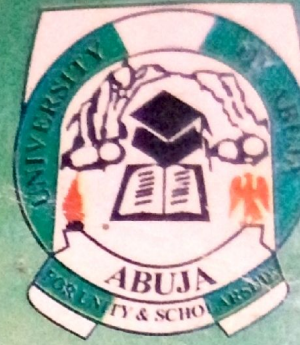




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AN ASSESSMENT OF EFFECTS OF CRUDE OIL EXPLOITATION ON AGRICULTURAL ACTIVITIES IN ELEME AREA OF RIVERS STATE, NIGERIA.

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ABSTRACT

The study assesses the effects of crude oil exploitation on agricultural activities in Eleme area of River state. To achieve the study objectives, 150 farmers were randomly selected from three oil producing communities in Odido district of Eleme local government area where incidence oil exploitation and pollution are mostly prominent. The data collected were analyzed using frequencies, percentages and chi - square. The study revealed that 72% of the farmers in the study area are females within the age range of 30 -40 years. Also 78.71% of the respondents have acquired one form of education or the other ranging from primary education to tertiary education. Oil exploitation has a negative effect on production of crops, domestic animals, and wildlife and forest environment. In other words while human beings are on the increase crops, domestic animals, trees/shrubs and wildlife are on the decrease. There is need to strengthen awareness campaigns and redirection of policies that will bring an increase in agricultural production and check the effects of oil exploitation, reduce environmental degradation and destruction of forest resources.

Key words: Crude oil exploitation, agriculture, environment and degradation.

INTRODUCTION

Since the discovery of crude oil in commercial quantities, severe hazards of oil exploitation such as destruction of farm lands, economic trees, wild and aquatic lives were experienced with adverse effects that reduce agricultural production (Gbadegesin, 1997). Exploitation and drilling for oil on land involves certain amount of land surface that results in land degradation, loss of farm lands and most oil spills result to extensive deforestation with no adequate replanting processes, these effects have shortened the life span of land, compounded the use of land for agricultural purposes, loss of soil fertility and consequently erosion of top soil (Gbadegesin, 1997). As the level of oil spillage on land increases, there is an accumulation of manganese and iron oxides to the levels which become very toxic to plants. Crude oil also affects the properties of the soil such as temperature, structure, nutrient status and PH. Also the deterioration and eventual death of trees as a result of toxicity of sulphides and manganese arising from displacement of air is caused by crude oil (Zuofa and Isirmah, 1985).

Oil exploitation has a disastrous impact on the physical environment of the oil bearing communities massively threatening the subsistence peasant economy, the entire environment, the entire livelihood and the overall survival of the people. For instance apart from destruction of farm lands, pollution of rivers and streams, and burning of forest reservation as a result of oil exploitation activities, the host community also lose their farmlands for laying of oil pipelines, construction of

access roads, residential buildings and industrial complexes which are used for operational activities (Etu – Efeto, 1993; Olagoke, 1996). Akpofure, et al., (2000) believed that the effects of oil exploitation are clearly disastrous. The pressure of crude oil exerts acute or chronic toxicity on soil properties, micro flora and fauna, and vegetations. Oil extraction and production has led to adverse environmental impact on the soil, forest and water of the communities in which it is produced. Various harmful and toxic organic compounds when introduced into the natural environment during oil extraction, oil spills, gas flares and several other forms of pollution changes the geo – chemical composition of the environment which in turn affects agriculture and lead to a drastic decline in output of farming activities. If the oil industry in Nigeria is considered in view of its enormous contribution to foreign exchange earnings, it has achieved remarkable success. On the other scale, when considered in respect of its negative impact on agricultural activities, socio – economic life and the environment of the immediate oil bearing communities and its inhabitants, it has left an ecological and socio – physical disaster (Efole, 2004).

Since the advent of crude oil, the oil bearing communities has suffered from many incidents of crude oil exploitation and spillages that have resulted to destruction and pollution of farmlands and rivers which have killed aquatic lives, crop plants and economic trees. The reduced farm sizes, pollution of farmlands and death of crops due to heat generated by gas flares have led to small farm sizes, poor harvest and low income level among farmers; these problems have subjected the host community to economic and social hardship. The communities are exposed to numerous environmental problems that can jeopardize the health of the inhabitants; this situation is bad and will worsen if timely research is not conducted to assess the effects of oil exploitation on agricultural activities of the oil bearing communities. It is against this background that the following research questions are formulated:

- What are the effects of oil exploitation on crop production?
- What are the effects of oil exploitation on domestic animals and wild life?
- What are the effects of oil exploitation on forest resources?

