



Effect of Oil Spillage on Agricultural Production in Rivers State, Nigeria

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Abstract

The study investigated the effects of oil spillage on agricultural production in Rivers State, Nigeria. One hundred and fifty (150) respondents were selected for the study. Frequency tables, percentages and means were used for the analysis of data. The results revealed that the major occupation of the people was fishing with a mean annual income of ₦86, 228.00. The major cause of oil spillage was the vandalization of oil pipelines. This oil spillage contaminated their water, degraded farm lands and destroyed aquatic lives. It resulted in massive reduction in agricultural production. The study recommended for environmental awareness campaign to sensitize the communities on the dangers of pipeline vandalization and for the people to be organized into groups for training on non-farming income generating activities and the diversification of sources of livelihood.

Keyword: Oil Spillage, Agricultural Production, Effect, River State

1.0 Introduction

In Rivers state, prior to the discovery of oil, the people made their living from exploitation of the resources of the land, water and forest as farmers, fishermen, and hunters. Conscious of the critical position of the environment to their sustenance and their future generations, the people were very attached to their environment. The discovery of oil understandably raised the hopes of the people for development. In their innocence, they believed that the Nigerian state and the oil companies were equally interested in and committed to their development. They soon found out that this was not the case, and that the two shared a common interest in the maximization of profit and the accumulation of capital at any cost, hardly their welfare or development (Owugah, 2000). Therefore with the discovery of oil in this area, all activities including agricultural pursuit became peripheral and subservient to oil exploration activities. In Rivers state, oil spills were a direct consequence of crude oil production and therefore man made. They may also result in changes to both the landscape and the socio-economic activities in the area. Spills may also result because of faults at any stage of the production and movement of crude, as products involve many mechanical processes, the continued efficiency of which may not be guaranteed. Jike, (1987) has argued rather trenchantly that although oil companies have made enormous profits in the country, these companies have contributed

minimally to the country's development. Oil spills have posed a major threat to the environment, which has led to total annihilation of the ecosystem. Thus, life in this area was becoming increasingly unbearable due to the ugly effects of oil spills (Oyem, 2001).

Intermittent oil spillages have rendered vast stretches of indigenous farmlands useless. Therefore as important as oil might seem to the nation's economy, the people perceive the discovery of oil as a threat to their life support system – the land. The spill is generally having a negative consequence on human health, due to the consumption of contaminated seafood. Akoroda, (2000), indicated that an emergent trend of carcinogenic diseases in this area is traceable to the exposure of these people to the radioactive elements of gas flaring, which is as a result of oil exploration and production in this area. The people are beginning to develop symptoms of bronchial and respiratory diseases. An air volatile fraction through evaporation processes of the oil, has adversely affected respiratory functions. These include impaired lung function, chemical bronchitis, tracheitis, visual irritation and skin reactions. Oil spill had a serious impact on the vegetation and wildlife to the extent that plants could no longer bear its traditional fruits and those making a living from the sea-sources were stranded and a vast array of agricultural farmlands and products were destroyed, causing fish mortality and destruction of other environmental resources, as

well as affecting the health and general living conditions of the people living in these community and its environs (Wikipedia 2009).

According to Badejo and Nwilo (2004), illegal fuel siphoning as a result of the thriving black market of fuel products increased the number of oil pipeline explosions in recent years. In July 2000, a pipeline explosion outside the city of Warri caused the death of 250 persons. According to Steiner (2008), NNPC reported 800 cases of pipeline vandalization from January through October 2000. In January 2001, Nigeria lost about \$4 billion in oil revenues due to the activities of vandals on the oil installations. Nigeria lost about N7.7 billion in 2002 as a result of vandalization of pipelines carrying petroleum products. The Nigerian government and oil companies claimed that up to 15 percent of the country's two million barrels per day oil production was taken illegally, taken from pipelines in the state and smuggled abroad. Generally, oil spillage occurs during crude oil production, refining, marking and transportation of crude and refined products. Despite all the factors mentioned above, records show that the majority of the spills that occurred were man made mistakes which were avoidable (Hart, Amah and Zabbey 2007). The two outstanding cases were, the Funiwa – 5 oil well blow-out of 1980 spilling 400,000 barrels of crude into the marine environment as well as the January 12th, 1998, oil spill, at the Mobil's Qua Iboe Terminal in Akwa - Ibom State, where about 40,000 barrels of oil were spilled (Aghalino and Eyinla, 2009).

