Assessment of the Flood Disasters' Effects on Farmers Livelihood in Imo State, Nigeria

Egwuonwu, Helen Adeola
Department of Agricultural Economics, Extension and Rural Development
Imo State University, Owerri, Nigeria
E-mail: egwuonwu.helen@yahoo.com
ORCID Number: 0009 0004 7553 2068
DOI: 10.56201/ijaes.vol.11.no8.2025.pg74.82

Abstract
This study assessed flood disaster effects on farmers livelihood in Imo State, Nigeria. A multi-stage sampling procedure was used in the selection of one-hundred and forty-four (144) farmers for the study. Primary data were collected through the use of structured questionnaire. Descriptive statistical tool was used in analyzing data for the study. The result reveals that all the farmers (100.0%) in the area were aware of flood disasters. Sources of awareness of flood disaster were radio (98.61%), social gathering (94.44%), cooperative group (86.81%) and newspaper (64.58%). Also, farmers identified crop farming (98.61%), livestock farming (96.53%), fishing (92.36%), and hunting (90.28%) as one of their major livelihood activities. The farmers perceived causes of flood disaster in the area were deforestation ($\bar{x}$ = 3.35), poor or no drainage system ($\bar{x}$ = 3.23), heavy rainfall ($\bar{x}$ = 3.60) and construction activities ($\bar{x}$ = 3.33). Perceived effects of flood disaster on livelihood activities of farmers in the area were pollution of drinking water sources ($\bar{x}$ = 3.60), loss of lives and properties ($\bar{x}$ = 3.58), increase in household food insecurity and poverty ($\bar{x}$ = 3.48), exposure to environmental health hazards ($\bar{x}$= 3.47), long distance between farm and market/workplace ($\bar{x}$ = 3.46), renders rural dwellers homeless ($\bar{x}$ = 3.44), destruction of farmlands ($\bar{x}$ = 3.31), destruction of crops and livestock ($\bar{x}$ = 3.31) and blockage of road networks ($\bar{x}$ = 3.23). However, inadequate flood adaptation fund (99.31%), poor access to farmland (97.22%), poor extension contacts (94.44%), poor knowledge of flood checking processes (90.28%), poor government support (90.28%), high cost of flood checking method (84.72%), poor access to information (82.64%), high cost of labour in flood control (79.08%) and unpatriotic attitude of most households (77.08%) were identified by the farmers as major barriers they faced in coping with the menace of flood disaster in the area. The study concludes that flood has negative effects of farmers livelihood. Therefore, the farmers should practice adequate measures to reduce the effects of flood disaster among them. Also, early warning sign alert should be increased by extension agents as this would help farmers relocate or plan ahead of unforeseen flood disaster.

Keywords: *Farmers livelihood, Flood, Flood disaster, Effects*

1.0 INTRODUCTION

Flooding impacts severely on the livelihood of farmers who rely on agricultural production and other ecosystem services (Nemni et al., 2020). This food production sector faces the daunting challenge of providing adequate food and other necessities to a growing population (Luana et al., 2021). Flooding has the propensity of bringing considerable change in the hazard profile and its interaction with the dynamic vulnerability and risk profiles of livelihood of farmers (Diaconu et al., 2021). The frequency and severity of extreme weather events and natural disasters have increased in the past decades worldwide (Jordhus-Lier et al.,

2021). Although some anticipated impacts of flooding are positive in certain areas, developing countries (Including Nigeria) are most likely to suffer from its negative impacts (Slobodan et al., 2021). Farmers are forced to leave their homes and normal life is disrupted. Similarly, disruption to ecosystem services can lead to loss of livelihoods of farmers who depend on agriculture (Liu et al., 2019). Meanwhile, the term livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stress and shocks and maintain or enhance its capabilities and assets now and in the future, while not undermining the natural resource base (Onyim et al., 2021). Examples of such activities could include fishing, farming, animal feed production, and sewing, weaving, and baking amongst others (Yazdanpanah et al., 2021).

