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Assessment of the Attitudes and Coping Strategies of Cassava Farmers toward Oil Spillage in Akwa Ibom State, Nigeria.

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ABSTRACT: The accrued benefits of crude oil production in Nigeria does not thrive without its destructive effects on the entire ecosystem of Niger Delta, and particularly in Akwa Ibom State. Hence, this study assessed the attitudes and coping strategies of cassava farmers toward oil spillage in Akwa Ibom State, Nigeria. A multi-stage random sampling technique was adopted in selection of 240 registered farmers as respondents Primary data was obtained through interview scheduled and questionnaire administration. Data collected were analysed and hypothesis tested using descriptive statistics and Z- test respectively. The majority of the respondents adopted backyard farming (95.83). The result also showed that some respondents also adopted greenhouse farming and off – farm activities or businesses (72.50% and 53.33%) respectively. The result of the respondents on the attitudes of cassava farmers toward coping strategies showed that respondents strongly agreed that backyard farming save cost and readily accessible with (mean score = 4. 41). The respondents further agreed to the fact that mixed cropping increases the output of many arable crops per season (mean score = 4.03). The Z- test calculated of (186.46 and 77.37 with Z-value of 2.39) respectively showed a significant difference in the output of cassava produced in the study area with non- oil spilled communities recorded higher output. Based on the above findings, the study recommends that: Cassava farmers are to engage in multiple cropping, early maturing crops, green house and intensive farming to supplement the output of cassava. Other farming systems such as sack crop production, intensive greenhouse farming, backyard farming and livestock production should be encouraged.

KEYWORDS: Attitudes, Coping Strategies, Cassava Farmers, Oil Spillage and Output

1.0 INTRODUCTION

The development of the human environment worldwide has been accompanied by industrialization however crude oil exploration has been on the increase since 1956 when crude oil was discovered in commercial quantity in the country (Ahmadu & Egbodion, 2013). Subsequent to it discovery over 90 per cent of Nigeria's economy is attributed to oil exploration. The oil industry has remained the leading sector of the Nigerian economy for many decades now. According to Energy Information Administration (EIA 2022), the Nigerian economy is heavily dependent on the oil sector which accounts for over 90 percent of export earnings and about 85 percent of government revenues and also the 10th largest producer in the world and the third largest in Africa. Nigeria is greatly endowed with abundant natural resources and the weather supports all year round agricultural production. The Niger Delta is known to have huge oil and gas reserve making Nigeria the 6th largest oil producer in the world and largest in Africa (Adekola et al., 2017). In as much as there is oil exploration going on in the area, the farmers also farm around the same oil field to feed their families and make income for a living. Oil is harnessed in about 606 oil fields of which 360 are on-shore and 246 are offshore (Ijiomah, 2018; Sam et al., 2016; Umar et al., 2021). The oil exploration in Nigeria is done in the Niger Delta region, which contains the oil reserves of the country. However, crude oil exploration in Nigeria has been on the increase since its discovery in commercial quantity in 1956.

In the past, Nigeria has depended largely on industrial and manufacturing sectors, as well as agricultural production and the export of cash crops like groundnut, millets, maize, cocoa and palm oil, which had a positive growth rate for its income, until oil was discovered in Nigeria. Oil sector has systematically replaced earnings from agriculture which was the main stay of the nation's economy. Consequently, less attention has been paid to agricultural sector which was the source of livelihood of the nation. Agriculture is however a shadow of itself in the communities in which the black gold (oil) flows and the inhabitant of the communities continue to wallow in conditions of social deprivation and abject poverty.

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According to Collins (2018), has enumerated several damages caused by oil exploration to the environment of Niger Delta which include the following; destruction of arable soils, deforestation, destabilization of the physiochemical properties of the soil, pollution of drinking water, alienation of the people for cultural inheritance and practices, air pollution, social and communal conflicts, global warming, heavy down pour, cancerous sun, noise pollution and social vices. Furthermore, the ugly situations faced by the Niger Delta people such as neglect, marginalization, deprivation, poverty, unemployment and underdevelopment of the Niger Delta region cannot be overemphasized. The indigenes of the oil rich communities decried how the community they cherished that used to provide for their forefathers has suddenly become polluted and unsuitable for agricultural production. Crude oil exploration is one of the activities that have affected the environment negatively especially when accident occurs in operation resulting to spillage of oil. According to National Oil Spill Detective Response Agency (NOSDRA 2021) have recorded a total of 822 oil spills and quantity spilled is about 9,828 between 2011 – 2021 .

