Nigeria

**L. A. Adebowale**

Senior Research Officer, Cocoa Research Institute of Nigeria, Nigeria

**N. Taiwo**

Senior Research Officer, Cocoa Research Institute of Nigeria, Nigeria

**Dr. K. A. Oluyole**

Principal Research Officer, Cocoa Research Institute of Nigeria, Nigeria

### **Abstract:**

*The study investigates the use of fertilizer for kola production. Random sampling technique was used to select 66 kola farmers from the study area. Structured questionnaires were used to collect data from the respondents and the data collected were analysed with the use of descriptive statistics. The result of the study showed that 59.16% of the respondents were of age 60 years and below, while 90.91% had a maximum of 5 hectares of farm size. Majority (90.91%) of the respondents do not apply fertilizer on kola plantation because of the non-availability of the product. However, 45.45% of the respondents are willing to accept training on the use of kola pod husk for compost making and 40.91% of the farmers are willing to apply the technology on their farms to solve the problem of fertilizer scarcity. The study however, recommended that kola pod husk compost training should be made available to kola farmers.*

**Keywords:** Kola, fertilizer, compost, training, farmers

### **1. Introduction**

Kola trees are native to the tropical rain forests of Africa. It is an evergreen tree with long, ovoid leaves pointed at both ends with a leathery texture. The caffeine containing fruit of the tree is used as flavouring ingredients in beverages and there are two popular species of cola, *Cola acuminata* and *Cola nitida*. *Cola nitida* was originally distributed along the West Coast of Africa from Sierra-Leone to the Republic of Benin (Opeke, 1987) with highest frequency and variability in the forest area of Ivory Coast (now Cote D'ivoire) and Ghana. The importance of kola nut to Nigerian economy cannot be over-emphasized, kolanut as a tropical tree crop has over twenty species, out of these *Cola nitida* and *Cola acuminata* are the only species grown on large scale in Nigeria. Out of the two species, *Cola nitida* is being traded internationally, while, the consumption of *Cola acuminata* is confined to Southern Nigeria. Before the dependence of the Nigerian It was also estimated that the internal kola nut market in Nigeria worth's about ₦30 million (Pala, 1976). In 1970, kola nut exports fetched ₦126, 000 to Nigerian government. Kola pod husk, economy on crude oil, kolanut played a significant role (Akinbode 1982). Out of the three components of kola fruit (pods) that is kola pod husk, kola testa and nuts, only the nut has been found to be of high economic importance, either in Nigeria or in the developed countries. In 1976 Nigeria produced 127,000 tons of kolanuts which accounted for 61% of world production. (FAOSTAT 2014). In 2014, Nigeria produces about 128,437 tons of the fresh nuts representing 50% of the world production (FAOSTAT, 2014). Kola pod husk which has been considered a waste on the farm in the past, has been processed as diet, this ensures significant replacement of maize in poultry feed formulation. Also, kola testa, which is found in small quantity, has been used in some feed formulation (Hamzat and Jayeola, 2002). This showed that the whole kola fruit has considerable economic uses.

The removal of essentials plant nutrients through kola pod harvest over long periods without replenishment could be one of the major causes of decline in productivity on kola farms. The tree crop farming in Nigeria has been based on the exploitation of fertility build up by the forest. It is however important to note that nutrients are removed annually from the farm through crop harvests. The calculated amounts of N, P and K removed from one hectare of kola soil per year were 130.9kgN, 10.3kgP and 138.74kgK respectively through harvesting of pods (Ayodele, 1988). Ndagi 2012 also observed that old kolanut trees need adequate soil amendments as a result of nutrient mining through harvesting of kolanut pods. Adebowale and Odesanya 2015 also reported nutrient depletion in some kola plantations which might be due to nutrients removed through pod harvest without replacement via fertilizer application. Therefore, the aim of this study was to evaluate the level of fertilizer use on kola in the study areas.

## 2. Methodology

The study was carried out in Edo and Cross Rivers States. Purposive random sampling technique was used to select three Local Government Areas (LGAs) from Cross Rivers States and four LGAs from Edo States while one community was randomly chosen from each of the Chosen LGA. A total of 66 kola farmers were randomly chosen from the two States. Information was collected from the respondents with the aid of structured questionnaire and the data retrieved from the information collected were analysed using descriptive analysis.

## 3. Results and Discussion

Table 1 shows that 59.16% of the respondents were of age 60 years and below, while 40.14% were above 60 years. This shows that large proportion of the respondents were still in the active age to do farm work conveniently and this would increase the productivity of the farmers and thus having positive impact on the farm size. From the study, 4.55% had no formal education while 90.91% had formal education ranging from primary to tertiary education hence, most of the respondents in the study area had formal education and this could lead to increased productivity as the respondents would be able to read and interpret the results of the research findings with ease. Table 1 also revealed that 90.91% of the farmers cultivates five hectares and above while 9.01% of the respondent farmers had farm size that is more than five hectares. This shows that majority of the farmers are small scale farm holders. Majority (81.83%) of the respondents had their farms older than 30 years, hence the productivity potentials of such farms would have been decreasing leading to low output. Hence, there's a need for rehabilitating such farms.