Farmers whose livelihood depends heavily on agriculture continues to bear the brunt of flood disaster impact as new risks and correlations emerge (Atanga & Tankpa, 2021). While flood disaster occurrence remains at its new and consistently high level, disaster impacts on livelihoods and economies continue to expand significantly. On a global level, the economic loss associated with flood disasters has averaged about USD 42.5 billion per year over the past decade (FAO, 2021). Meanwhile, this flood disaster has continued to devastate lives, livelihoods and economies of Nigeria and Imo State in particular (Okafor, 2021). Imo State has continued to experience several devastating floods disasters which has affected thousands of farmers and resulted to losses in live, livelihood and properties amounting to millions of naira (NEMA, 2020). The worst year experience was in 2012 were coastal areas particularly Oguta, Ohaji-Egbema, Iheagwa and Obinze were hit by the incident of flooding (Nigeria Environmental Study and Action Team (NEST), 2020). About 100 thousand households were affected with more than 200 thousands other households considered as internally displaced. More than 5,000 farmers means of livelihood and food crops were wiped away resulting in major threats to food security in the State and Nation at large (Umunakwe et al., 2018).

Farmers in Imo State are experiencing reduced access to inputs, labour and farmlands, resulting in production loss, lower household income and nutrition declines and most regrettably loss of entire livelihood of the farmers. According to Nwachukwu et al. (2018) flood disaster has damaged over 100 thousand hectares of lands and reduced food production along flood plains in Imo State. This has been a recurrent event especially at flood plain areas where farmers rely on river as a source of irrigation during the dry season but are faced with flood experiences during raining season (Umunakwe et al., 2018). In August, 2019, No fewer than 2000 people, including women and children, have been rendered homeless following a flood which submerged at least 70 houses in Orsu-Obodo community in the Oguta Local Government Area of Imo State (NEWMAP, 2020). This also buttress the disasters caused by flooding and livelihood of farming households that are lost. Understanding of the extent to which flood disaster affect livelihood of farmers occupies a large fraction of farming population and the strategies they adopt to thwarts the negative effect of this disaster is critical to policymakers and other stakeholders to further improve and implement holistic strategies and actions in order to minimize the effect of the disaster. However, till now, it is not clear that some areas in Imo State experience flood disaster but what do farmers consider as the leading cause of these frequent flooding, what do farmers perceived as the effects, what are the barriers to checkmate the effects of flood on livelihood activities. It was against this background that the study was investigated. Therefore, the study ascertained the awareness status of farmers on flood disaster; described the sources of information of farmers on flood disaster; identified the various livelihood activities of the farmers; ascertained the perceived effects of flood disaster on livelihood activities among farmers; and identified the barriers farmers face in reducing the effects of flood disaster.

2.0 METHODOLOGY

The study was conducted in Imo State, Nigeria. Imo State is located in the eastern zone of Nigeria. The State lies between Latitudes 4°45'Nand 7°15'N and Longitude 6°50'E and 7°25'E. Imo State covers an area of about 5,067.20 km^2, with a population of 3,934,899 [National Bureau of Statistics (NBS), 2020)]. The State experiences two major seasons: dry and rainy seasons. The State has also experience various incidence of flood disaster. All this necessitated the selection of the area for the study. The sample for the study was drawn from farmers in the study area. A multi-stage used in the selection of farmers. Firstly, purposive sampling was used to select the two (2) agricultural zones of the State (Orlu and Owerri) areas that frequently have experienced incidence of flooding and flood disaster. one (1) Local Government Areas (LGAs) were purposely selected from each of the two agricultural zones (Oguta and Ohaji Egbema LGAs) for the study. Subsequently, three (3) communities were randomly selected from each of the two (2) selected LGAs to give a total of six (6) communities for the study (Mgbelle, Egwe,Uzombe, Assa, Obitti, Oloshi). Finally, twenty four (24) farmers were randomly selected from each of the six (6) to give a total sample size (n) of one-hundred and forty-four (144) farmers for the study. Primary data were used for the study. Data were collected through the use of structured questionnaire. Descriptive statistical tool were used in analyzing data for the study. Specifically, the objectives were achieved using frequency count, mean and percentage, while mean score of a 4-point Likert type rating scale of Strongly Agreed =4; Agreed =3; Disagreed =2; Strongly Disagreed = 1 was used to capture perceived causes and perceived effects of flood disaster on farmers. Discriminating index of 2.50 cut was obtained. The decision rule is that any statement equal and greater than 2.50 was considered agreement with the statement while mean score of less than 2.50 implies disagreement.

