CONSTRAINTS FACED BY FISH FARMERS IN ANAMBRA STATE, NIGERIA

[1]OHATURUONYE SAMPSON.O, [1]OKEKE, P.A and [2]UKAGWU, JOHN,
[1]Nnamdi Azikiwe University, Awka, Anambra State.
[2]Alvan Ikoku Federal College of Education Owerri, Imo State.
so.ohaturuonye@unizik.edu.ng or sampsonoha@gmail.com.

ABSTRACT
The major constraints faced by aquaculturists operating within Anambra State, Nigeria were investigated between the month of January, 2021 to December 2021 with a view of proffering solutions to them. A sample of 80 fish farmers were selected within the four agricultural zones of Anambra using Taro Yamani formula. Field observation, oral interviews, questionnaires and visits to farm sites were used to access the farmers. The result on socioeconomic characters of the farmers revealed that there were more male fish farmers (75.8%), average fish farmers age ranged from 41—50 years (34.7%), with majority of them being married (71.3%). They were also educated with primary education (48.8 %) and an average household number of 4 – 6 persons (60.0%). Overall mean for production constraints were (3.32), environmental constraints (3.17), socio-cultural (3.06) institutional constraints (3.40), infrastructural, financial, technological and marketing constraints were (3.72, 3.72, 3.51, and 3.32) respectively, and they all were above 2.5 likert scale indicating they were all major constraints. Infrastructural and financial constraints were identified as the most major constraints among all of them and ranked highest with mean range of 3.72 both among the other constraints. In conclusion, government of Anambra state is advised through the findings of this study to as a matter of urgency embark upon massive infrastructural development to stem the tide of rural- urban migration among the youths in the state as well as supporting these fish farmers with soft loans, grants, and other financial assistance in order to solve some of these identified constraints.

Keywords: Constraints, Socio economics, Fish Farmers, Anambra State

INTRODUCTION

Aquaculture or fish farming is defined as the rearing of aquatic organisms in a controlled environment. Fisheries and aquaculture are a vital source of protein for over 3 billion people all over the world. Employment in fisheries and aquaculture has continued to grow faster than in other sectors including agriculture providing over 55 million jobs worldwide. The need for aquaculture was as a result of the reduction in supply of aquatic products from both fresh and marine waters caused by overfishing, pollution, climate change, biodiversity loss, habitat destruction etc. One of the ways to bridge the gap between the reduced fish supply and increased world food fish demand is through aquaculture. Fish demand in Nigeria is not enough at present, not withstanding slight increases that were recorded recently through domestic production of over 1.12 million metric tonnes as against annual domestic demand of 3.3 million metric tonnes. There is therefore an identified gap of about 2.2 million metric tonnes that needed to be filled through increased domestic production of aquatic products. This identified shortfall presently cost Nigeria over 1.2 billion dollars annually through fish importation (Daurtz *et al*. 2009, Edward, 2000, FAO 2017, Akinsorotin *et al.*, 2019).

The ocean have a great opportunity in supporting aquaculture, oceans around the world have huge potentials to encourage aquaculture as a result of their large space. Oceans have the capacity to produce over 300 million metric tonnes of aquatic products every year. According to FAO (2017), 300 million metric tonnes is above 3 times the current global seafood consumption rate. However, if only <1% of the oceans space is to be utilized for aquaculture purposes, the quantity of aquatic product that will be produced will be 3 times the current global seafood consumption rate (FAO, 2017).

According to the 2016, Nigeria fisheries statistics report, our annual fish demand stood at 3.3 million metric tonnes indicating an increase as a result of the rising population that is over 186 million people with a lower production capacity of about 1.12 million metric tonnes. Nigeria is having a deficit of over 2.2 million metric tonnes that worth over 1.2 billion dollars which is lost annually through importation of aquatic products. According to Central Bank of Nigeria, Nigeria spends over $1.2 billion worth of money on fish importation (FAO, 2017).