Objectives of the Study

The main objective of this study is to determine the effects of oil exploitation on agricultural activities in Eleme area of Rivers state. The specific objectives are to:

- (i) examine the effects oil exploitation on crops production in Eleme area
- (ii) examine the effects of oil exploitation on domestic animals and wild life and to
- (iii) examine the effects of oil exploitation on forest resources

METHODOLOGY

The study was carried out in Eleme local government area because it is one of the leading oil producing area in Rivers state, Nigeria. The study area falls in the rain forest zone with an annual rainfall of between 1900mm – 4000mm per annum. Odido district was selected out of the two districts from the local

government because it is the main oil producing district in the local government area and the effects of oil exploitation is predominantly higher. Simple random sampling technique was used to select 3 communities namely; Ebubu, Akpajo and Onne from 5 communities in the district. Simple random sampling was also used to select one hundred and fifty (150) respondents that were interviewed in the selected communities. Interview schedule was employed to collect relevant data on the effects of oil exploitation (i.e. oil spillage, gas flaring and bush fire) on agricultural activities in the study area. Descriptive statistics like frequency and percentages were used to analyze the data collected while chi – square was used to test the relationship between socio – economic characteristics and the perception of respondents on effects of oil exploitation activities on agricultural production.

DISCUSSION

Table 1 show that 28% of the farmers are males while 72% are females. This shows that the females engage more in farming activities than the males. This is as a result of the cultural belief that farming activities are mostly carried out by the females, while the males engage in other activities such as fishing, wood carving and white collar jobs to sustain the family. The table also revealed that 82.1% and 12% of the farmers that engage in agricultural activities are in the active age of farming (31 - 40 and above 50 years respectively). In situation of poor farm output as a result of oil exploitation activities the farmers tend to abandon farming activities in search of other jobs. The physical and chemical changes in soil due to oil pollution have adverse effects on farming activities which encourages migration to other jobs (*Odjuvwedehie et al., 2006*). From Table 1, 30.0% had primary education, 40.7% of the respondents had secondary education while only 8.0% had tertiary education these imply that majority of the farmers have one form of education or the other although at a lower level. A sound education is not only a necessary tool for the knowledge and skills essential for agricultural production but also important for the control and management of the effects of oil exploitation on farming activities.

Table 1 also reveals that 28% of the farmers have experience of 11 – 20 years while 23.3% and 10.7% of farmers have 21 – 30 years and above 30 years respectively. The years of farming experiences are expected to affect the farming system and level of production, this is because years of farming experience enable the farmers to overcome problem faced in the previous years of their production. It is shown on Table 1 that the farmers in the study area have a farm size of 0.5 ha – 2ha, this may be due to the fact that oil companies utilize part of their farmlands for road construction, laying of pipes and drilling for oil on land involves certain amount of land surface alteration that affects farmlands and crops as well as leads to extensive deforestation (*Gbadegesin, 1997*).

The results on Table 2 indicated that 94.0% of the respondents experienced oil spillage on their crops, 2.7% of the respondents reported that gas flaring destroy their crops through the heat being emitted during flaring which also inhibits photosynthetic process that crops generally require for growth and

3.3% of the respondents reported that bush fire as a result of oil exploitation destroy their crops. A single occurrence of oil spillage can cause so much effect for a long time because it does not only kill the crops, but also render the soil where it occurs sterile to crop production, loss of soil fertility, erosion of top soil, impairs seed germination, inhibit microbial activities, retard plants growth and kill the plants which finally disrupt general crop production and yield. Various harmful and toxic organic compounds when introduced into the natural environment during oil extraction, oil spills, gas flares and several other forms of pollution changes the geo-chemical composition of the environment which in turns effects agriculture and leads to a drastic decline in output of farming activities (Gbadegesin, 1997).

The results from table 3 indicated that majority of the respondents (62.7%) reported that gas flaring has a severe effect on their domestic animals. The continuous occurrences of gas flaring for over 10 years which is always accompanied with high intensity flames not only scare farm animals and wildlife but also destroy the crops and trees which they feed on (Funkekeme, 2000), hence, this has contributed to low animal production. 31.3% and 6% of the respondents reported that bush fire and oil spillage have contributed in the destruction of their domestic animals.

Table 4 shows that majority (82.0%) of the respondents reported that bush fire had a greater effect on wildlife in the study area, 14.7% and 33% reported that oil spillage and gas flaring have effects on wildlife. Oil spillage as a result of oil exploitation sometimes leads to bush fire which if not controlled spreads to farms, destroy forests and thereby disturbing the natural habitats of wildlife as well as destroy the forage which these wildlife depend on as a source of food.