3.0 RESULTS AND DISCUSSION

3.1 Awareness Status of Farmers on Flood Disaster

The result of the farmers distribution based on awareness of flood disaster is presented in Table 1. It indicates that all the farmers (100.0%) were aware of flood disaster in the area. This is expected as the menace of flood disaster is always seen and prevalent across South-east Nigeria of which Imo State is included. This is also an indication that farmers may have been practicing several measures in coping with the menace of flood disaster in the area. More than half of the flood disasters in the country are man-made arising from deliberate intent, error or negligence (NEMA, 2021). Hence, flood disasters of man-made origin can be minimized by arousing the consciousness of the people through awareness generation. The positive awareness status of farmers could serve as a cornerstone in building a culture of sustainable resilience to flood disasters in the area.

Table 1: Distribution of the Farmersby Awareness of Flood Disaster

Awareness Status	Frequency	Percentage (%)
Aware	144	100.0
Not Aware	0.00	0.00
Total	**144**	**100.0**

Source: Field Survey Data, 2024

3.2 Various Sources of Information of Farmers on Flood Disaster

The output of the farmers' distribution based on sources of awareness of flood disaster is presented in Table 2. It reveals that most (98.61%) of the farmers identified radio as one of

their various sources of information on flood disaster. The use of technology has made radio device more accessible and reachable to many. Farmers are able to go everywhere with their radios, including to their farms. Every farmer are able to afford radio, as it is also affordable. There are also various radio programme targeted at improving farmers agricultural production and flood disaster management knowledge in a sustainable way.

Silvia et al. (2021) had established that radio is leading in overall media consumption with the wake of many vernacular radios which are able to effectively communicate to the targeted groups. Finding also shows that social gathering (94.44%), cooperative group (86.81%), newspaper (64.58%) and extension agents (28.47%) were identified by the farmers. Others 15.97%, 9.03% and 5.56% of the farmers stated that they source information through NiMET, television and internet respectively. The low use of television and internet may not be unconnected to the epileptic power supply, high cost of television set and use of internet services. The finding becomes clear that farmers have various sources of information on flood disaster, however, the use of one or more maybe due to the situation at the disposal of the farmer.

Table 2: Distribution of the Farmers by Sources of Information of Farmers on Flood Disaster

Items	*Frequency	Percentage (%)
Radio	142	98.61
Social gathering	136	94.44
Cooperative group	125	86.81
Newspaper	93	64.58
Extension agents	41	28.47
NiMET	23	15.97
Television	13	9.03
Internet	8	5.56

***NiMET: Nigerian Meteorological Agency; *multiple responses were recorded; Source: Field Survey Data, 2024**

3.3 Livelihood Activities of the Farmers

The result of farmers distribution based on their livelihood activities in the area is showed in Table 3. It shows that about 98.61%, 96.53%, 92.36% and 90.28% of the farmers identified crop farming, livestock farming, fishing and hunting respectively as one of their various livelihood activities. Finding also reveals that gardening (87.50%), sewing (84.72%), traditional medicine (83.33%), basket weaving (79.86%) and carpentry (58.33%) were identified by the farmers as one of their various livelihood activities. Result also shows wood carving and welding were reported by about 25.00% and 10.42% respectively of the farmers.

Therefore, the finding is an indication that farmers were involved in more than one livelihood activities. This could be a way of diversifying against unforeseen event due the uncertainty nature of agriculture. The study of Rodriguez et al. (2021) asserted that agricultural diversification is an attempt by farmers to find new ways to raise incomes in the face of uncertainty while promoting sustainability of the enterprise.

Table 3: Livelihood Activities of the Farmers

Items	*Frequency	Percentage (%)
Crop farming	142	98.61
Livestock farming	139	96.53
Fishing	133	92.36

Hunting	130	90.28
Gardening	126	87.50
Sewing	122	84.72
Traditional medicine	120	83.33
Basket Weaving	115	79.86
Carpentry	84	58.33
Wood carving	36	25.00
Welding	15	10.42

***Multiple responses were recorded; Source: Field Survey Data, 2024**

3.4 Perceived Causes of Flood Disaster among the Farmers

The outcome of farmers distribution based on perceived causes of flood disaster in the area is showed in Table 4. Findings shows that all the items which included deforestation ($\bar{x}$ = 3.35), poor or no drainage system ($\bar{x}$ = 3.23), heavy rainfall ($\bar{x}$ = 3.60) and construction activities ($\bar{x}$ = 3.33) were all rated high and had an acceptable overall discriminatory score. Result also reveals that absence of vegetative cover in the environment ($\bar{x}$ = 3.56), dam spills (($\bar{x}$ = 3.30), blockage of flood path with sediment deposits ($\bar{x}$ = 3.27) oceans storms and tidal waves ($\bar{x}$ = 3.44) and burst water main pipes ($\bar{x}$ = 3.53).