Cassava (Manihot esculenta) is an economic crop serving both domestic and industrial purposes in Nigeria. As a staple food crop it serves as a huge source of calorie supply to the country's population who depend on it for their daily energy consumption. Akerele etal. (2021) in their study asserted that cassava production is an economically viable farm enterprise among farming households. In their findings they also observed that the output of cassava in Nigeria has continued to fall below its total demand for food, industrial use and export purposes. Cassava production over the years in the Niger Delta region has continued to decline, meanwhile the low performance can be traced to unattended consequences of environmental degradation due to oil spillage. However, oil exploration has negative effect on the soil as it pollutes the microorganisms in the soil and renders it agriculturally unproductive.

The Niger Delta region has been exposed to untold hardship and poverty in spite of the abundant natural and financial resources. The regions ecosystem has therefore been declared as one of the most endangered ecosystems in the world (Anejionu et al., 2015). According to Iheriohanma (2016) and Dode (2017) they posited that oil exploration has heightened the level of economic hardship in terms of hunger in the Niger Delta, due to the problems associated with oil exploration which has affected aquatic lives, trees and plants. The people of Akwa Ibom state are predominantly farmers, cassava farming in particular which is their staple food crop. Farming activities in the southern part of Akwa Ibom has become a mirage, instead of improving it rather declining gradually due to incessant oil spillage. The negative effect of oil spillage on cassava production leads to the yellowish of cassava leaves and wilting, the stems of cassava become dried while the tubers rot, poor yield in terms of the quality and the quantity of cassava produced are negatively affected. In view of the above aforementioned problems faced by oil producing communities and cassava farmers in particular, some coping strategies has to be adopted in filling the gap thereby seeking alternative ways to bring succor to farmers in order to assist alleviates the suffering of the people. Makaiko etal. (2015) observed in their findings of determinants of adoption and use intensity of improved cassava varieties that farmers can only adopt modern technologies if they are aware of the availability and benefits of it and inherent characteristics. They also asserted that adoption depends on regular contacts with extension workers and information that enhance increase exposure and awareness of a particular agricultural technology.

1.2 Objective of the Study

The main objective of this study is to assess the attitudes and coping strategies by cassava farmers toward oil spillage in Akwa Ibom State, Nigeria. The specific objectives of the study are to:

1. describe the socioeconomic characteristics of cassava farmers in the state;
2. describe the coping strategies adopted by cassava farmers in the study area;
3. describe the attitudes of cassava farmers toward the coping strategies adopted and
4. Determine cassava output differentials in oil spilled communities and non- oil spilled communities.

2.0 METHODOLOGY

This study was conducted in the southern part of Akwa Ibom State of Nigeria. The Southern part of Akwa Ibom State where oil spillage has ravaged the oil rich communities. Southern part of Akwa Ibom is predominantly a coastal area consisting of Ikot Abasi, Eastern Obolo, Mkpat Enin, Onna, Eket, Nsit Ubium, Ibeno, Esit Eket, Mbo, Urue Offong Oruko, Udung Uko, Oron and Okobo. Akwa Ibom State has three senatorial districts namely; Eket, Uyo and Ikot Ekpene senatorial district respectively. There are two major tribes which are the Ibibio and Annang and the major ethnic groups are Ibibio, Annang, Oron, Eket and Ibeno. The state is located between Latitude 4032^0 AND 5033^0 North and Longitudes 7035^0 and 8025^0 East.

Geographically, Akwa Ibom State is bordered by Rivers State on the West, Abia State on North, Cross River State on the East as well as Bight of Bonny (Atlantic Ocean) on the South. The State has a population of 6.497,967 (using population and

estimation index of 2021 with an annual growth rate of 3.46%) as forecasted by National population Census of 2006 and a land area of 6,900 square kilometers (NBS 2019). The entire region lies in the tropical rain forest belt and has two distinct seasons-rainy and dry seasons.

