



ROLES OF AGRICULTURAL EXTENSION SERVICE ON OIL SPILLAGE AMONG RURAL FARMERS IN OGBA/EGBEMA/NDONI LOCAL GOVERNMENT AREA, RIVERS STATE, NIGERIA

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ABSTRACT

This study examined the roles of extension service on oil spillage among rural farmers in Ogba/Egbema/Ndoni Local Government Area of Rivers State, Nigeria. Specific objectives of the study included to: examine the farmers socio-economic characteristics, determine main types of oil spillage, identify damages caused by oil spillage on agricultural production, examine the role of extension service in reducing the effects of oil spillage on agricultural production and identify constraints associated with the roles of extension on oil spillage among rural farmers in the area. Questionnaire was used in collecting data from 120 respondents. Simple descriptive statistics such as frequency distribution, percentages, mean and likert type scale were used for the data analysis. Findings revealed that more males (55.8%) were involved in agricultural activities in the area. Sabotage ($\bar{X}=2.2$), Pipeline Vandalism ($\bar{X}=2.1$) among others were the main types of oil spillage in the area. Farmers agreed that oil spillage caused reduction in agricultural production ($\bar{X}=2.3$). The extension agents played the role of assisting farmers form strong leaders who can present oil spillage problems to concerned oil companies ($\bar{X}=2.3$) and encouraged farmers to form co-operatives to reduce cost of losses from oil spill ($\bar{X}=2.2$). Identified constraints to extension playing their roles effectively included poor extension contact/visit to farmers ($\bar{X}=2.2$). The study recommended among others that extension agents should increase their number of visit to the farmers and advising farmers on formation of strong leaders for effective representation for assistance from oil companies in case of oil spillage.

KEY WORDS: Roles, Extension Service, Oil Spillage and Rural Farmers.

INTRODUCTION

Poverty eradication and food security have moved to the centre stage of the global development agenda. An estimated 239 million people in sub-Sahara Africa were hungry and malnourished while 925 million people were hungry worldwide. Africa was the continent with the second largest number of hungry people as Asia and Pacific had 576 million, principally due to much larger population of Asia when compared with sub-Sahara Africa. Sub-Sahara Africa had the largest proportion of its population undernourished and estimated 30% in 2010 compared to 16% in Asia and Pacific (FAO, 2012). Agriculture needs not only to provide adequate nutritious food, income, and decent jobs, but also address a host of environmental challenges. To respond to these multiple challenges, there is need to shift to more sustainable forms of agriculture and to introduce comprehensive policies that support this shift. Nigeria has before independence in 1960 and during early independence, enjoyed a thriving agrarian economy. The growth rate in agricultural production had an edge over population growth and seemed salutary, with the Food and agricultural Organization (FAO) projecting food surpluses in Nigeria for the 1970's. The food surpluses never happened as predicted essentially because the euphoria of the oil boom which advertently transformed into oil doom, for agriculture within the period (Asiegbu, 2000). Thus improved record in

agricultural productivity cannot be achieved without the roles of agricultural extension service in educating the rural farmers, even in the face of certain challenges faced by the farmers in Ogba/Ndoni/ EGBEMA Local Government Area (ONELGA) of Rivers State Nigeria. One of such challenges is oil spoilage. Oil spoilage is the release of a liquid petroleum hydrocarbon into the environment. It is the presence of significant large amount of layer of crude or refined oil on soil or sea water especially due to human activities (Oyem, 2001).

Prior to the discovery of oil, the people made their living from exploitation of the resources of the land, water and forest as a good number of them are farmers, fishermen, and hunters. Conscious to their critical position of the environment to their sustenance and their future generations, the farmers of the study area were attached to their environment, as the farmers engaged in crop cultivation, animal rearing and other agricultural production practices. The fishermen capture fish from the rivers and other water bodies in the area and the hunters scout the bushes and forests hunting for animals all to make money from these practices and carter for their households thereby making a living from them Badejo and Nwailo (2004).