Nigeria is endowed with a coastline of about 853 kilometres boarding the ocean with many fresh, mangrove swamps, creeks, rivers, lakes, bays and many other water bodies but still depends on fish importation to meet most of the 36 Nigerian states demand for fish, despite 25% of Nigerians total population share the Atlantic ocean coastlines (Ita 1993, Olaosebinkan and Raji 2021).

Attempts made to identify major constraints facing fish farmers in Nigeria indicated that the ability to comparing fish farming activities as a novel donor-driven technology, that is associated with multi dimensional in built constraints had been a major concern. Anambra State is crossed by numerous rivers, swamps, abundant rainfall, effective harvesting and storage of surface water run-off undoubtedly favouring fish farming (Egwui, 2014). The aim of this work is to identify constraints faced by fish farmers in Anambra State and proffer solution towards solving them for better fish production in the state.

MATERIAL AND METHOD

Description of the study Area:

Anambra State is located in the South Eastern region of Nigeria between 6º 47'N and latitude 5º38'N to 6º 47'N. Anambra State consists of 21 L.G.A' bounded by Delta State to the West, Imo State and Rivers State to the North. Anambra State has a population of 4,0055,038 with density of 84 6km^2 (NPC, 2006). It is made up of four agricultural zones namely: Aguata, Anambra, Awka and Onitsha Agricultural zones as indicated in figure 1.