For the purpose of this study registered cassava farmers were randomly selected. A total of 240 cassava farmers was selected for the study. Five stage random sampling technique was employed. In stage one, two Agricultural Zones were purposively selected, Eket Agricultural Zone which is oil spillage zone and Uyo Agricultural Zone which is non- oil spillage zone respectively. In stage two, three (3) agricultural extension blocks were randomly selected from each zone and that made up six (6) extension blocks for the study. In stage three, four (4) extension cells were randomly selected from each block, giving a total of 12 extension cells. In stage four, ten (10) cassava farmers were randomly selected from each cell. In stage five, 120 cassava farmers were selected from oil spilled communities and 120 from non-oil spilled communities making a total of 240 respondents for the study. Structured questionnaire and interview scheduled were used to obtain the primary data (taking cognizance of the set objectives). The data obtained was analyzed appropriately using descriptive statistical tools, frequency count, percentage, mean score from 5- point likert scale and Z- test were used respectively. Objective one (socioeconomic characteristics of the respondents was analyzed using frequency count, percentage and mean pooled). Objective two (the coping strategies adopted by cassava farmers was achieved using frequency count, percentage and ranking). Objective three (attitudes of cassava farmers toward the coping strategies adopted was analyzed using 5-points likert scale of mean score). Objective four (cassava output differentials in oil spilled communities and non-oil spilled communities was analyzed using Z- test).

The z-test used in this study was specified as shown below:

$$Z = \frac{\overline{X_1} - \overline{X_2}}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

Where:

$\overline{X_1}$ = Mean of the first sample

$\overline{X_2}$ = Mean of the second sample

n_1 = Sample size of the first sample

n_2 = Sample size of the second sample

S_1^2 = Variance of first sample

S_2^2 = Variance of second sample

First sample = cassava output from farmers within oil spilling communities in year 2021.

Second sample = cassava output from farmers outside oil spilling communities in the year 2021

3.0 RESULTS AND DISCUSSION

3.1 Socioeconomic Characteristics of the Respondents

The socioeconomic characteristics of cassava farmers in the oil spilled and non-oil spilled communities was represented in Table 1. According to the table, the result of the findings showed that the largest group of respondents participated in the interviewed were 20 to 60 years with a mean ages of 44.29 and 43.94 years in oil spilled and non-oil spilled communities respectively with mean age of 44.07 years. The farmers in the oil spilled communities were older than the ones in non- oil spilled communities indicating that the respondents had been in agricultural production for a long time and must have had witnessed oil spillage incidents. This finding agreed with the study conducted by Angba etal,. (2020) they ascertained that most of the farmers were at their active and productive age fully involved in agricultural production to cater for their needs and that of families. The result indicated that majority of (60.00% and 59.17%) of the respondents were males. The involvement of more males than the females could be attributed to the tedious nature of the various activities involved in agricultural production. Moreover higher percentage of males' involvement could be attributed to the fact that men have easy access to lands being heads of family for agricultural purposes. The findings of the study agreed with that of Aboajah etal. (2018) in their study of socioeconomic determinants of cassava farmers whereby (70%) of the respondents were males. The result also revealed that the majority of (74.20% and 78.33%) of the respondents were married respectively in both oil spilled and non-oil spilled communities. This implies that married couple engaged in farming activities and agricultural production which helps in provision of food for the family. The result that majority of the respondents were married agrees with the findings of Ighoro etal,. (2018), that agriculture is mostly practiced by married people to make ends meet and cater for their children. This implies that majority of respondents being married is that members of their household could be of great assistance in farming activities and also form a valuable part of farm labour. With regards to household size, the mean household size showed 6 and 5 members of each were from oil spillage and

non-oil spillage communities respectively and the mean household size was 6 members. This implies that large family size contributes positively on farming activities which they may serve as labour in agricultural production. According to Olajide et al.(2015) asserted that household size is an important socioeconomic factor among farm families and further stated that the higher the household size the higher the productivity.