Variables	Frequency	Percentage
Age		
≤ 40	3	4.55
41-50	12	18.19
51-60	24	36.37
> 60	27	40.94
Total	66	100.00
Gender		
Male	66	100.00
Female	0	0
Total	66	100.00
Educational Status		
No response	3	4.55
No formal education	3	4.55
Primary	33	50.00
Secondary	24	36.36
Tertiary	3	4.55
Total	66	100.00
Marital Status		
No response	12	18.18
Married	54	81.82
Total	66	100.00
Farm Size (Ha)		
≤ 5	60	90.91
> 5	6	9.01
Total	66	100.00
Age of farm (Years)		
No response	3	4.55
≤ 30	9	13.64
31-40	3	4.55
41-50	15	22.73
> 50	36	54.55
Total	66	100.00

Table 1: Socio-economic Characteristics of the Farmers

Source: Field Survey, 2017

Table 2 revealed the knowledge of the application of fertilizer of the respondents. The table reveals that majority (90.91%) of the respondents do not apply fertilizer on kola plantation. This development can lead to low productivity as most plantations would have been depleted of one nutrient or the other. However, the farmers claimed that they do not use fertilizer because fertilizer is not readily available. Others claimed that fertilizer was not necessary on their farms. The few kola farmers that used fertilizer only use NPK fertilizer on their farms and the fertilizer was applied at the rate of 20g per tree, while the method of application adopted are foliar and ring methods. Meanwhile, all the farmers who responded attested that they do not test their soil before fertilizer application.

Attribute	Frequency	Percentage
Do you apply fertilizer on kola?		
No response	3	4.55
Yes	3	4.55
No	60	90.91
Total	66	100
Reason for not using fertilizer		
No response	60	90.91
Fertilizer is not available	3	4.55
Fertilizer is not necessary on my farm	3	4.45
Total	66	100
Types of fertilizer used		
No response	63	95.45
NPK	3	4.55
Total	66	100
Rate of fertilizer used		
No response	60	90.91
20g	6	9.09
Total	66	100
Source of fertilizer application rate in use		
No response	60	90.91
Extension agents	3	4.55
NGO	3	4.55
Total	66	100.00
Method of applying fertilizer		
No response	60	90.91
Foliar	3	4.55
Ring method	3	4.55
Total	66	100.00
Do you test soil before fertilizer application		
No response	57	86.36
No	9	13.64
Total	66	100.00

Table 2: Status of the knowledge of fertilizer application  
Source: Field survey, 2017

Table 3 shows the status of utilization of kola pod husk among the respondents. The table reveals that 54.55% of the respondents are not aware that kola pod husk can be used for compost. The table also shows that 81.82% do not use kola pod husk on their farms. This shows that kola pod husk, despite the fact it is available in the farmers' farms, it is not being utilized among the respondents.

Attribute	Frequency	Percentage
Do you have kola pod husk on your farm?		
No response	12	18.18
Yes	54	81.82
Total	66	100.00
Do you use make use of kola pod husk on your farm?		
No response	12	18.18
No	54	81.82
Total	66	100.00
Are you aware that kola pod husk can be used for compost?		
No response	30	45.45
No	36	54.55
Total	66	100.00
If yes, have you used kola pod husk for compost?		
No response	33	50
No	33	50
Total	66	100

Table 3: Utilization of kola pod husk  
Source: Field survey, 2017

Table 4 reveals the willingness of the respondents to accept training on the use of kola pod husk for compost making. The table reveals that 45.45% of the respondents are willing to accept training on the use of kola pod husk for compost making and 40.91% of the respondents are willing to offer their farms for demonstration. Most (40.91%) of the farmers are willing to apply the technology on their farms.

Attribute	Frequency	Percentage
Are you ready to accept training offer on kola pod husk compost?		
No response	36	54.55
Yes	30	45.45
Total	66	100.00
If yes, can you offer your farm for demonstration?		
No response	39	59.09
Yes	27	40.91
Total	66	100.00
If trained, will you apply the technology on your farm?		
No response	39	59.09
Yes	27	40.91
Total	66	100.00

Table 4: Training on the use of kola pod husk for compost

Source: field survey 2017

#### 4. Conclusion

Majority of the farmers do not use fertilizer for kola production due to non-availability of fertilizer and this has resulted to low output from the crop. In order to avert the problem, the farmers are willing to accept a training offer on the production of compost from kola pod husk which is available as a waste material on their farms. The study however, recommended that kola pod husk compost training should be made available to kola farmers in order to solve the problem of non-availability of fertilizer for their usage.

#### 5. References

- i. Adebowale L.A. and Odesanya B.O (2015). Effects of kola cultivation on soil fertility status of selected kolanut plantations in Ogun State, Western Nigeria. *International Research Journal of Agricultural Science and Soil Science* vol5 (5): 129-135.
- ii. Opeke L.K. (1987): *Tropical Tree Crops*. Spectrum Books Limited, Ibadan, Nigeria.
- iii. Pala, A.O. (1976): *African Women in Rural Development: Research trends and priorities*. American Overseas Liaison Committee, Washington.
- iv. Akinbode A. (1982): *Kola nut production in Nigeria*. Institute Social and Economics Research. ( NISER), Ibadan.
- v. FAOSTAT 2014. [www.faostat.fao.org/site/567](http://www.faostat.fao.org/site/567). Accessed on internet March, 2017
- vi. Hamzat, R.A. and C.O. Jayeola (2001): *Nutritional Quality of Snails (Achatina marginata) fed solely with fresh kola testa under kola plantation*. CRIN Annual Report. CRIN Ibadan.
- vii. Ayodele EA (1988). The amounts of nutrients (NPK) removed from the soil in harvested Kola: A guide to the fertilization of Kola, CRIN seminar.
- viii. Ndagi, I, F. D. Babalola, I. U. Mokwunye, C. F. Anagbogu, I. A. Aderolu, O. Ugioro, E. U. Asogwa, M. Idrisu, and F. C. Mokwunye Potentials and Challenges of Kolanut Production in Niger State, Nigeria *International Scholarly Research Network ISRN Agronomy* Volume 2012, Article ID 492394, 9 pages