The result shares view with the studies of Uzoh (2021) who found that burst water main pipes, poor or no drainage system and deforestation were among the various causes of flooding across South-east Nigeria. This result strongly confirmed that farmers rightly perceived the direction of the causes of flood disaster that is negatively affecting their livelihood activities and may have started practicing several measures to thwart its negative effect in the area. It is evident that most of these perceived causes of flood disaster farmers identified are man-made. This study therefore identified the need for governments at all levels along with farmers to design a sustainable policies/practices that will help reduce or if possible eliminate totally these (man-made) negative perceived causes of flood disaster. Finally, from the aggregate mean ($\bar{x}$ = 3.41) which is above the discriminatory score ($\bar{x}\geq 2.50$), it shows that the farmers perceived rightly the perceived causes of flood disaster and it is therefore accepted.

Table 4: Perceived Causes of Flood Disaster among the Farmers

S/No	Perceived Causes of Flood Disaster	Mean ($\bar{x}$)	SD(σ)
1	Deforestation	3.35	0.84
2	Poor or no drainage system	3.23	0.75
3	Heavy rainfall	3.60	0.99
4	Construction activities	3.33	0.87
5	Absence of vegetative cover in the environment	3.56	0.95
6	Dam spills	3.30	0.82
7	Blockage of flood path with sediment deposits	3.27	0.66
8	Oceans storms and tidal waves	3.44	0.87
9	Burst water main pipes	3.53	0.93
10	Poor sewage Management	3.37	0.85
11	Neglecting early warnings signs from metrological agencies	3.31	0.83
12	Unplanned urbanization	3.47	0.90
13	Flood plain being occupied by human settlement and economic activities	3.58	0.97
	Aggregate Mean Score	**3.41**	**0.86**

Discriminatory index: Cut off point $\bar{x}\geq 2.50$ Accepted; Field Survey Data, 2024

3.5 Perceived Effect of Flood Disaster on Livelihood Activities of Farmers

The outcome of farmers distribution based on perceived effect of flood disaster on livelihood activities of farmers in the area is displayed in Table 5. From the result, farmers stated that flood disaster has resulted to destruction of crops and livestock ($\bar{x}$ = 3.31), blockage of road networks ($\bar{x}$ = 3.23), loss of lives and properties ($\bar{x}$ = 3.58), destruction of farmlands ($\bar{x}$ = 3.31) and increase in household food insecurity and poverty ($\bar{x}$ = 3.48). Findings also reveals that flood disaster has also resulted to pollution of drinking water sources ($\bar{x}$ = 3.60), damages stored farm produce ($\bar{x}$ = 3.26), renders rural dwellers homeless ($\bar{x}$ = 3.44), exposure to environmental health hazards ($\bar{x}$ = 3.47) and result to long distance between farm and market/workplace ($\bar{x}$ = 3.46). The finding becomes clear that there is prevalent of flood disaster and it has negative effect on the livelihood activities of farmers in the area. It is likely that this problem associated with flood disaster is one of the major reasons there is widespread poverty, food insecurity and low standard of living among farmers in the area.

The result tallies with the study Nwagbo (2021) who reported that in the South-eastern States of Nigeria, the incidence of flooding has wide-ranging impacts which includes destruction of lives, properties, farmland, crops and livestock. The flooding is majorly due to heavy rainfall which is prevalent in the southern parts of the country (Okafor, 2021).Finally, from the aggregate mean ($\bar{x}$ = 3.42) which is above the discriminatory score ($\bar{x} \geq 2.50$), it shows that the farmers perceived rightly on theeffect of flood disaster on their livelihood and it is therefore accepted.

