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PERCEIVED DETERMINANTS OF OIL SPILLAGE ON AGRICULTURAL LANDS IN IBENO LOCAL GOVERNMENT AREA, AKWA IBOM STATE, NIGERIA

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ABSTRACT

The foods consumed in Ibeno Local Government Area in particular and Akwa Ibom State in general are from the rural areas. The fundamental problem associated with agricultural production in Ibeno Local Government Area of Akwa Ibom State, Nigeria, is oil spillage. The contamination of soils by carbon monoxides led to the destruction of vegetation, macro substances and soil degradation. Most farmers and even those who intend to go into agricultural enterprise in the oil producing areas of Akwa Ibom State in general and Ibeno Local Government Area in particular are discouraged from doing so, because of serious damage on agricultural lands occasioned by oil exploration in the study area. This study aimed at determining the perceived causes of oil spillage on agricultural lands in Ibeno. The study identified the socio-economic characteristics of respondents in the study area, showed the socio-economic w ellbeing of respondents and the perceived causes of oil spillage on agricultural lands in Ibeno Local Government Area. Purposive sampling technique was used to select four (4) agricultural cells for the study. Forty respondents were selected from each of the localities making a total of 120 respondents for the study. Data were collected using questionnaires. This was done using frequency, mean scores and ranks. The results showed that majority of the respondents were aged between 26 and 35 years, 71% were males, 41% had secondary level of education. About 58% of the respondents were engaged in fish farming activities. Equipment failure (x=4.56), pipeline corrosion (x=4.05) and pipeline sabotage (x=3.01) ranked 1st and 2nd respectively were perceived as the major causes of oil spillage on agricultural lands in the study area. Also, relationship between host communities and oil companies (x=4.30), economic activities in the communities (x=4.19) and unrest in the communities (x=3.84) ranked 1st, 2nd and 3rd were the major influence of oil spillage on the socio-economic wellbeing of the respondents. The study concludes that oil spills are caused by pipeline corrosion, equipment failure and sabotage. On the other hand, the study recommends use of modern pipes made to withstand stress and strains to avoid oil spillage in the study area.

Key words: Perceived, Determinants, Oil Spillage, Agricultural Land, Ibeno, Communities, Akwa Ibom

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INTRODUCTION

Agriculture was the mainstay of the Nigerian economy before the advent of oil boom after which it had been relegated by lack of political will to a non-significant position in the colony of economic activities in the country. Oil boom had instigated a rush from rural to urban centre of a large proportion of agricultural labour force leaving (men and women) old farmers and children behind who cannot produce enough food for the ever-increasing population of the country [1]. Agriculture is an income generating activity seen to have provided food for the farm families and improve the country's Gross Domestic Product (GDP) [2]. Massive oil exploration in the Niger Delta region in general and Ibeno Local Government in particular led to a shortage of agricultural production particularly at the peak periods of planting and harvesting. This led to a drop in food production in meeting the needs of the growing population of Nigeria [3]. The oil industry in Nigeria is fast expanding due to the economic benefits inherent in them because of the role of the oil industry as the highest revenue earner, most countries especially in the developing economies do not ponder at the detrimental effects of oil exploration and production in their domains [4]. Oil producing regions of Nigeria fall into the sub-equatorial zone, due to its closeness to the equator, the area has tropical climate and is occasioned by high temperature and humidity at about 80 to 100% most times due to the uprising taking place from the myriad of creeks in Delta region. Northern region of Nigeria traverses about four types of vegetation while the Delta span only two major vegetation types namely: swamp and rain forest. Agricultural activities in the zone include but not limited to livestock, fishery, crop farming and plantation or tree crop farming.

The rate of oil spill has been increasing with increased production in Nigeria. In the 10 years period from 1970 to 1980, a total of 2,107 oil spills involving at least 2.5 million barrels of oil were reported in Nigeria [5]. In January 1999, 50,000 barrels of oil were spilled through a burst pipe linking mobil-Idoho platform and Qua Iboe Terminal in Ibeno, Akwa Ibom State [6].

Contamination of soils by carbon monoxide and other hydrocarbons lead to destruction of vegetations, macro organisms and aerobic micro-organisms. Also, contaminations of water by hydrocarbons lead to destruction of fisheries and other marine resources [7].

Most farmers and even those who intend to go into agricultural production in the oil producing Ibeno area are discouraged from doing so because of the serious damage on farmlands and water bodies by oil spills, subsequently resulting in low

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outputs [8]. The most significant and disturbing caused of spills in Ibeno are the adverse effects on the degradation of the environment, thereby leaving those who are earning a living from the environment without income [9]. This study seeks to assess the perceived determinants of oil spillage and its effects on agricultural lands in Ibeno Local Government Area of Akwa Ibom State, Nigeria.