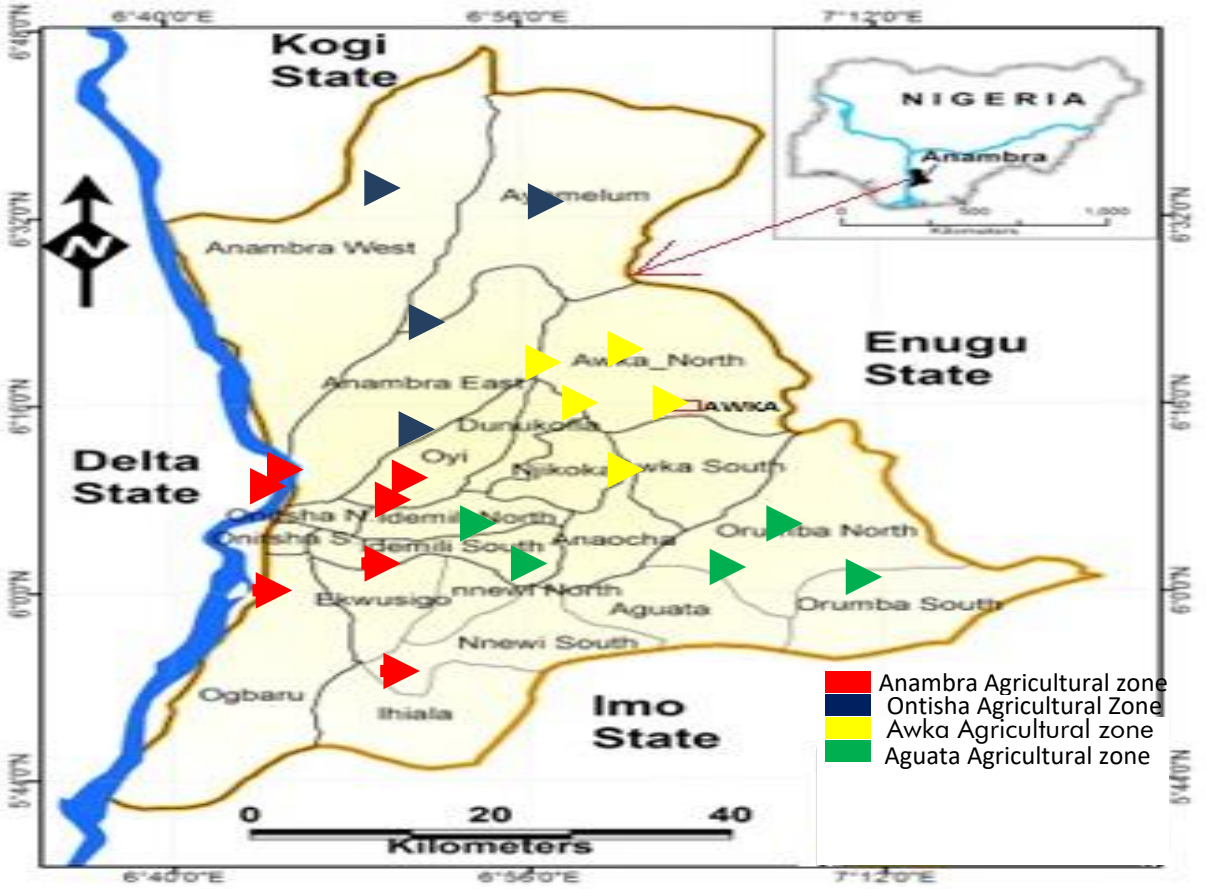

Figure 1: Map of Anambra State showing the four agricultural zones of the state

Table 1: Agricultural zones and local government under them in Anambra State

Agricultural Zone	LGAs	Headquarters
Onitsha	Onitsha North, Onitsha South, Ogbaru, Idemili South, Idemili North, Ihiala Ekwusigo	Onitsha
Anambra	Anambra East, Anambra West, Oyi	Ayamelum
Aguata	Nnewi North, Nnewi South, Orumba South, Orumba North	Aguata
Awka	Awka North, Awka South, Dunukofia, Njikoka, Anaocha	Amawbia

Source: Anambra State Agricultural Development Programme, Awka.

According to Demographic statistics bulletin (2017), the population of Anambra state rose from 4,177,826 in 2006 to 5,527,804 in 2016.

Sampling size and technique:
The population sample comprises of eighty (80) fish farmers that were randomly selected within the following circles, blocks and agricultural zones of Anambra state.

Table 2: List of Fish Circles, and Blocks in Agricultural Zones of Anambra state.

Agricultural zones	Fish Block	Fish Circle
Aguata	13	25
Anambra	12	25
Awka	9	18
Onitsha	15	39
	49	102

Source: Field survey (2021)

Using Taro Yamani formular. Yamani Taro (1967). The following members of respondents were identified.

$$n = \frac{N}{1 + N (e)^2}$$

Where n = Sample sixe

N = population size (102), e = 0.05 based on research condition

n = 102//1 + 102 (0.05)2

n = 102/1.255 =81.2

Method of Data collection:
In this study, questionnaire, oral interviews, field's observation and visits to fish farms were used during the study.

Source of data collection:
Data collected for this study came from primary and secondary data. The primary data was generated through field survey using well structured questionnaires between January 2021 to December 2021, while secondary data on the other hand were obtained through relevant literature ranging from textbooks, journals, articles, periodicals, seminars papers, proceeding and interviews

Data Analysis:
Analytical tools used were descriptive statistics frequency, percentage, mean, and all analysis was done with SPSS package.

RESULTS:
Socio economic characteristics of fish farmers in Anambra State.
Table 3, showed result on socio economic characteristics of fish farmers in Anambra State where majority of the fish farmers were male, (73.8%) with an average age of 41 – 50 years (37.5%). Also most of them were married (71.2%) and educated with a minimum of primary education (48.8%) and a household size of 4 – 6 (60%).

Table 3: Socio economic characteristics of fish farmers in Anambra State

SN	Socio-economic characteristics	Frequency (F)	Percentage (%)
1	Gender		
	Male	59	73.8
	Female	21	26.2
2	Age		
	20-30 yrs	8	10.0
	31-40 yrs	29	36.3
	41-50 yrs	30	37.5
	Above 51 yrs	13	16.2
3	Marital status		
	Married	57	71.2
	Single	15	18.8
	Widowed	5	6.2
	Others	3	3.8
4	Educational Qualification		
	Non-formal	10	12.5
	Primary	39	48.8
	Secondary	18	22.5
	Tertiary	8	10
	Others	5	6.2
5	House hold size		
	1-3	9	11.2
	4-6	48	60.0
	7-8	21	26.3
	Above 9	2	2.5

Result on analysis of constraints faced by fish farmers in Anambra State:

Table 4 revealed the analysis of constraints faced by fish farmers in Anambra State. Production constraints had an overall mean value 3.32, indicating that all listed constraints were major constraints. High cost of constructing ponds ranked highest with a mean value 3.93, and inadequate ponds had the least mean value 2.36 that is less than 2.5 likert scale thereby making it a minor constraint. Environmental constraints also had an overall mean value 3.17, while pollution ranked highest with a mean value 3.53, water level reduction in pond recorded least mean value 2.3 an indication that it is a minor constraint. Socio-cultural constraints also had an overall mean value 3.06 with predation of fish ranking highest with a mean value 3.33 and religious belief recording 2.62. Institutional constraints had an overall mean value 3.40 with lack of government support ranking highest alongside a mean value 3.65, while poor access to credit facility recorded least mean value 2.76.Infracstructural constraints had higher overall mean value 3.72 with lack of dams as the most ranked with a mean value 3.85 and poor farm facilities as the least with 3.63 mean. Financial constraints also had higher overall mean value 3.72 with no agricultural subsidy from government as the highest ranked mean value 3.85 and poor investment plan as the least 3.56.Technological constraints had an overall mean value 3.51 with lack of awareness on new innovation as most ranked 3.55, while poor yield from local technologies had least mean 3.45.Marketing constraints were made up of an overall mean 3.32 with low selling price of fish as most ranked 3.43 and inadequate local consumption as least with a mean value 3.11.

Table 3: Analysis of constraints faced by fish farmers in Anambra State

SN	Constraints	N	Mean
1	**Production**		
	Inadequate supply of fingerlings	80	3.2500
	Inadequate ponds	80	2.3625
	High cost of feed	80	3.8625
	High cost of constructing ponds	80	3.9375

	High cost of equipment used in fish farming	80	3.8000
	Unavailability of improved fish species	80	3.6375
	Inadequate space in pond	80	3.2500
	High cost of other inputs	80	3.8375
	Absentee farmers/managers	80	3.6750
	Irregular feeding	80	3.5375
	Inadequate management	80	3.2750
	Valid N (listwise)	80	
Over all mean			**3.3208**
2	**Environmental**		
	Low water pH in ponds	80	3.2125
	Adverse effect of acid rainfall	80	3.2625
	pond turbidity	80	3.2875
	dissolved oxygen	80	3.2500
	Pollution	80	3.5375
	Water level reduction in pond	80	2.3625
	Effects climate change	80	3.3125
	Valid N (listwise)	80	
Over all mean			**3.1750**
3	**Socio-cultural**		
	Cultural beliefs and value system on cultured fish	80	3.0125
	Activities of poachers	80	3.2625
	Not employing the right people	80	3.2250
	Land restriction for fish farming activities	80	2.7750
	Religious belief	80	2.6250
	Predation of fish by animals	80	3.3375
	Effect of value system	80	3.2375
	Valid N (listwise)	80	
Over all mean			**3.0679**
4	**Institutional**		
	Poor access to credit facilities	80	2.7625
	Poorly implemented government programes and policies	80	3.5000
	Taxation	80	3.5375
	Non availability of fisheries extension agents	80	3.5625
	Lack of government support	80	3.6500
	Valid N (listwise)	80	
Over all mean			**3.4025**
5	**Infrastructural**		
		80	3.7250
	Poor road network	80	3.7125
	Lack of electricity	80	3.7125
	Lack of dams	80	3.8500
	Poor farm facilities	80	3.6375
	Valid N (listwise)	80	
Over all mean			**3.7235**

6	**Financial**		
	High rate of interest rate charged by banks	80	3.8250
	Lack of insurance services	80	3.7000
	No subsidy from government	80	3.8500
	Inadequate record keeping	80	3.5750
	Huge capital required for the establishment of fish farm	80	3.8250
	Poor investment plan	80	3.5625
	Valid N (listwise)	80	
Over all mean			**3.7229**
7	**Technological**		
	Lack of awareness of new innovations	80	3.5500
	Poor yield from local technologies	80	3.4500
	Type of pond infrastructure	80	3.5375
	Valid N (listwise)	80	
Over all mean			**3.5125**
8	**Marketing**		
	High cost of marketing fish produce	80	3.4125
	Low selling price of produce	80	3.4375
	Inadequate local consumption	80	3.1125
	Valid N (listwise)	80	
Over all mean			**3.3208**