The result further showed that the majority of (91.66% and 93.34%) respondents were educated with different levels of educational qualifications respectively in oil spilled and non-oil spilled communities. Education increases the ability of the farmers to adopt agricultural innovation and hence improve their productivity. This explains the direct relationship between education and agricultural productivity for the farmers in oil spilled communities. This finding of the study is in line with the study of Iheke et al. (2016) who asserted that the level of education of farmers do not only increases their farm productivity, but also enhances their ability to understand and evaluate new production technique. The result implies that the higher literacy level of the farmers would allow farmers have access to information that would help increase their productivity and further adopt the coping strategies of agricultural technologies as well as information on oil spillage. The findings also indicated that mean farming experience of the respondents as (16.78 and 16.35 years) for oil spillage and non-oil spillage communities respectively. The farmers have been in agricultural business for 16.39 years. Experience in farming activity is an indication of farmers' ability to effectively adopt agricultural technologies practices and in so doing, ensure increased productivity. This implies that the respondents had engaged in agricultural production for longer time and must have had several experiences concerning the effects of oil spillage in agricultural production in oil spillage communities. This result has positive implications for increased crop productivity because according to Iheke etal. (2019), who reported that the number of years spent by a farmer in farming business might influence their practical knowledge on how to overcome specific farm production problem.

The mean of farm size under cultivation was 1.7 hectare. The farm sizes of the farmers in the non- oil spilled communities was as result of pressure on the farmlands by farmers from the neighboring oil spilled communities whose farmlands had been destroyed by oil spills. The respondents from oil spilled communities no longer cultivate large portion of land due to oil spillage which had led to farm degradation. The findings is in line with Ighoro etal.(2018) in their study of socioeconomic determinants of cassava farmers observed that farmers have an average farm size because they are peasant farmers operating on small farm size. The finding showed that the majority (53.30% and 49.17%) of respondents used both family and hired type of labour in oil spilled and non-oil spilled communities.. This finding also agreed with Job and Adebola (2015) findings that the combination of family and hired labour contributed greatly to labour supplied for crop production. This implies that agricultural production in the study area is characterized by crude technology that requires many hands to ease the burden involves in farming activities. The findings of the study showed that 74.20% and 75.83% in oil spilled and non-oil spilled communities had access to extension services. The extension services provide useful information that would help farmers in their agricultural productivity in order to increase their yield and information to combat oil spillage menace. According to Rokhani etal. (2021) in their study found that the farmers living in the non-oil spilled communities had more frequent extension services than their counterpart. This implies that access to extension services would significantly increase farm income and improve farm performance. Also, Orawan and Surasak (2020) in their study found that the determinants of technical efficiency of cassava farmers were household labour, farm size, and extension service respectively. This implies that increase in the number of extension visits increases the profitability of cassava farming. The annual income generated indicated that mean annual income of the respondents from cassava production ₦ 380,550.48 and ₦ 813.670.45 at (45.83% and 55.83%) from oil spillage and non-oil spillage communities respectively , while the mean annual income of both was ₦ 819,500.58. It is a clear indication that the non-oil spillage communities generates more income than oil spillage communities. It therefore implies that cassava production is threatened with frequent oil spills which in turns affect the yield of cassava. The non-oil spilled communities generated higher income than it counterparts because their lands are still fertilized for agricultural production. This findings is in line with Amusa etal.(2021) that concluded in their study that cassava production is still profitable in the oil bearing communities of Abia State despite the environmental challenges of oil spills confronting the farmers.

Table 1: Socio economic Characteristics of Cassava Farmers n=240

Variables	Oil Spilled n = 120		Non-Spilled n = 120		Pooled	
	Frequency	Mean	Frequency	Mean	Frequency	Mean
Age						
20 – 40	55 (45.83)	44.29 yrs.	63 (52.50)	43.94 yrs.	118 (49.17)	44.07 yrs.
41 – 60	51 (42.50)		42 (35.00)		93 (38.75)	
61 – 80	14 (11.67)		15 (12.50)		29 (12.08)	
Sub total	**120 (100)**		**120 (100)**		**240 (100)**	

