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ASSESSMENT OF FARMERS' KNOWLEDGE ON RECOMMENDED QUANTITIES OF FERTILIZER APPLICATION ON OIL PALM IN OVIA NORTH EAST LOCAL GOVERNMENT AREA OF EDO STATE, NIGERIA

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Abstract
This study assessed farmers' knowledge on recommended quantities of fertilizer application on oil palm in Ovia North East of Edo State, Nigeria. Oil palm farmers constituted the population. Primary data were collected with the aids of a structured questionnaire administered to 75 farmers through interview: A multi-stage sampling procedure was used in selecting farmers. The data collected were analysed using percentages and frequencies. Findings revealed that majority (89.3%) of the farmers were males with an average age of 43.5 years. Majority (65.3%) of the farmers had secondary education, 70.6% had a household size of between 6 and 10. Furthermore, 84% and 66.7% of the farmers had a farm size of ≤ 20 ha with a farming experience of at least 15 years. About 53.3% of the farmers were not members of cooperative Majority (80.7%) of the respondents were not aware of Nigerian Institute for Oil Palm Research recommended fertilizers for oil palm trees of four to five years old and their major source of information was fellow farmers/friends (78.7%). Majority (57.8%) of the farmers had low knowledge of Nigerian Institute for Oil Palm Research recommended quantities of fertilizer application per palm per year for four to five years old oil palm. It is recommended that Nigerian Institute for Oil Palm Research should carry out sensitization/awareness creation as well as training workshop in order to enhance farmers' knowledge on Nigerian Institute for Oil Palm Research recommended quantities of fertilizer application per palm per year of four to five years old oil palm for improved productivity in the study area.

***Keywords**: Assessment, Oil palm, knowledge, quantities, fertilizer application.*

Introduction

The Oil palm (*Elaesis guineensis Jacq.)* is a member of the Arecaceae family (Nigerian Institute for Oil Palm Research, 2023). The oil palm industry is primarily one of the corner-stones of the Nigeria's agricultural economy, contributing principally in income generation, employment and foreign exchange earnings (Onojieruo, 2024).

Nigeria is the fifth largest producer of palm Oil in the world (Onojieruo, 2024). Despite Nigeria's position in the palm oil production in the world, her impact has not been significantly felt at the global market due to many challenges that have limited this sector for maximum yield. One of the greatest constraints in the oil palm industry in Nigeria is the lack of effective use of fertilizers, as well as adoption of its recommended practices within the oil palm belt zones in the country.

Fertilizers are required as important nutrients for oil palm proper growth and development. Fertilizers supply the needed nutrients for plants in order to enhance their optimal development and yields (Corley and Tinker, 2016). The appropriate quantity of fertilizer on oil palm farm has been one of the challenges faced by many farmers and to cushion the gap on the applications of the right quantities of fertilizers, especially on younger oil palm trees of about four to five years old, the

Nigerian Institute for Oil palm Research (NIFOR) has developed comprehensive guidelines for fertilizer applications directed towards effective oil palm production in the country. It is therefore very paramount that if farmers align with these fertilizer recommended practices as guidelines, they will significantly increase their yields and also maximize profits in their oil palm businesses (NIFOR, 2023). Between the ages of four and five years, oil palm trees begin to bear flowers to produce fruits, and if must perform maximally, the farmer has to apply the recommended fertilizer applications for optimum yield (NIFOR, 2023). It has been verified that irrespective of scientifically backed up recommendations, many small-holder farmers still continued to experienced low fresh fruit bunch yields from their plantations. Therefore the study seeks to investigate farmers' knowledge on NIFOR recommended quantities of fertilizer applications per palm per year (Kg/Palm/Year) of four to five years oil palms.

Objectives of the Study

The broad objective of the study was to assess farmers' knowledge on recommended quantities of fertilizer application on oil palms in Edo State, Nigeria and the specific objectives were to:

i describe the socio-economic characteristics of the respondents;
ii ascertain respondents' awareness of recommended quantities of fertilizers application for oil palm of 4 – 5 years;
iii identify respondent's sources of information on recommended quantities of fertilizers applied to oil palms trees of 4 – 5 years;
iv assesses respondents' knowledge on recommended quantities of fertilizer applied to oil palm of 4 – 5 years.