Table 5: Perceived Effects of Flood disaster on Livelihood Activities of Farmers

S/No	Perceived Effects	Mean ($\bar{x}$)	SD(σ)
1	Destruction of crops and livestock	3.31	0.80
2	Blockage of road networks	3.23	0.75
3	Loss of lives and properties	3.58	0.95
4	Destruction of farmlands	3.31	0.81
5	Increase in household food insecurity and poverty	3.48	0.95
6	Pollution of drinking water sources	3.60	0.98
7	Damages stored farm produce	3.26	0.78
8	Renders rural dwellers homeless	3.44	0.86
9	Exposure to environmental health hazards	3.47	0.84
10	Result to long distance between farm and market/workplace	3.46	0.89
11	Fills homes with dirty water and refuse	3.31	0.81
12	Disruption of economic activities	3.51	0.91
13	Result to difficulties in distribution of goods and services	3.52	0.93
	Aggregate Mean Score	3.42	0.80

Discriminatory index: Cut off point $\bar{x} \geq 2.50$ Accepted; Field Survey Data, 2024

3.6 Barriers Farmers Face in Reducing the Effects of Flood Disaster

The output of farmers distribution based on the barriers face in reducing the effects of flood disaster on their livelihood activities in the area is shown in Table 6. It shows that inadequate flood adaptation fund (99.31%), poor access to farmland (97.22%), poor extension contacts (94.44%), poor knowledge of flood checking processes (90.28%) were identified by the farmers as one of the barriers they face in coping with the menace of flood disaster in the area. Most flood disaster coping strategies are costly and farmers are unable to better and more

coping strategies if they have little or no financial capacity. In most cases when farmers lack knowledge of modern coping strategies, they are unable to practice it.

The result is in line with the study of Udemezue et al. (2019); Nwagbo (2021) who found that poor fund and inadequate knowledge of modern flood coping strategies is t one of the leading courses of increasing flood disaster. In the same way, poor government support (90.28%), high cost of flood checking method (84.72%), poor access to information (82.64%), high cost of labour in flood control (79.08%) and unpatriotic attitude of most households (77.08%) were stated by the farmers as one of the various barriers thy face in checkmating flood disaster in the area. These constraints left the farmers not to be proactive in the face of impending flood disaster in the area. When farmers are proactive in the face of flood disaster they are able to adapt properly, present losses and thereby increasing their livelihood positively in the area.

Table 6: Barriers Farmers Face in Reducing the Effects of Flood Disaster

S/No	Items	*Frequency	Percentage (%)
1	Inadequate flood adaptation fund	143	99.31
2	Poor access to farmland	140	97.22
3	Poor extension contact	136	94.44
4	Poor knowledge of flood checking processes	130	90.28
5	Poor government support	122	84.72
6	High cost of flood checking method	119	82.64
7	Poor access to information	115	79.86
8	High cost of labour in flood control	111	77.08
9	Unpatriotic attitude of most households	103	71.53

Multiple responses were recorded; *Source: Field Survey Data, 2024

4.0 CONCLUSION AND RECOMMENDATIONS

The study on assessment of the flood disaster effects on farmers livelihood shows that there were incidences of flood disaster in the study area. The prevalence of flood disaster had negative effects on the livelihood activities of farmers in the area. Flood disaster resulted in the destruction of crops and livestock which led to widespread of poverty, food insecurity and low standard of living among farmers in the area. Farmers faced many constraints in reducing the effects of flood disasters on their livelihood. This study therefore emphasized that farmers should practice adequate measures to reduce the effects of flood disaster among them. Also, early warning sign alert should be increased by extension agents and NiMET as these would help farmers relocate or plan ahead of unforeseen flood disaster.

REFERENCES

Atanga, R.A., & Tankpa, V. (2021). Climate Change, Flood Disaster Risk and Food Security Nexus in Northern Ghana. Front. Sustain. *Journal of Food Syst.* 5(12), 1-11

Diaconu, D.C., Costache, R., & Popa, M.C. (2021).An Overview of Flood Risk Analysis Methods. *Journal of Water*, 13 (2), 1-13.

Food and Agriculture Organization (FAO) (2021). The impact of disasters and crises 2021 on agriculture and food security, Retrieved on August, 28th, 2024 from http://www.fao.org/3/cb3673en/cb3673en.pdf

Jordhus-Lier, D., Saaghus, A., Scott, D., & Ziervogel, G. (2019).Adaptation to flooding, pathway to housing or 'wasteful expenditure'? Governance configurations and local policy subversion in a flood prone informal settlement in Cape Town. *Journal ofGeoforum,* 9(8), 55–65.

Liu, J., Xu, Z., Chen, F., Chen, F., & Zhang, L. (2019).Flood hazard mapping and assessment on the Angkor world heritage site Cambodia. *Remote Sensing*, 11(1), 98-107.