The effect of oil spill on farmlands has greatly hampered agricultural activities in the area. There have been records of spills covering farming areas, loss of soil fertility and

deterioration of crops which has led to decline in food production for family consumption and also for commercial purposes. This has posed a serious threat on the farmers' survival over time (Njoku, 2005). Another negative effect of this oil spillage and other oil exploration activities in the area is its effects on wildlife, which has precipitated forced migration of a wide range of wild animals, monkeys among others of economic values to farmers that were highly visible and ubiquitous within the area before the advent of oil exploration. The spill as well, generally had negative consequences on human health due to the consumption of contaminated sea food as a result of spills on water bodies, killing the aquatic lives (fish) thus, a loss to rural farmers who cultivate these and serve as a source of making money (Akoroda, 2000). Water for drinking, irrigation, and other purposes from streams, bore holes, rivers have also been polluted, this is a serious problem since it rendered the water undrinkable and not good for other purposes due to unacceptable taste, bad odour and change in colour by presence of spilled crude oil mixed in it, thus leading to failing health standards and diseases like chemical gastroenteritis. The most significant and disturbing to the indigenes of the study area are the adverse effects on the degradation of the environments, thereby leaving those who are earning a living from the environment jobless. This has resulted in a drop in morality, disruption of the family peace, anti-social ways of life like robbery, prostitution, kidnap cases and other forms of immoral behavior (Onoh *et al.*, 2015) The peoples sources of livelihood have pervasively been destroyed by the activities of oil companies like SHELL, Elf, SAIPEN oil companies which they play host to, as such there has been increased vandalization of oil installation by the host community youths, since the compensations due to the host communities most times are delayed, or not paid or does not even get into the hands of those it is meant for.

Despite oil boom and consequent neglect to agricultural sector, agricultural extension service seems to be the only avenue for advising farmers to adopt new innovations or technologies, taking farmers problems to research for solution and back to farmers as to increase their income and improve their standard of living. According to Mgbada (2010), agricultural extension as an informal educational system which assists rural people in improving farming methods and techniques and other agro-based occupation, increasing production and service efficiency, income and improving the socio economic and educational levels of rural dwellers. Agricultural extension is of great importance and plays enormous roles in agricultural production. According to Aneato *et al.* (2012), the roles of agricultural extension in the development of agriculture throughout the world are not in doubt. It has remained one of the prime movers in the development of agricultural production and invariably in the rural development of the study area, Through the assistance of extension education, farmers would be able to handle oil spill situations and still carry out their agricultural activities in the area which aims at obtaining an appreciable yield at the end of farming seasons.

It has been argued that agricultural extension has not played her roles in the past in cases of oil spills as to handle oil spill problems while farmers continue with their

agricultural activities. Some may argue that extension agents face difficulties such as lack of early release of fund by Government for extension activities, inadequate number of trained extension staff /experts, poor response of farmers to extension teachings due to communication barriers, etc hinder them from performing their roles effectively. Therefore there lies a gap between what is, and what ought to be, and since researches carried out in the past have not properly addressed this problem, this study therefore, investigated the roles of extension service on oil spillage among rural farmers in ONELGA of Rivers State, Nigeria.

The objectives of the study included to:

- i. examine the socio-economic characteristics of the farmers in the area.
- ii. determine main types or forms of oil spillage in the area.
- iii. identify extent of damages caused by oil spillage on agricultural production.
- iv. examine the role of extension service in reducing the effects of oil spillage on agricultural production in the area.
- v. Identify constraints associated with the roles of extension on oil spillage among rural farmers.

METODOLOGY

This study was carried out in ONELGA of Rivers State Nigeria. ONELGA is one of the twenty three (23) L.G.A's of Rivers State, Nigeria with its administrative capital at Omoku. ONELGA Local Government Area is located in the central Orashi –Sombriero plains of Rivers State and is one of the major producers of oil that funds Nigerian economic development in recent decades (Ellah, 1995). The area stretches from about 4'50E to about 5'30N and extends from about 6'25E to about 6'40E. The area is bounded by Ekpeye, Engeni, and Ijaw areas to the South and South West, Oguta, Awala to the North and North West (Ejor, 1978). The chief rivers in the area are the Orashi and the Sombriero rivers. ONELGA has a population of about 284,010 people covering an area of 969 km² (NPC, 2006). The people of ONELGA are settled migrant farmers and fishermen and hunters with a rich cultural history, they cultivate crops such as; palm fruits, cassava, yam, cocoa yams, plantain, and vegetables among others. They also rear animals like goat, sheep, poultry. Two climate seasons are observable in this tropical area which also applies to the entire country of Nigeria, the wet and dry seasons. From October to February is dry during which period, some of the streams dry up and the rivers ebb for great economic activities in the area while the season from March to September is wet. All rivers and streams are full with water and parts of the land are flooded for relatively low economic activities.