Sex						
Male	72 (60.00)		71 (59.17)		143 (59.58)	
Female	48 (40.00)		49 (40.83)		97 (40.42)	
Sub total	**120 (100)**		**120 (100)**		**240 (100)**	
Marital Status						
Married	89 (74.20)		94 (78.33)		183 (76.25)	
Single	18 (15.00)		19 (15.83)		37 (15.42)	
Divorced	2 (1.70)		2 (1.70)		4 (1.67)	
Widow	8 (6.70)		4 (3.33)		12 (5.00)	
Widower	3 (2.50)		1 (0.83)		4 (1.67)	
Sub total	**120 (100)**		**120 (100)**		**240 (100)**	
Household Size						
1-3	24 (20.00)		23 (19.17)		47 (19.58)	
4-6	60 (50.00)	6	63 (52.50)	5 members	123 (51.25)	6
7-9	30 (25.00)	members	26 (21.67)		56 (23.33)	members
10-12	6 (5.00)		8 (6.67)		14 (5.83)	
Sub total	**120 (100)**		**120 (100)**		**240 (100)**	
Educ. Background						
No formal education			6 (5.00)		16 (6.67)	
Primary education	10 (8.33)		8 (6.67)		18 (7.50)	
Secondary education	10 (8.33)		37 (30.83)		79 (32.92)	
Tertiary education	42(35.00)		69 (57.50)		127 (52.92)	
Sub total	58 (48.33)					
	120 (100)		**120 (100)**		**240 (100)**	
Farming Exp.						
1- 10	47 (39.17)		48 (40.00)		95 (39.58)	
11 – 20	35 (29.17)	16.78 yrs.	37 (30.83)	16.35 yrs.	72 (30.00)	16.39 yrs.
21 – 30	27 (22.50)		28 (23.33)		55 (22.92)	
31 – 40	8 (6.67)		6 (5.00)		14 (5.83)	
Above 40	3 (2.50)		1 (0.83)		4 (1.67)	
Sub total	**120 (100)**		**120 (100)**		**240 (100)**	
Farm Size						
0.1 – 2.0	96 (80.00)	1.47 ha	27 (22.50)	1.83 ha	123 (51.25)	
2.1 – 4.0	21 (17.50)		52 (43.33)		73 (30.42)	1.7 ha
Above 4.0	3 (2.50)		41 (34.17)		44 (18.33)	
Sub total	**120 (100)**		**120 (100)**		**240 (100)**	
Labour Type						
Family	21 (17.50)		17 (14.17)		38 (15.83)	
Hired	35 (29.20)		44 (36.67)		79 (32.92)	
Both	64 (53.30)		59 (49.17)		123 (51.25)	
Sub total	**120 (100)**		**120 (100)**		**240 (100)**	
Access to Ext.						
Access	89 (74.20)		91 (75.83)		180 (75.00)	
No access	31 (25.80)		29 (24.17)		60 (25.00)	
Sub total	**120 (100)**		**120 (100)**		**240 (100)**	

Annual Income						
Below 200,000	41 (34.17)	380,550	11 (9.17)	813,670.45	52 (21.67)	819,
200,000 – 800,000	67(55.83)	.48	44 (36.67)		111 (46.25)	500.58
801,000 – 1,400,000	8 (6.67)		55 (45.83)		63 (26.25)	
Above 1,400,000	4 (3.33)		10(8.33)		14 (5.83)	
Sub total	**120 (100)**		**120 (100)**		**240 (100**)	

Source: Field Survey: 2022. Figures in parentheses are percentages

3.2 Coping Strategies Adopted by Cassava Farmers

Data presented in Table 2 shows the various coping strategies adopted by the cassava farmers in the study area. Coping strategies is defined as remedial actions utilized by farmers to survive when unexpected event such as oil spills strikes and livelihoods are threatened. The result indicated that (95.83%) respondents adopted backyard farming as an important coping strategy. The result further revealed the adoption of mixed cropping by the respondents with (95.80%). Moreover, the adoption of use of fast-maturing varieties of crops and intensive farming by the respondents were (85.00% and 85.00%) respectively. The result also showed that some respondents adopted greenhouse farming and off-farm business (73.11% and 53.33%) respectively. This findings are consistent with the study and findings of Mango etal.(2017) which indicated that adoption of individual technologies varies extensively, with some practices recording low adoption rates while others were high. Additionally, the findings indicated that small-scale farming households adopted a bundle of technologies. This implies that smallholder farmers adopt multiple technologies to harness their complimentary benefits.