From Table 5, the majority (52.7%) of the respondents reported that bushfire have caused a major destruction to forest environment. Bushfire if not controlled destroy the forests and in some cases erase communities and families. The Table also revealed that 46.0% and 1.3% of the respondents indicated that oil spillage and gas flaring has an adverse effect on the trees and shrubs in the study area. Apart from the fact that trees and shrubs are natural habitat of the environment that plays a very important role in the agricultural sector (the trees acts as wind breaks which reduces wind erosion while the shrubs serve as cover crops which reduces water erosion to great extent), they are also important for sustaining the local communities because of the ecological functions they perform and the many essential resources they provide including soil stability, medicines, wood for fuel and shelter, tannins and dyes and critical wildlife habitat.

The chi-square results indicates that there is no significant relationship between sex, level of education and years of farming experience with the respondents' perception on effect of oil exploitation on crop production. This can be attributed to the fact that oil spillage on crop production can be visible or easily seen regardless of sex, level of education and years of farming experience. Similarly, the level of education has a significant relationship with effect of oil spillage on domestic animals and trees/shrubs; this implies that when the level of

education of the respondents increases their perception of oil spillage on domestic animals and trees/shrubs also increases. This can be attributed that an educated person can be able to keep track and record of output from domestic animals and trees over the years than the uneducated farmer.

RECOMMENDATION AND CONCLUSION

It is recommended that there is need to strengthen awareness campaigns and redirection of policies that will bring an increase in agricultural production and check the effects of oil exploitation, reduce environmental degradation and destruction of forest resources. The federal government decision on gas flaring should be pursued and properly implemented.

On the basis of the results obtained from this study, the following conclusion can be drawn. It can be concluded that majority of the farmers in the study area are females. Oil exploitation has a negative effect on production of crops, domestic animals, wildlife and forest environment. In other words while human beings are on the increase crops, domestic animals, trees/shrubs and wildlife were on the decrease.

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APPENDIX
Table 1: Socio-economic characteristics of respondents

Characteristics	Frequency	Percentage
Gender	108	72.0
Female	42	28.0
Male		6.0
Age (years)	9	42.7
<30	64	39.3
30 - 40	59	12.0
41 - 50	18	
>50		21.3
Education	32	30.0
No formal education	45	40.7
Primary	61	8.0
Secondary	12	
Tertiary		28
Years of farming experience	42	38
1 - 10	57	23.3
11 - 20	05	10.7
21 - 30	06	
>30		
Farm Size (ha)		10.0
< 0.5	15	30.0
1.1 - 1.5	45	30.0
1.6 - 2.0	45	0.7
>2.0	16	

Source: Field survey, 2009.

Table2: Perceived Effects of oil exploitation on crop production

Effects	Frequency	Percentage
Effects of oil spillage on crops	141	94.0
Effects of gas flaring on crops	4	2.7
Effects of bush fire on crops	5	3.3
Total	150	100.0

Source: Field survey, 2009.

Table3: Perceived Effects of oil exploitation on domestic animals

Effects	Frequency	Percentage
Effects of oil spillage on domestic animals	9	6.0
Effects of gas flaring on domestic animals	94	62.7
Effects of bush fire on domestic animals	47	31.3
Total	150	100.0

Source: Field survey, 2009.

Table 4: Perceived Effects of oil exploitation on wildlife

Effects	Frequency	Percentage
Effects of oil spillage on wildlife	22	14.7
Effects of gas flaring on wildlife	5	3.3
Effects of bush fire on wildlife	123	82.0
Total	150	100.0

Source: Field survey, 2009.

Table 5: Perceived Effects of oil exploitation on forest environment

Effects	Frequency	Percentage
Effects of oil spillage on forest	69	46.0
Effects of gas flaring on forest	2	1.3
Effects of bush fire on forest	79	52.7
Total	150	100.0

Source: Field survey, 2009.

Table 6: Relationship between socio – economic characteristics and perception of respondents on effects of oil exploitation on agricultural activities n = 150

Variables Value	Chi square	d.f	p. value	Decision
Sex vs. perception of the effect oil exploitation on crop production	8.157	4	p<0.05	ns
Level of education vs. perception of the effects of oil exploitation on crop Production	3.91	6	p<0.05	ns
Level of education vs. perception of the Effects oil exploitation on domestic animals	11.029	6	p<0.05	s
Farm experience vs. perception of the effects Of oil exploitation on crop production	4.799	8	p<0.05	ns
Educational level vs. perception on the effect On trees and shrubs	21.248	6	p<0.05	s

Source: Field survey, 2009.

ns = not significant

s = significant