2.0 Materials and Method

The study area is Rivers state which is located in the Niger Delta area of Nigeria. The Niger Delta consists of nine (9) states namely: Abia, Akwa-Ibom, Bayelsa, Cross-River, Delta, Edo, Imo, Ondo and Rivers states. It covers an area of about 7.5 % of Nigeria's total land mass. The coastline extends for 560km, roughly two-thirds of the entire coastlines of Nigeria (NDDC, 2004). Rivers state consists of 23 local government areas (LGAs). It is bounded on the south by the Atlantic Ocean, to the north by Imo, Abia and Anambra states, to the east by Akwa-Ibom state. The inland part of the state consists of tropical rainforest, while the coastal areas were covered by swamps. Rivers state named after the many rivers that surround its territory was part of the oil rivers protectorate from 1885-1893, when it became part of the Niger coast protectorate. The state was created in 1967 with the split of the eastern region of Nigeria

(Wikipedia, 2012).The population of Rivers state was 6,689,087 inhabitants NBS,2014.

A multi-stage sampling technique was employed to select 150 respondents for the study. In the first stage, fifteen communities prone to oil spillage were purposively selected. They included; Ogbodo, Mgbuodo, Rumuekpe, Ikata, Imogu, Otukpo, Epellema, Ilomu, Nimalo, Kala, Bille, Ogale, K-Dere and Kpor communities. In the second stage, 10 respondents were randomly selected from each community to give a total of 150 respondents for the study. The primary data for this work were collected using structured questionnaire which were administered by the researcher with the help of Rivers State Agricultural Development Programme staff. Secondary data were obtained from journals and text books. Percentages, means and a four point likert- type scale with responses such as strongly agree (4), agree (3), disagree(2) and strongly disagree (1) were used for the analysis of data .Variable with a mean score higher or equal to 2.5 was regarded as having effect on food production, while mean score less than 2.5 was regarded as having no serious effect.

3.0 Results and Discussion

3.1 Personal characteristics of the respondents

Table 1 is the result of personal characteristics of respondents. Table 1 shows that majority of the respondents (54 %) were males. This result is consistent with gender role pattern of people where fathers play dual roles of household and farm family heads. This disagrees with the findings of Onoh & Peter-Onoh, (2012) and Aniedu et al (2007) who observed women as major stakeholders in the provision of food. The mean age of the people was 42.69 years. Age is an important characteristic that determines the ability to pursue and learn new innovations (Adisa & Adekoya, 2011). Majority of them belonged to one social organization or the other. This is in line with the findings of Etuk, Ekanem & Cookey (2012), which stated that Green River Project (GRP) farmers belonged to cooperative groups and have a better access to farm inputs than individual farmers. They also said that farmers' membership of cooperative societies enhanced their social capital, interactions, awareness and exposure to innovations and subsequent adoption.

Their level of education could be said to be low as more than 20 % of them did not go to school at all. The mean years spent in school was 7.23 years. Adejo, et al (2012) stated that technological changes

are achieved through formal education. Okoronkwo and Ume (2013), also stated that level of farmers' education has a positive effect on their level of adoption in catfish production. The major occupation of the people was fishing (23 %) and only 5.33 % of them were employed in the petroleum sub-sector of the economy. In line with this result, Tawari, (2006) and Davies et al. (2008) stated that the major occupation of the people of Niger Delta

region was fishing .This was due to the aquatic nature of their environment. Their mean house-hold size was 8 persons per house-hold with a mean annual income of N86,228.00.The implication of this is that the people may opt for cheaper means of meeting their financial obligations because according to Shehu et al (2007),the bulk of people living in rural areas in Nigeria have low economic status.

Table 1: Personal characteristics of the respondents

Sex	Frequency	Percentages	Mean
Male	81	54	
Female	69	46	
Total	150	100	
Age			
16-25	20	13.33	
26-35	31	20.67	
36-45	30	20.00	42.69
46-55	34	22.67	
56 and Above	35	23.33	
TOTAL	150	100	
Social organization			
Yes	100	66.67	
No	50	33.33	
TOTAL	150	100	
Years spent in school			
0	34	22.67	
1-6	46	30.67	
7-12	37	24.6	7.23
13-18	23	15.33	
Above 18	10	6.67	
Total	150	100	
Occupation			
Crop cultivation	24	16.00	
Status			
Fishing	35	23.33	
Livestock	26	17.33	
Trading	27	18.00	
Public sector worker	12	8.00	
Oil company worker	8	5.33	
Retired	18	12.00	

2.2 Causes of Oil Spillage

The results in Table 2 show the respondents' opinion on possible causes of oil spillage in the area. Majority (73.33 %) felt it was caused by spills from vandalized oil wells, followed by corrosion of oil pipe lines (72 %), during drilling of oil wells (65.35 %), leakages from oil tanks/faulty facilities (63.33 %) and during maintenance operations (62.00 %). According to Steiner (2008), oil spills in the Niger

delta have been extensive, difficult to assess and often under reported. In his opinion, one uncomplimentary value shared by the bulk of oil companies operating in Nigeria was the deliberate under reporting of the actual environmental impacts of such oil spills, especially those resulting from equipment failures, in terms of volume of crude oil spilled into the already fragile and over stretched ecosystem.