Table 2: Coping strategies n=120

Coping Strategies and Management Practices	Frequency	Percentage	Ranking
Coping strategies adopted by cassava farmers			
Greenhouse farming	87	72.50	4th
Off-farm activities	64	53.33	5th
Mixed cropping	114	95.00	2nd
Intensive farming	102	85.00	3rd
Backyard farming	115	95.83	1st
Use of fast-maturing varieties of crops	102	85.00	3rd

Source: Field Survey, 2022

3.3 Attitudes of cassava farmers toward different coping strategies

Data on Table 3 shows the attitudes of cassava farmers toward various coping strategies. A highest rate of the respondents (mean score = 4.41) who strongly agreed that backyard farming save cost and readily accessible because of its proximity. The majority of the farmers also agreed and preferred backyard farming based on its numerous benefits, such as provision of fresh vegetables and meat for family consumption, effective utilization of leisure time, provision of gainful self-employment and it allows the cultivation of vegetables, root and tubers crops and animal rearing at the same plot of the land with mean scores of 4.26, 4.19, 4.18 and 4.14 respectively. Closely followed by the respondents who agreed to intensive farming as a strategy which entails combination of growing crops and rearing animals with mean score of 4.28. Also farmers agreed that intensive farming is highly productive in terms of yields with (mean score = 4.16). Furthermore, the result also revealed another coping strategy adopted by the respondents who strongly agreed that greenhouse farming allows farmers to increase their productivity, yields and quality of the products produced. Greenhouse farming is limited to an enclose space where vegetables are cultivated and greenhouse farming prevents crops from pests and diseases attack, also threat from extreme weather and oil spillage incident with (mean score = 4.16, 4. 13 and 4.06) respectively. The findings also indicated that respondents agreed on the fact that the cost of establishing and maintaining greenhouse is very expensive with (mean score 4.13). The result showed that respondents strongly agreed on the adoption of multiple cropping that is mixed cropping increases the output of many arable crops per season. Farmers engaged in cultivation of multiple crops in case of oil spillage and cultivation of mixed crops contribute to the preservation and improvement of soil quality in oil spillage prone areas (mean score of 4.03, 3.62 and 3.41) respectively. Moreover, the respondents strongly agreed on the use of early maturing and improved varieties of crops would help farmers incase of oil spillage incident, also that early maturing plant completes their life cycle within a short period of time and early maturing crops possess traits such as high yielding, pests and diseases resistant and early maturity mean scores of 3.65, 3.54 and

3.44) respectively. Makaiko etal. (2015) stated in their findings that sustainable agriculture is a system of producing food and fibre on natural recourse and also increase farmer's income where there is drought situation. This implies that farmers are to employ different coping strategies that would help them remain in agricultural production.

Table 3. Attitudes of cassava farmers towards the coping strategies

Farmers Attitudinal Statement	SA	AG	UD	DG	SD	MS	Remark	Rank
Oil spillage causes damage to crops in field but backyard farming crops are save and readily accessible.	63	50	2	4	1	4.41	Agreed	1st
The effect of oil spillage is disastrous so the Farmers prefer combination of crops growing and animal rearing as a coping strategy.	47	65	3	4	1	4.28	Agreed	2nd
Backyard farming always produces fresh food in terms of vegetable and meat for family consumption.	44	69	3	2	2	4.26	Agreed	3rd
It saves as a way of utilizing the waste land and efficient use of leisure time that in which is not prone to oil spillage.	33	82	2	1	2	4.19	Agreed	4th
I think backyard farming provides gainful self-employment as a relief to reduce the effect of oil spillage.	39	70	7	2	2	4.18	Agreed	5th
I think the cost of maintaining greenhouse farm is very expensive even though it prevents oil spillage effect on crops.	52	38	28	1	1	4.16	Agreed	6th
I understand the intensive farming is highly productive in terms of yield whereby it allows farmers to diversify and guard against oil spillage incident.	40	67	7	4	2	4.16	Agreed	6 th
It allows farmers to increase their performance, yields and improving the quality of products produced where there is no incident of oil spillage.	38	66	14	1	1	4.16	Agreed	6th
The adoption of backyard farming allows the cultivation of vegetables, root and tuber crops and animal rearing at the same plot of land and it serves the farmer from the issue of oil spillage.	35	76	3	3	3	4.14	Agreed	7th
Greenhouse farming prevents crops from pests and diseases attack and also threat from extreme weather even the incident of oil spillage.	43	55	19	0	3	4.13	Agreed	8th
The greenhouse farming is limited to an enclose space where vegetables are cultivated and could not be affected by oil spillage.	38	59	18	2	3	4.06	Agreed	9th
I adopted cultivation of mixed cropping because it increases the output of many arable crops per season to reduce the impact of oil spillage.	26	83	4	3	4	4.03	Agreed	10th
I think the use of early maturing and improved varieties of crops would help prevent the effect of oil spillage.	34	49	10	15	12	3.65	Agreed	11th
The cultivation of multiple crops contributes to the preservation and improvement of soil quality in oil spillage prone areas.	22	65	9	13	11	3.62	Agreed	12th
The early maturing plant completes their life cycle within a short period of time which allows farmers harvest in case of oil spillage occurrence.	30	51	8	16	15	3.54	Agreed	13th