Methodology

This study was carried out in Ovia North East Local Government Area (LGA) of Edo State, Nigeria. Ovia North East lies between latitudes 5^{o} 40` and 7$^{o}$ 40` North and Longitude 5^{o}00` and 6$^{o}$3030` East. Ovia North East occupies a total land mass of 2,301 km with a total population census of 153,849 persons (National population Commission, 2007). The River Ovia flows through all communities in the Local Government Area. The major occupations of the people include farming, hunting, trading and fishing, while oil palm trees, Cocoa, cassava, maize, plantain and yam are the major crops grown by the people.

A multi-stage and snowball sampling procedures were used to sample respondents. First, Ovia North East Local Government Area was purposively selected due to its significant oil palm activities. In the second stage, five communities namely, Aihuobabekun, Igbekhue, Abumenre, Okada and Okokhuo were also purposively selected from 40 communities because of the high `numbers of oil palm farmers in the area. In the third stage, a snowball technique was used to select 15 oil palm farmers from each of the communities, to give a total sample size of 75 respondents. Primary data were collected with the aid of a structured questionnaire. The data collected were analysed with the use of frequency, percentages and means,

Results and Discussion

Socio-economic Characteristics of Oil palm farmers

Table 1 reveals that majority (89.3%) were males, while 10.7% were females. This implies that the oil palm cultivation was male dominated crop. This finding agrees with Sarku, (2016) and Ajayi *et al.* (2010) that males were mostly involved in oil palm cultivation than females in their respective areas of study. Also, Majority (54.7%) of the respondents fall between 41 - 50 years with a mean age of 44 years. This suggests that majority of the respondents were within their active age. Majority (68%) of the respondents had secondary education and 24% had tertiary education. This shows that the respondents were literate, implying that most of the farmers can maximize the use of information if exposed to it. Table 1 also, reveals that majority (69.3%) of the respondents had a family size of about 6 – 10 members. This suggests that the family size in the study area was large. This finding is in

line with Omokore *et al* (2011) that house hold size influences participation in family farming unit. Furthermore, 84% of the respondents had a farm size of at least 20 hectares implying that most of the respondents were small scale oil palm farmers. Table 1 reveals that (66.7%) of the respondents had farming experience of between 11 - 15 years indicating that the majority (66.7%) of the oil palm farmers have experience in oil palm cultivation. Result in Table 1 reveals that 58.7% of the respondents were not members of cooperative society while 41.3% of the respondents were members of cooperative society implying that majority may find it difficult to access credit facilities from financial institutions and government intervention programs if it is facilitated by farmers' cooperative society, in terms of input supply such as fertilizers, improved planting materials, training, financial grant for the oil palm industry.

Table 1: Distribution of Respondents According to Socio-economic Characteristics (n=75)

Variables	Frequency (f)	Percentage (%)	Mean
Sex			
Male	67	89.3	
Female	8	10.7	
Age (years)			
≤ 20	-	-	
21 – 30	2	2.7	
31 – 40	10	13.3	43.5
41 – 50	41	54.7	
51 – 60	19	25.3	
≥ 61	3	4.0	
Educational Level			
Non formal	-	-	
Primary	6	8	
Secondary	51	68	
Tertiary	18	24	
Household size			
1 – 5	20	26.7	
6 – 10	52	69.3	
Above 10	3	4.0	
Farm Size (ha)			
≤ 20	63	84	
25 – 50 ha.	12	16	
≥ 51	0	0	
Farming Experience			
≤ 5 years	2	2.7	
6 – 10 years	17	22.6	
11 – 15 years	50	66.7	
≥ 16 years	6	8	
Membership of Cooperative Society			
Yes	31	41.3	
No	44	58.7	

Source: Field survey, (2023).

Awareness of NIFOR Recommended Quantities of Fertilizer Applications per Palm per Year of Four to Five Years Old Oil Palm

Table 2 shows that all (100%) of the farmers were aware of the recommended quantities of urea and NPK – Mg (Rustica) (12: 12:17-2) fertilizers application per palm per year of 4 – 5 years old palm, 86.7% sulphate of ammonia application and 77.3% single super phosphate or rock among others. all (100%) of the farmers were aware of urea and NPK-Mg (Rustica) 12:12:17-2) due to their close proximity to NIFOR.