DISCUSSION

The result on socio-economic characters of fish farmers from Anambra state revealed that there were more male aqua culturist (73.8%) than female aqua culturist (26.3%) similar results were obtained by Osonudu and Ijeoma (2014) where they recorded (77.1%), Dasuki *et.al.,*(2014), Oladoja and Adeokun,(2009), Agwu and Adeniran (2009), Oguntade (2007), all recorded male dominance in fishing activities on all their studies. According to Duada and Yakubu (2013), men are believed to be heads of households who decide on productive ventures the household can go into or invest in.

Result from this study showed that fish farmers between the age of 41-50 years were more (37.5%) closely followed by those between 31-40 years (36.3%). Oguntade (2007), recorded age range between 40 – 59 years (36.9%) with a mean age of 44 years, Dasuki *et.al.,* (2014) recorded age range of 20 and 49 years with majority (60%) within 40 years. This agrees to the fact that aquacultural activities is very viable as its operation is predominantly on the hands of farmers in their relatively productive age and no doubt of youthful vigour. Age is an important factor in determining the productivity and adoption of an innovation by farmers (Kebede, 2001). At the youthful age, decision making for improved production and ability to take risks for expression of production frontier by the farmers would not be difficult to adopt. Eze (2002) reported that active age of farmers is a positive factor for decision making. Most fish farmers in Anambra state were made up of mainly married men (71.3%) while single (18.8%) , widowed and others who were (15%, 5% and 3%) respectively. Osondu and Ijeoma (2014), reported in their work that most fish farmers in their studies were married (72.9%), Dasuki.*et.al.* (2014), Oladoja and Adeosun, (2009), Ladu, *et.al.,* (2013) all reported that most of their respondents were married. Most of these fish farmers being married are themselves assumed to be responsible, it could also mean that unmarried , widowed and others may not have domestic responsibility to shoulder. (Nwosu *et al.,* 2012). Most of the respondents had primary education (48.8%). Oladoja and Adeosun, (2009), Ladu, *et.al.,* (2013), Osondu and Ijeoma (2014), Oguntade (2007), all recorded higher literacy level among fish farmers. This means that education level for most fish farmers were primary school certificate an indication that most critical decisions concerning their fish farming cannot be effectively taken by them as a result of low level of

education. Results from this study on household size of fish farmers in Anambra state showed that household range from 4-6 persons were the dominant household size (60.0%), Oladoja and Adeosun, (2009), Dalhatu and Ala (2012), also reported nine household members in their study though higher than this which may be attributed to the study area. Ladu, *et.al.,* (2013), and Agwu and Adeniran (2009) also recorded high household size, thereby confirming that fishing activities need more hands. This household size is desirable and of great importance to rural household as they rely more on their family members than hired labour in their fish farming activates thereby reducing production cost. This finding is consistent with (Palmguist, 1989).

Results from this study revealed that the overall mean for production constraints were (3.49), which was above likert scale of (2.5) indicting that most of the production constraints faced by fish farmers were major constraints except inadequate ponds which can easily be rented or bought . In environmental constrains, overall mean was also (3.18) as most of the identified constrains were major except for, temporary level of water in pond which occasionally occurs during heavy rains that is witnessed around August and can be as a result of overflow on the pond due to constant rain that normally take place during that period. Results on institutional constraints also showed that the overall mean was (3.40) indicating that most of them were major constraints, as they were all above (2.5) likert scale. This same results were obtained from infrastructural, financial technological and marketing that were (3, 3.72, 3.72, 3.51 and 3.32) respectively. Ogunremi and Olatunji (2019), recorded high cost of improved technologies (mean = 3.29), inadequate finance (mean = 3.5), infrastructure (mean = 3.1). Adefunla *et.al.,* (2013) and Isa *et.al.,* (2014) also recorded these identified constraints as major constraints faced by fish farmers in their studies, thereby agreeing with the findings of this study. Onemolease and Oriakhi (2011), identified financial constraints (mean = 3.6) and infrastructure (mean = 3.4) among major constraints faced by fish farmers. According to Marywell (2021), infrastructural constraints like electricity and road network as well as finance were listed among top six (6) challenges in fish farming activites, which is in line with the findings of this study. The result from ANOVA on table 4 revealed that there were significant differences among the major constraints as ($P < 0.05$) hence the need for multiple regression test which showed that infrastructural and financial constraints were identified as most major constraints that ranked highest (3.72) among the other constraints. Most fish farming activities in Anambra state were carried out in rural and semi-urban areas where infrastructure problems of poor road network, lack of vehicles and other essential amenities are lacking as well as lack of access to finance.