Early maturing and improved varieties of crops possess traits such as high yielding, pest and diseases resistance and early maturity that can withstand oil spillage effect.	27	50	11	13	19	3.44	Agreed	14th
I engaged in Cultivation of multiple crops to reduce the effect of oil spillage.	25	42	13	37	3	3.41	Agreed	15th

Source: Field Survey, 2022 SA = Strongly Agree; AG = Agree; UD = Undecided; DG = Disagree; SD = Strongly Disagree; MS = Mean Score

3.4 Output Differential

Cassava analysis of the Z- statistics on the difference between cassava outputs from non-oil spilled and oil spilled communities is presented in Table 4. It indicated that there is a significant ($P \leq 0.05$) difference between the output of cassava from oil spilled communities and non- oil spilled communities respectively. This means that null hypothesis which states that there is no significant difference between the cassava outputs in oil spilled communities and non- oil spilled communities in the study area is therefore rejected. In comparison, cassava output in non- oil spilled communities was higher than the oil spilled communities. The findings implies that farmers preferred their farmland not to be polluted with oil spills because that oil spillage causes harm or damage to cassava production according to Abah etal,. (2020. This finding also agrees with Opuofoni (2022) in his study who observed that crude oil exploration is negatively related to cassava yield that is oil spill affects cassava production negatively. It implies that the rate of oil spillage in the area reduced the output of cassava production in oil producing communities.

Table 4. Output Differential among Cassava Farmers

Variable	**Mean (tons)**	**Std. Error**	**Std. Dev.**	**Z-value**
Non-Oil Spill	186.46	41.98	459.92	
Oil spill	77.37	18.06	197.86	2.39***
Combined	131.92	23.08	357.49	
Difference	**109.09**	**45.71**		

Source: Computed from Field Survey, 2022

4.0 CONCLUSION AND RECOMMENDATIONS

Oil spillage has been a serious issue to reckon with as long as oil exploration and exploitation are concerned. Oil spillage has imposed serious threats and challenges to agriculture and human lives living in Niger Delta. More so, the agricultural farmlands have been rendered unproductive due to incessant oil spills. It has been ascertained that consequences of oil spillage on the environment are enormous ranging from land degradation and negative effects of oil spillage on cassava production. Coping strategies such as backyard farming, mixed cropping, intensive farming, off- farm business, use of early maturing varieties of crops and green house farming were various strategies adopted by cassava farmers. However, some of the coping strategies are yet to be properly adopted to significantly reduce the negative effect of oil spillage on the cassava farm.

Based on the findings from the study, the following were recommended;

1. The oil spillage communities and cassava farmers in Akwa Ibom State should adopt multiple cropping, early maturing crops, green house farming and intensive farming to supplement the output of cassava and further ameliorate their suffering from all kinds of crude oil pollution incidents and its negative effects on farmlands.
2. Other farming systems such as sack crop production, intensive greenhouse farming, backyard farming and livestock production should be embarked upon.
3. The study further recommends that cassava farmers in Akwa Ibom State, living in crude oil pollution prone areas should seek additional means of livelihood by diversifying their sources of income by engaging in non- farm businesses to supplement farming as an occupation as this will help reduce tension from scourge of damage caused by oil spillage.

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