Multi – Stage sampling technique was used in selecting 120 respondents for the study. The first stage involved random selection of forty (40) autonomous communities in ONELGA. In the second, Six (6) communities prone to oil spillage were purposively selected from the 40 autonomous communities. The six communities include Ebecha, Erema, Obagi, Ogbogu, Obirikopm and Omoku. The final stage involved twenty (20) respondents randomly selected from the six (6) communities to give a total of one hundred and twenty (120) respondents. The

sample frame which is list of Communities and farmers from ONELGA obtained from the Community Development Officer and extension agents respectively working in the area. Questionnaire was used to elicit data from the respondents. Data were analysed using simple statistics like frequency, percentages and mean and likert scale type. Simple statistics like frequency, table mean and percentages were used for objective 1 while Likert scale type was used for objectives 2, 3, 4, and 5.

The likert scaling type measuring instrument is represented by the formula:

$$\bar{X} = \frac{\sum Fx}{N}$$

Where \bar{X} = mean score

\sum = summation sign

F = frequency

N = no of respondents.

x = no of nominal value of each response category

Therefore,

$$\bar{X} = \frac{fx}{N} = \frac{3+2+1}{3} = \frac{6}{3} = 2.0$$

Three different scaling statements were used namely: 'strongly agree', 'agree', and 'disagree' for objectives 2, 3 and 4 while 'very serious', 'serious', and 'not serious' was used for objective 5.

Therefore, 2 is the weighed mean of the scaling statement. Decision rule: Any mean value greater or equal to 2 is positive.

Mean value less than 2 is negative

RESULTS AND DISCUSSION

Table1 shows that 55.8% of the farmers were males and 50.8% married. The males being majority of the farmers imply the dominance of the male folks in agriculture and related business as owners and family heads who take decisions as family heads. Majority (60.2%) of the farmers were between the ages of 40 and 59 years. Most (64.2%) respondents had farming as their main occupation. Majority (80.8%) had both primary and secondary education. All the farmers belonged to one social organization or the other while 57.2% agreed that extension contact with farmers in every two months was 1-2 times. 63.6% had an average annual farming income of N135, 212.50 Naira. According to Aderinto and Adisa (2006), Social organizations are avenues where experience and information are shared among members. Also Adejo *et al.* (2012) reported that the more educated the farmers are the more they become willing to accept ideas.

TABLE 1: Distribution of respondents according to Socio-economic characteristics

Socio-economic characteristics	Frequency	Percentage	Mean (X)
Sex			
Male	67	55.8	
Female	53	44.2	
Age			
20-29	10	08.3	
30-39	25	20.8	47
40-49	30	25.0	
50-59	42	35.2	
60 and above	13	10.7	
Marital Status			
Single	35	29.2	
Married	61	50.8	
Divorced	21	17.5	
Widow	3	2.5	
Main Occupation			
Farming Alone	77	64.2	
Farming and Other business	43	35.8	
Educational Attainment			
No education	8		
Primary Education	11	6.7	
Secondary Education	86	9.2	
Tertiary Education	15	71.6	
Social Organization Belonged			
Yes	120	100	
No	0	0	
Extension Contact			
0-2	69	57.5	
3-4	51	42.5	
Farming Expirience (years)			
1-10	43	35.8	
11-20	67	55.8	13
21- 30	10	8.4	
Annual Farm Income (N)			
35,000 – 65,000	06	5.0	
66,000 – 95,000	21	17.5	135,212.5
96,000 – 144,000	20	16.7	
145,000 – 165,000	53	44.1	
166,000 – above	20	16.7	

Source: Field Survey, 2017

Table 2 shows that the respondents agreed that pipeline vandalization and faulty facilities/leakage (X=2.1) were forms of oil spillage. Others included Sabotage and drilling of oil wells (X=2.2) and (X=2.4) respectively.

This is in line with Badeji and Nwilo (2004) who agreed that these are forms of oil spillage. According to Oyem (2001), some pipelines are laid above the ground without adequate surveillance exposing them to wears and tears

and other dangers. According to Steiner (2008) oil spill 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 underreporting of the actual

environmental impacts of such oil spill, 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 according to extent to which they agree on forms of oil spillage

Forms Oil Spillage	Strongly agree (3)	Agree (2)	Disagree (1)	Total Score	Mean \bar{X}	Remark
Pipeline vandalization	38(114)	56(112)	26(26)	252	2.1	Agree
Drilling of oil wells	56(168)	58(116)	6(6)	290	2.4	Agree
Sabotage	39(117)	66(132)	15(15)	264	2.2	Agree
Faulty facility/leakage	33(99)	65(130)	22(22)	251	2.1	Agree