From the findings of this work, fish farmers in Anambra state are faced with numerous constraints that cut across production , environmental , socio cultural institution, infrastructural, financial, technological and marketing constraints but among these major constraints, Infrastructural and financial were both affecting them most, infrastructural constraints limited their assess to market while finance and other factors that tend to discourage them from fish farming practice and thus encourage rural urban migration that is ravaging most of our urban areas today.

CONCLUSION:

Having identified infrastructural and financial constraints as most ranked major constraints faced by fish farmers in Anambra state, as a way to encouraging not only fish farming activities but other productive ventures, government from all levels should intensity effect towards infrastructural development in all the entire Local Governments of the state which will in turn stem the tide of rural urban migration as well as tackle food insecurity that is ravaging the whole of our country now as well as provision of soft loans, grants, subsidies and other financial assistance to tackle financial and the remaining constraints as itemised in this study.

Acknowledgement:

We wish to thank the management and staff of Anambra State Agricultural Development Programme for their support and assistance during the course of this study

REFERENCES

Adefunla, I.I., Aderinoye – Abdulwahab, S.A.., Bell, O.G., Olorunfemu, O.D. and Oba, S.A. (2013). Information needs of farmers in Ilorin metropolis, Kwara State Nigeria. *Nigeria Journal Agriculture Food and Environment*. 9(2): 1 – 5.

Agwu, A.E and Afrioroho (2007). Influence Of Personal And Institutional Factors On Adoption Of Improved Pond Management Practices Among Fish Farmers In Isoko Local Government Area, Delta State, Nigeria. *Journal of Animal Production, 34(1):121-131.*

Akinsorotain, A.M, Akinsorotan, A.O, Jiomoh, J.O, Adene I.C and Akiwowo, U.A (2019). *Journal of physics conference series. 12(99): 102-111.*

Chianu J.N and Tsujii H. (2007). Gender differences in Labour allocation in West Africa: A case study of the Savannas of Northern Nigeria. *Human and Social Sciences Journal* 2 (2): 93-103.

Dalhatu, M. and Ala A. L., (2010). Analysis of Fish Demand in Sokoto Metropolis, Sokoto State Nigeria. *Nigerian Journal of Basic and Applied Science*, 18(2): 154-159.

Dasuki, A., Dauda, A.B, Oshoke, J.O, Tiri. G.D, and Bichi, A. H, (2014). A Study of Artisanal fisheries of Makara zone, Zobe Reservoir, Kastina State. In: proceedings 29th November, 2014, at Royal Choice Inn Limited, Gondo, Ahuor Road, Old GRA, Lobi Quarters, Makurdi, Benue State, Nigeria. pp 2-5.

Dauda, A.B. and Yakubu, S.O. (2013). Fish consumption and knowledge of fish farming among inhabitants of Dutsin – Ma Local Government Area,Katsina State,Nigeria. Nigerian Journal of Fisheries.10 (1&2):586 – 594.