MATERIALS AND METHODS

The study was conducted in Ibeno Local Government Area, Akwa Ibom State, Nigeria. The local government area consists of twenty -three villages. Ibeno is located in the South South of Nigeria. Ibeno town lies on the eastern side of the Kwa Ibo River about 3 kilometers (1.9 miles) from the river, and is one of the largest fishing settlements in the Nigerian coast. Ibeno lies in the mangrove forest belt of Niger Delta region of Nigeria, bordered to the west by Eastern Obolo Local Government Area, to the North by Onna, Esit Eket and Eket, and to the South by the Atlantic Ocean. It has coordinates of 4.56 8693oN and 7.976396oE of Nigeria. The headquarters of Ibeno Local Government Area is Upenekang.

It is located in the transitional zone between the swamp forest and the rainforest regions. Ibeno Local Government Area is made of up 75,380 people comprising 41,311 males and 34,069 females [12]. The physical condition of the people influenced their economic activities. Activities of the oil companies have also influenced economic life of the people. The principal occupation of the people of Ibeno involves agricultural activities, such as farming, fishing and crafts. Data used for this study were obtained from primary sources. A multistage sampling technique was used for the study. At stage one, four agricultural cells namely; Ndita, Ikot Akpaete, Ukpenekang and Uquo were purposively selected for the study. This is due to the fact that oil spillage is more predominant in these areas. At stage two forty respondents were selected randomly from each of the agricultural cells, using a list of registered farmers obtained from Agricultural Extension office in the cell, making a total of 120 respondents. Questionnaires were used to elicit data and the data were subjected to frequency counts, percentages means and ranks. The mean with the highest score was ranked first followed by the second highest score and so on till all variables in the study were ranked.

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RESULTS AND DISCUSSION

Socio-economic characteristics of the respondents

The results of the socio-economic characteristics of the respondents shown in Table 1 indicated that most (70.83%) of the respondents were males and their age ranged between 26 and 35years. A good number of the respondents (40.83%) had formal education, while 17.5% of the respondents had no formal education. This implied that information concerning oil spills could be disseminated to the majority of the farmers through electronic media because they could read and write. Also the remaining fraction of the farmers may accept the information through adoption processes. This result is in agreement with the findings of Effiong and Aboh posited that educational advancement of farmers is a panacea to adoption of improved agricultural innovation adoption in Nigeria[3].

Majority of the respondents were involved in fishing activities (57.5%) as source of livelihood. This may be due to the fact that Ibeno is majorly a riverine area surrounded by major rivers and tributaries. Some farmers were into crop production (29.17%) while others indicated that they were into livestock production and sawmilling (12.5%) and (0.83%) respectively. This study is in agreement with the findings of Effiong who stated that most respondents take farming as a stepping stone to other occupations or a means to an end to economic adversity and poverty reduction [10].

Perceived determinants of oil spills on agricultural land

The result of the perceived determinants of oil spills on agricultural lands is shown in Table 2. From the table, the respondents indicated that e quipment failure (x=4.56) ranked 1st, followed by pipeline corrosion (x=4.05) ranked 2nd and pipeline sabotage (x=3.01) ranked 3rd as the perceived determinants of oil spillage in Ibeno Local Government Area. Bush burning had mean score of (2.70) ranked 4th, cropping activities had the mean score of (2.11) ranked 5th while the mean of, ecavations (x=1.41) ranked 7th while the least recorded was flooding with mean score (x=0.72) ranked 9th. These results agree with the findings of Ijioma, Effiong, Ogbonna and Anumneoka that corrosion of steel pipes used for irrigation purposes may lead to pipe breakdown and subsequent flooding of farmlands. In the same way, corrosion of steel pipes as oil pipes may lead to oil spills. They also noted that equipment failure (tractor) led to delay in the ploughing of farmlands in Akwa Ibom, Cross River and Abia States, Nigeria. The study also agrees with Effiong that spills caused by corrosion, equipment failure and flooding occurred as a result of the old age of the pipelines and lack of regular maintenance [11]. Also, obsolete, leaking pipes, rusting, cropping activities and bush burning had become major causes of

oil spillage in Ibeno Local Government Area of Akwa Ibom State. According to Effiong and Aboh [12], bush burning, continuous cropping, soil excavation may result in gully erosion, thus leading to severe damage to any underground structures such as pipelines, drainage pipes and contours.

Perceived effect of oil spills on Agricultural production

The result of the perceived effect of oil spillage is shown in table 3. The table indicated that most respondents (91.67%) stated that oil spillage affected plant biodiversity in the area. Also, 8.33% of the respondents disagreed with the position that oil spillage caused plant biodiversity. The result agreed with the findings of Effiong & Effiong that man made factors such as oil spillage and oil pollution have greatly affected biodiversity loss. During pollutions, the process of plant photosynthesis that enhanced plant diversity is impaired due to crude oil deposits on leave surfaces. [3] The respondents also noted that crop germination in the field were affected as follows wilt and death of plants (40.00%), low yield (30.83%), poor germination/growth (20.00%). These results showed that there was serious effect on the physiochemical properties of the soil including the PH values of the soil caused by oil spillage. Oil spillage pollutes air, water and land resources causing death of crops and aquatic lives. [10]

Influence of oil spills on socio-economic wellbeing of respondents

The result of the influence of oil spills on socio-economic wellbeing of the respondents is shown in Table 3. From the table, oil spills exert high negative influence on relationship between the oil company and the host communities (x=4.30) ranked 1st, negative influence on the economic activities in the study area (x=4.19) ranked 2nd. Also, unrest in the communities (x=3.87) ranked 3rd. These, according to Adeyemo and may have hindered youth, women and men's participation in agricultural activities in the oil rich communities in Nigeria, one way or the other, resulting in low productivity in the agricultural subsector [11]. Other influence of oil spills on wellbeing identified are non-payment of compensation (x=3.44) ranked 4th, provision of health care services (x=2.60) ranked 5th and provision of coping strategies (x=2.60) ranked 6th. Also, the least influence identified was preventive measures mounted in the study area (x=1.00) ranked 9th.