Source: field survey, 2017

Table 3 shows that high level of soil degradation and Adverse effects on health statuses of people ($\bar{X}=2.4$) in ONELGA were as a result of continuous oil spillage. Pollution/contamination of marine eco-system that reduces catch of sea food and fishing income in addition to reduction of agricultural production ($\bar{X}=2.3$) are also damages caused by oil spillage. Others damages included negative impact on the social well being of the ONELGA people and socio – cultural activities of the people affected by oil spillage ($\bar{X}=2.2$). Also, Oil spillage gave rise to economic hardship as daily/monthly income drops

($\bar{X}=2.20$). Azibolomanri (1995) agreed that pollution and contamination of the ecosystem are some of the bad effects. Also Anyanwu and Tanee (2008) agreed that oil spillage reduces crop yield and farm income. Gbadegesin (1997) reported that oil spillage caused extensive deforestation without replacement. In addition, Anyanwu and Tanee (2008) observed dramatic reduction in cassava yield parameters (growth, fresh weight of shoot and tuber, total fresh weight, etc) in the Niger Delta due to oil pollution.

TABLE 3: Distribution of respondents based on the damages caused by oil spillage in the area

Damages caused by Oil Spillage	Strongly agree (3)	Agree (2)	Disagree (1)	Total Score	Mean (\bar{X})	Remark
High level of soil degradation in ONELGA is as a result of continuous spillage e.g. low soil fertility, low crop yield, loss of nutrient, deforestation.	70(210)	30(60)	20(20)	290	2.4	Agree
Oil spillage gives rise to economic hardship as daily/monthly income drops e.g. low sales, crop failure, depressed farm income.	54(162)	37(74)	29(29)	265	2.2	Agree
Reduction in agricultural production e.g. damages to storage facilities, stunted growth.	54(162)	44(88)	22(22)	272	2.3	Agree
Pollution of marine eco-system reduces the catch of sea food and fishing income e.g. death of fish and aquatic animals, pollution of drinking water.	58(174)	41(82)	21(21)	277	2.3	Agree
Negative impact on the social wellbeing of ONELGA people e.g. lack of interaction by farmers due to low agric activities caused by oil spillage.	51(153)	47(94)	22(22)	269	2.2	Agree
Socio cultural activities of the ONELGA people is affected by oil spillage e.g. new yam festivals due to low harvest, rotting of yams, cocoa yams.	43(129)	53(106)	24(24)	259	2.2	Agree
Adverse effects on health status of the people e.g. contaminated water, waterborne diseases and other sicknesses due to oil spillage.	56(168)	48(96)	22(22)	226	2.4	agree

Source: field survey, 2017

Table 4 shows that most of the respondents agreed that extension agents informed farmers on the importance of taking insurance policies on agricultural activities/productivity ($\bar{X}=2.0$). Extension agents encouraged farmers liaise with the oil companies involved in oil

production in the area to provide support and preventive or clean up services before or during cases of oil spill ($\bar{X}=2.1$). Extension agents inform farmers on weather forecast from meteorological stations concerning oil spill cases and advancing oil spill ($\bar{X}=2.2$). Other roles played

by extension agents included assisting in liaising with oil companies to give subsidy for the purchase of farm inputs and improved varieties for the farmers (X=2.3), motivation to farmers to form co-operative societies to help them reduce losses in cases of oil spillage (X=2.2). The role of cooperatives cannot be over emphasized because it encourages people to move as a body to fight for their rights. Extension advised farmers to have strong leaders whose roles include representing farmers in case of oil spillage with the oil companies (X= 2.3). Also extension creates awareness to farmers on latest farming techniques

and improved farm inputs so as to have bumper harvest in case of no oil spillage (X=2.3), extension agents carry out educative trainings for the rural farmers on ways of averting oil spill cases, (X=2.1). According to Anaeto *et al* (2012), one of the critical roles of agricultural extension is farmer education, a prime mover in the development of agricultural production and rural development. Mgbada (2010) noted that extension roles are mostly advisory in areas of formation of cooperatives, leadership, creation of awareness *etc.*

TABLE 4: Distribution of respondents according to Roles of extension in reducing the effects of oil spillage on Agricultural production in the area