Table 2: Awareness of Recommended Quantities of Fertilizer Applications per Palm per Year for Oil Palm of 4 – 5 Years Old (n=75)

Farmers awareness of recommended quantities of fertilizer application	Frequency	Percentage
0.05kg of urea/palm/year	75	100
1.00kg of sulphate of ammonia/palm/year	65	86.7
1.00kg of single super phosphate or rock per palm per year	58	77.3
1.50kg of muriate of potash(MoP) kg/palm/year	49	65.3
0.05kg of magnesium sulphate/palm/year	41	54.7
2.0kg of NPK-Mg ((Rustica) (12: 12:17-2)	75	100

Source: Field survey, 2023

Sources of Information on Recommended Quantities of fertilizer applications per Palm per Year of Four to Five Years Oil Palm

Table 3 shows that respondents sourced information from NIFOR (46.7%), friends and families (42.7%), ADPs (13.3%) and State Ministry of Agriculture (2.7%). The finding reveals that a reasonable (42.7%) of the respondents sourced information from NIFOR. NIFOR has worked on different varieties of oil palm and has presented many recommendations including fertilizers, spacing and best variety of oil palm for planting by farmers for high yield to the farmers.

Table 3: Sources of Information on NIFOR Recommended Quantities of Fertilizer Applications per Palm per Year for Oil Palm of 4 – 5 Years Old (n=75)

Sources	Frequency (F)	Percentage (%)
NIFOR	35	46.7
ADP	10	13.3
State Ministry of Agriculture	2	2.7
Social Media	-	-
Radio	-	--
Television	-	-
Friends/Family	32	42.7

Source: Field survey, (2023)

Knowledge of NIFOR Recommended Quantities of Fertilizer Application per Palm per Year of 4 – 5 Years Oil Palm.

Table 4 depicts that majority (66.7%) of the respondents had knowledge on NIFOR recommended 0.05kg of Urea application per palm per year of 4 – 5 years old oil palm, 41.3% had knowledge on 1.00kg application of sulphate of ammonia per palm per year, 40% had knowledge on

1.50kg application of muriate of potash (Mop) and 2.0kg application of NPK-Mg (Rustica) (12:12:17-2) per palm per year of 4 – 5 years old oil palm, and 36% had knowledge on 1.00kg application of single super phosphate per palm per year of 4 – 5 years old oil palm. From this finding, it can be inferred that majority of the farmers were more knowledgeable on the application of 0.05kg of urea per palm per year of 4 – 5 years old oil palm.

Table 4: Knowledge of recommended quantities of fertilizer application per palm per year of 4 – 5 years oil palm (n=75)

NIFOR recommended quantities of fertilizer application per palm per year of 4 – 5 years old oil palm	Frequency	Percentage
Application of 0.05kg of urea/palm/year	50	66.7
Application of 1.00kg of sulphate of ammonia/palm/year	31	41.3
Application of 1.00kg of single super phosphate or rock per palm per year	27	36
Application of 1.50kg of muriate of potash(MoP) kg/palm/year	30	40
Application of 0.05kg of magnesium sulphate/palm/year	22	29.3
Application of 2.0kg of NPK-Mg ((Rustica) (12: 12:17-2)	30	40

Source: Field survey (2023)

Conclusion and Recommendations

Conclusion

Based on the findings of this study, it can be concluded that majority of the farmers were males with an average age of 43.5 years who had secondary school education and a household size of between 6 - 10. Also, majority of the farmers were small scale farm-holders with a farming experience ranging between 11 and 15 years. Majority of the farmers were not members of cooperative society. Although many of the farmers were aware of NIFOR recommended quantities of fertilizers application per palm per year for the four to five years old oil palms, about 66.7% had knowledge of application of 0.05kg of urea/palm/year.

Recommendations

It is recommended that;

i. farmers should form cooperative society in order to enhance their access to training programmes organised by Government and Non-governmental organizations in collaboration with NIFOR on oil palm production, especially in the area of soil nutrition and management.

ii. Extension agents with soil science background should be deployed to areas for teaching and practical demonstrations.

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