Table 2: Distribution of Respondents on Causes of Oil Spillage

Causes	Frequency	Percentage (%)
Drilling of oil wells	98	65.33
Explosion of wells/terminals/stations	95	63.33
Spills from vandalized oil pipelines	110	73.33
Leakages from oil tanks/faulty facilities	95	63.33
Corrosion of oil pipelines	108	72.00
Natural gas flaring	86	57.33
Maintenance activities of oil companies	93	62.00
Sabotage	78	52.00

Source: Field Survey Data, 2014

2.3 Effects of Oil Spillage on Agricultural Production

The results in Table 3 show that oil spillage contaminated their water, degraded agricultural farm lands, increased soil temperature/toxicity, resulted in outbreak of crop diseases, destroyed soil micro-organisms and also resulted in the destruction of aquatic lives with mean effects of 3.87, 3.80, 3.77, 3.76, 3.74, and 3.50 respectively. They

however, felt that oil spillage did not affect the taste and decay of their farm produce. These results are in line with the findings of Olaniyi et al (2008). In another study, Anyanwu and Tanee (2008) observed dramatic reductions in Cassava yield parameters (growth, fresh weight of shoot and tubers, total fresh weight, etc) in the Niger Delta due to oil pollution.

Table 3: Distribution of Respondents according to their perceived effects of oil spillage on food production

Effects	Strongly disagree		Disagree		Agree		Strongly agree		Mean (??)	Remark
	F	%	F	%	F	%	F	%		
Reduction of soil fertility	5	3.33	15	10	30	20	100	66.67	3.73	Agreed
Increased soil temperature/toxicity	-	-	2	1.33	30	20	118	78.67	3.77	Agreed
Yellowing of crops leaves	125	83.33	20	13.33	5	3.33	-	-	1.25	Disagreed
Death of livestock	150	100	-	-	-	-	-	-	1.01	Disagreed
Contamination of water source	-	-	-	-	8	5.33	142	94.67	3.87	Agreed
Crop leaves appear burnt	150	100	-	-	-	-	-	-	1.08	Disagreed
Death of fishes and aquatic life	2	1.33	2	1.33	50	33.33	96	64	3.50	Agreed
Oil spillage degrades agricultural farmland	-	-	-	-	38	25.33	112	74.67	3.80	Agreed
Outbreak of crop disease	-	-	-	-	32	21.33	118	78.67	3.76	Agreed
Toxicity of water available for livestock	-	-	-	-	30	20	120	80	3.74	Agreed
Destruction of soil micro organism	-	-	-	-	30	20	120	80	3.74	Agreed
Bad taste of produce	75	50	39	26	14	9.33	29	19.33	1.38	Disagreed
Decay of tuber plants	75	50	39	26	14	9.33	29	19.33	1.38	Disagreed

Source: field survey data, 2014

2.4 Strategies Used to Curtail the Effect of Oil Spillage

Table 4 shows that majority (56.67 %) of the respondents got involved in non-farming activities as a coping strategy to overcome the effects of oil spillage, while 43.3 % others coped by purchasing

food items from neighbouring communities. This finding is in line with that of Hart et al (2007) which showed that respondents coped with the effect of oil spillage by engaging in non-farming activities and by purchasing of food crop items from unaffected neighbouring towns.

Table 4: Distribution of Respondents According to Strategies Used to Curtail the Effect of Oil Spillage.

COPING STRATEGIES	FREQUENCY	PERCENTAGE (%)
Migration to other villages//town	20	13.3
Purchasing of food crops from unaffected neighboring towns	65	43.3
Acquisition of new unaffected land	10	6.67
Engaging in non farming activity	85	56.67

Source: Field Survey Data, 2014

4.0 Conclusion and recommendations

It is inferred from this study that oil spillage was caused by spills from vandalized oil wells and corrosion of oil pipe lines. This spillage contaminated their water, degraded farm lands and destroyed aquatic lives. It resulted in massive reduction in agricultural production. It is recommended for oil companies and governments to mount environmental awareness campaign to sensitize the communities on the dangers of pipeline vandalization and for the people to be organized into groups for training on non-farming income generating ventures. The oil companies should be compelled to pay adequate compensation to the people when such devastation occurs. European Union (EU) countries whose companies operate in the Nigeria's oil industry should respond speedily to the cries for justice by the impacted communities.

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