Roles of Extension Service	Strongly Agree (3)	Agree (2)	Disagree (1)	Total Score	Mean (X)	Remark
Extension Agents inform farmers on weather forecast from meteorological stations concerning oil spills cases and advancing oil spills.	50(150)	41(82)	29(29)	261	2.2	Agree
Extension agents inform farmers on the importance of taking insurance policy on Agric. Activities/ productivity	33(99)	55(110)	32(32)	241	2.0	Agree
Extension. advice farmers to have strong leaders whose roles include representing farmers in case of oil spillage with its oil companies	61(183)	34(68)	25(25)	276	2.3	Agree
Extension serves as motivation to farmers to form co-operatives to help them reduce loses in case of oil spillage.	45(135)	58(116)	17(17)	268	2.2	Agree
Ext. agent advise to farmers to liase with oil companies involved in oil production in the area to provide support and preventive or clean-up series before or during cases of oil spill	41(123)	50(100)	29(29)	252	2.1	Agree
Assist in liaising with oil companies to give subsidy for purchase of farm inputs and improved varieties for the farmers	54(162)	51(102)	16(16)	280	2.3	Agree
Create awareness for farmers on latest techniques and improved farm inputs as to have bumper harvest in case of oil spillage.	61(183)	34(68)	525(25)	276	2.3	Disagree
Ext. agents carry out awareness, educative trainings for the rural farmers on ways of averting oil spillage cases.	41(123)	50(100)	29(29)	252	2.1	Disagree

Source: field survey, 2017

Table 5 shows the respondents agreed that lack of strong leadership ($\bar{X}=2.0$) on the part of the farmers to represent them with the oil companies in the area as constraint. This may result from leaders not elected democratically. Insurance companies do not respond adequately and in time to the farmers in cases of oil spillage ($\bar{X}=2.1$). Extension contact/visit to farmers was minimal and inadequate ($\bar{X}=2.2$). Compensation paid by oil companies was not equal to the level of lost of farm produce and farmland ($\bar{X}=2.3$). Lack of sincerity and full co-operation from the oil companies ($\bar{X}=2.2$). Lateness of Information on weather forecast from extension agents to farmers ($\bar{X}=2.1$). Poor motivation of agric. Research institutes and

other institutions/agencies to carry out their duties effectively ($\bar{X}=1.7$) was perceived not serious. Other respondents perceived Language difference as a problem which makes extension-farmers' communication ineffective ($\bar{X}=1.8$) as not serious. Some respondents were of the opinion that poor farmers' response to extension agents was not constraint ($\bar{X}=1.9$). Atoma, *at el.* (2015) reported that there is increasingly low extension-farmer ratio, poor extension contact with farmer, lack of strong farmer cooperative organizations and poor leadership among farmers affect extension service roles in Nigeria which resulted in low coverage and inefficiency in service delivery.

TABLE 5: Distribution of respondents according to the level of seriousness of constraints associated with the roles of extension agents on oil spillage

Constraints to Roles Extension Service	Very serious (3)	Serious (2)	Not serious (1)	Total Score	Mean \bar{X}	Remark
Lateness of Information on weather forecast from extension agents to farmers	48(144)	54(108)	18(18)	270	2.3	Serious
Insurance companies do not respond adequately and in time to the farmers in case of oil spill	45(135)	43(86)	32(32)	253	2.1	Serious
Lack of strong leadership on the part of the farmers to represent them with the oil companies in the area	33(99)	50(100)	37(37)	236	2.0	Serious
Poor farmers respond to extension agents	30(90)	46(92)	44(44)	226	1.9	Not serious
Poor motivation of agric. Research institutes and institutions agencies to carry out their duties effectively	43(129)	56(112)	21(21)	262	2.2	Serious
Lack of required funds to insure their farmlands and farm produce.	17(51)	47(94)	56(56)	201	1.7	Not serious
Compensation paid by oil companies is not equal to the rate of loss of farm produce and farmlands	19(57)	48(96)	53(53)	206	1.7	Not serious
Lack of sincerity and full co-operation from the oil companies.	48(144)	56(112)	16(16)	272	2.3	Serious
Language difference is a problem which makes extension farmers communication ineffective	43(129)	56(112)	21(21)	262	2.2	Not serious
	27(81)	47(94)	46(46)	221	1.8	Not serious

Source: Field survey, 2017

CONCLUSION AND RECOMMENDATION

The future and success of agricultural activities, production and productivity in the face of oil spill cases depends heavily on the effective contributions of the extension service. Oil spillage existed in the area. It reduced their agricultural production, resulted in environmental degradation, reduced health status and made the people who gain from the land they own jobless. The extension service played important roles which included assisting farmers in having effective leaders, formation functional cooperative organizations to represent their interests with those oil companies operating in the area. The study recommended that more males should be encouraged into agricultural production activities for strong leadership and representation of the farmers with oil companies in case of oil spill cases. Oil companies involved in exploration activities should pay compensation directly to the farmers involved and in equal proportion to the rate of loss of farm produce and farmlands, extension agents should increase their number of visit to the farmers as to have on the spot information on oil spillage and finally extension service should carry out awareness on importance of taking insurance policies and educative training for the rural farmers on ways of averting oil spillage cases.

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