The study showed that there is need for oil companies to conduct routine checks on pipelines in the area and pay adequate compensations to affected farmers. This problem may be the reason why there is low agricultural output in the study area. This result also agrees with the assertions of Effiong and Effiong that crop production in Akwa Ibom State has been adversely affected by oil spillage, flooding, fire outbreak and other natural disasters [13].

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CONCLUSION

It is a fact that oil spillage occurred in Ibeno Local Government Area of Akwa Ibom State. The spills were caused by pipelines corrosion, equipment failure, pipeline sabotage and bush burning among many other perceived determinants in the communities. Majority of the people in the area were involved in one agricultural activity or the other irrespective of their position in the society. The study also observed that oil spillage brought about biodiversity loss, poor plant germination and various kinds of pollution in the area. Farmers in Akwa Ibom State, Nigeria could be encouraged through the supply of improved seedlings, inputs, machineries and the provision of alternative lands for agricultural production. Also, concerned efforts should be put in place by government, oil companies and host communities to solve the problem of oil spillage in the state. These may also be achieved through the provision of healthcare services, provision of warning signals, alternative source of income and establish cordial relationships between host communities and the oil companies operating in the area. In addition, therefore the study recommends that:

1. The oil company should ensure safety of oil pipes by using modern pipes made to withstand stress and strains. There is need for good maintenance system and burying of oil pipes deep to avoid sabotage and breakage.

2. There should be regular replacement of corrosive pipelines and flow lines should be done to avoid spillage on farm lands and community roads.

3. The oil companies should provide adequate socioeconomic wellbeing through payment of compensation, provision of health care services, coping strategies and installation of warning signals at strategic locations in the study area to avoid unforeseen circumstances.

4. Agricultural activities in an around oil pipe line installations should be avoided to ensure safety of the pipelines.

5. Cooperate social responsibilities should be encouraged among the oil companies operating in the area to ensure healthy and sound relationship between the communities and companies operating in the study area for better mutual relationship.

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Table 1: Distribution of respondents according to socio-economic characteristics

Socio-economic variable	Value	Frequency	Percentage (%)
Age	Between 16 and 25	21	17.5
	Between 26 and 35	35	29.17
	Between 36 and 45	29	24.17
	Between 46 and 55	20	16.67
	Over 55	15	12.5
Sex	Male	85	70.83
	Female	35	29.17
Level of education	Non-formal education	21	17.5
	Primary level	25	20.83
	Secondary level	49	40.83
	Tertiary level	25	20.83
Class of occupation	Crop production	35	29.17
	Fishing	69	57.5
	Livestock	15	12.5
	Sawmill	1	0.83
Source of labour	Family labour	80	66.67
	Hired labour	40	33.33

Source: Field Survey Data, 2021

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Table 2: Perceived determinants ranking of oil spills on agricultural lands in the study area

Causes of spillage	Mean score ($\bar{x}$)	Rank
Pipeline corrosion	4.05	2
Equipment failure	4.56	1
Pipeline sabotage	3.01	3
Blowout	1.78	6
Bush burning	2.70	4
Cropping activities	2.11	5
Livestock grazing	1.35	8
Excavations	1.41	7
Flooding	0.72	9

Source: Field Survey Data, 2021

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Table 3: Distribution of respondents according to the perceived effect of oil spillage

Variables	Frequency	Percentage (%)
Biodiversity loss		
Yes	110	91.67
No	10	8.33
Plant Germination		
Wilt and death of plants	48	40.00
Destruction of plant roots	11	9.17
Poor Germination growth	24	20.00
Low yield	37	30.83
Pollution		
Land pollution	59	49.16
Air Pollution	23	19.17
Water pollution	33	27.50
Pollution control	5	4.17

Source: Field Survey Data, 2021

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Table 4: Ranking of influence of oil spills on socio-economic wellbeing of respondents

S/N	Socio-economic wellbeing	Mean score ($\bar{x}$)	Rank
1	Influence on economic activities	4.19	2
2	Unrest in the communities	3.87	3
3	Influence on the relationship between oil company and host communities	4.30	1
4	Non payment of compensation	3.22	4
5	Preventive measures mounted	1.00	9
6	Health care services provided	2.60	5
7	Provided coping strategies	1.15	6
8	Early warning signals	1.01	8
9	Provided alternative source of income	1.13	7

Source: Field Survey Data, 2021

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