Duar*te, C.M, Hol*wer M.O, Olsen Y., Soto D., Mba N., Guiu,J. ,Black ,K and Karakassis, I. (2009). Will the ocean help feed humanity? *Bioscience 59:967-976*

Edwards, P. (1999). Aquaculture and Overty; Past, Present And Future Prospects Of Impact. Fifth Fisheries Developmment. *Donor Consultation Rome, Italy 22-24 Februrary 1999, Rome, Italy.*

Egwui, P.C. (2014). Yields of the African Catfish, *Clarias gariepinus (Burchell,1822)* From a Low Input Homestead Fish Pond Umudihe, Abia State, Nigeria. *Nigeria Agricultural Journal, 38(1):170 - 175*

Eze, S.O (2002). Post-Harvest Plantain Technology dissemination and Agricultural Extension Implementations for poverty eradication among rural women in Anaocha L.G.A Anambra State. In: Iloje G.E, Osuji, U., Herbert and Asunuda G.N (eds) Agricultures. A basis for poverty eradication and coutter resolution proceeding of 26th annual ASR FUTO Owerri Nig.: 201 – 204.

FAO, (2017). Short term projection of global demand and supply gaps. FAO. Fisheries and Aquaculture technical paper: 607--. 609

Ha, E.O (1993). Inland Fisheries Resources of Nigeria. FAO. CIFA Occasional paper No. 20. Rowe. FAO: 120-125.

Issa, F.O, Abdulazzeez, M.O, Kezi, P.M, Dare, J.S, and Umar, R. (2014). Profitability Analysis of Small Scale Catfish Farming in Kaduna State, Nigeria. *Journal of Agricultural Extension and Rural Development 6(8):267-273.*

Kebede, T.A (2001). Farm Household Technical Efficiency. A Stochastic Frontier. A study of rice producers in Mardi – Watershed in the western Development Region of Nepal. A M.Sc. Thesis submitted to the Department of and Social Sciences Agricultural University of Norway: 56 – 60..

Ladu, B.M.M, Sogbesan, A.O, and Tafida, A.A, (2013). Fisheries and Fishing Enterprises in the Hadeja Jamaare Kamadugu Yobe Basin, Nigeria. Technical report on Hadeja Jamaare Yobe Basin Trust Fund, Nigeria.

Marywell, (2021). Livestock Farming. Marywellfarms.com.ng/2021/10/21/challenges-fish-economy/.

Nwosu, C.S; Onyeneke, R.U; Okoli, V.B.N. (2012). Socioeconomic Determinants of fluted pumpkin leaf (*Telfaria Occidentalis*). Production in Ezihitte Mbaise Local Government Area of Imo State, Nigeria. *Agric. Sci. Res*. S **2**(6) 355 – 361.

Ogunremi, J.B and Olatunji, S.O, (2019). Constraints to adoption of fish farming technologies among fish farmers in Obio/Akpor Local Government Area of Rivers State, Nigeria. *Nigeria Journal of Animal Production 46 (1):256-262.*

Oguntande, I. (2007). Backyard fish farmers information meeds in Osun State, Nigeria. In proceedings of the African Association of Agricultural Economist Conference Accra, Ghana. 20-22 August, 2007. pp 106-169.

Oladoja, M.A and Adeokun, O.A, (2009). Analysis of socio-economics constraints of fisher folks on poverty alleviation in Lagos State. *Agricultural Journal 4(3):130-134*

Olasosebikan, B.D. and Raji, A. (2021). Revised Edition, 2021 Fish Guide to Nigeria Fresh Water and Marine Fishes. Federal College of Freshwater Fisheries Technology, New Bussa, Nigeria:. 1 – 5.

Omorinkoba, W.S., Ogunfowara, O.O., Aga, N.D. and Mshelia, M.B. (2011).Artisanal Fisheries Activities in Lake Kainji. In: Raji AA, Okaeme N, Ibeun MO (Eds.), Forty Years on Lake Kainji Fisheries Research : 43-53.

Osondu, K. and Ijeoma, C. (2014). Analysis of profitability and production determinants in Umuahia, Abia State, Nigeria. *Journal of Agricultural Sciences* 2(7)168-176

Palmguist, R. Danelsam, L. (1991). A Hedonic study of the Effects of Erosion Control and Drainage on Farmland Values. *American Journal of Agricultural Economics.* **71**(2):55-62.

Sanusi, S.M. and Dansaba, K.M. (2015). Problems and prospect of small scale fish farming in Mina Agricultural zone of Niger State, Nigeria and its implications on increased fish food security in journal Agric. *Res. Rev.* (3):157 – 160.