Luana, L.M., Mariana, M. W., & Masato, K. (2021). A systematic review and future prospects of flood vulnerability indices, *Nat. Hazards Earth Syst. Sci.,* 21 (4), 1513-1530

National Boundary Commission (NBC) of Nigeria (2020). Boundaries across South east, Nigeria, Retrieved on 10 April from https://nnn.ng/tag/national-boundary-commission-nbc/

National Emergency Management Agency (NEMA) (2021). Update on Flood 2021 Response. National Emergency Management Agency. Retrieved on March 24th 2024 from https://nema.gov.ng/flood-updates/

Nigeria Erosion and Watershed Management Project (NEWMAP) (2020). A support to Nigeria Effort to Gully Erosion; Information Sheet of NEWMAP, 2020; Retrieved on August 24th of 2024; www.newmap.gov.ng

Nigeria Environmental Study and Action Team (NEST) (2020). *Flood Hazard Assessment, Management and Mitigation Measure: A NEST Publication, Nigeria Environment Study/Action Teams, Ibadan.* Retrieved on August 24th 2024; *https://www.eldis.org/organisation/A7850*

Nigerian Meteorological Agency (NiMET) (2020).Drought, Rainfall and Flood Monitoring in South-East Bulletin 2020. Retrieved 28th March, 2024, from www.nimet.gov.ng

Nwachukwu, M.A., Alozie, C.P., & Alozie, G.A. (2018) Environmental and Rainfall Intensity Analysis to Solve the Problem of Flooding in Owerri Urban.*Journal of Environmental Hazard*, 1(2), 107-112

Nwagbo, U.V. (2021). Environmental Impact of Flooding on Rural Development in Southeastern Nigeria, *Journal of Environmental Hazards,* 5(6), 1-9

Okafor, J.C. (2021). Flood, Livelihood Displacement, and Poverty in Nigeria: Plights of Flood Victims, 2012–2018. In: Leal Filho W., Oguge N., Ayal D., Adeleke L., da Silva I. (eds) *African Handbook of Climate Change Adaptation. Springer,* 191(12), 2535-2545

Onyim, O. E., Udoh, J. C., & Aniefiok, I. S. (2021). Analysis Of Rural Livelihood Diversification And Non-Farm Activities In OrukAnam Local Government Area, AkwaIbom State, Nigeria. *Journal of Global Research in Education and Social Science,* 15(2), 33-39.

Rodriguez, C., DimitrovaMårtensson, L.M., Zachrison, M., & Carlsson, G. (2021). Sustainability of Diversified Organic Cropping Systems—Challenges Identified by Farmer Interviews and Multi-Criteria Assessments. *Front. Agron*. 3(2), 69-89.

Silvia, S., Musebe, R., Baars E., Ganatra, D., & Romney, D. (2021). Going digital in agriculture: how radio and SMS can scale-up smallholder participation in legume-based sustainable agricultural intensification practices and technologies in Tanzania, *International Journal of Agricultural Sustainability,* 19(5), 583-594

Slobodan, P., Simonovic, Z.W., & Nigel, W. (2021). Floods and the COVID-19 pandemic—A new double hazard problem, *Journal of Wire Water,* 8(2), 5-14

Udemezue. J. C., Madukwe. M. C., Nwoye. I. I., Osegbue. E. G., & Kadiri.A.O. (2019). Effects Of Flooding On Small Scale Farmers In Anambra, Nigeria, *Noble International Journal of Agriculture and Food Technology*, 1(2),70-74

Umunakwe, H.C., Alozie, M.C., & Eneogwe, I.C. (2018). Spatial Analysis of Urban Flood Risks on Recreational Development in Oguta, Owerri - Imo State, South-Eastern Nigeria, West Africa, *Journal of Physical Science and Environmental Studies*, 4 (4),64-73

Uzoh, V.N. (2021). Environmental Impact of Flooding on Rural Development in Southeastern Nigeria. *J Environ Hazard,* 5(2), 154-166

Yazdanpanah, M., Tajeri, M., Savari, M., Zobeidi, T., Sieber, S., & Löhr, K. (2021).The Impact of Livelihood Assets on the Food Security of Farmers in Southern Iran during the COVID-19 Pandemic. *International Journal of Environment Resources and Public Health,* 18(6), 1-21