Oceanography & Fisheries
Open access Journal
ISSN: 2476-0536

Juniper PUBLISHERS key to the Researchers

Research Article
Volume 18 Issue 2 - June 2025
DOI: 10.19080/OFOAJ.2025.18.555985

Oceanogr Fish Open Access J

Practices and Challenges of *Clarias gariepinus* (African Giant Catfish) In Owerri West Local Government Area

Remmy Fortune Obinna[1], Ezeafulukwe Chukwuka[1], Micheal Abimbola Oladosu[2], Moses Adondua Abah[3]*, Eliezer Oluwatimileyin Adeleke[4], Olaide Ayokunmi Oladosu[5] and Nwala Immaculata Chidinma[1]

[1]*Federal University of Technology, Owerri, Fisheries and Aquaculture Technology, School of Agriculture and Agricultural Technology, Nigeria*

[2]*Department of Biochemistry, University of Lagos, Nigeria*

[3]*Department of Biochemistry, Federal University of Wukari, Nigeria*

[4]*Department of Biomedical Laboratory Science, University of Ibadan, Nigeria*

[5]*Department of computer Science, Faculty of Science and Technology, Babcock University, Ilishan, Nigeria*

Submission: May 23, 2025; **Published**: June 03, 2025

Corresponding author: Moses Adondua Abah, Department of Biochemistry, Federal University of Wukari, Nigeria

Abstract

Background: Catfish farming is the sub-set of Aquaculture that focuses on rearing of catfish under controlled or semi controlled conditions for economic and social benefits. It represents a major source of revenue for developing countries. Therefore, this study aimed at evaluating the methodologies and obstacles associated with catfish cultivation in Owerri West LGA, Imo State, Nigeria.

Method: This study was carried out using 26 catfish producers after obtaining their consent. A well-structured questionnaire was administered. Analytical methods such as descriptive statistics and factor analysis were applied to interpret the data.

Result: in this study, catfish farming was observed to be male dominated with 84.6% of male participation. Most of farmers (65.4%) possessed a Secondary School Certificate Examination (SSCE) as their highest qualification. Majority (53.8%) manage between 4 to 8 ponds or tanks, predominantly operate on a small scale (73.1%), and prefer plastic tanks (42.3%) as their main production system.

Conclusion: The study identified three principal categories of challenges: economic, climatic, and operational. Economic issues were the most pressing, with inadequate financing, the soaring costs of fish feed, and a notable absence of government support. Climatic challenges such as unreliable power supply, water source issues, and extreme temperatures with evaporation also posted significant difficulties. Operational challenges included predation, marketing problems, inadequate storage facilities, and a substantial gap in access to extension services and expertise, all of which impede effective farm management. To address these issues, the study recommends enhancing financial accessibility, improving capacity building and extension services, investing in infrastructural upgrades, encouraging collaborative efforts, and reinforcing policy and regulatory frameworks. The implementation of these strategies is expected to drive the sustainable advancement and expansion of the catfish farming industry in the area, ultimately elevating the well-being of the farmers and contributing to the region's economic progress.

Keywords: Catfish; Farming; Practices; Challenges; Owerri

Introduction

Fish farming is a sub-set of Aquaculture that focuses on rearing of fish under controlled or semi controlled conditions for economic and social benefits [1,2]. Fishery products were reported as major source of export revenue for developing countries, amounting to over US $ 20 billion per annum in late 1990s [3]. This exceeded the values obtained from the exports of meat, dairy, cereals, vegetables, fruit, sugar, coffee, tobacco and oilseeds in 1997 from developing countries (International Trade Centre, 2002). However, F.A.O [4], estimated that Nigeria imports about 560,000 tonnes of fish estimated at about $400 million annually while annual domestic fish supply in Nigeria stands at about 400,000 tonnes. This makes Nigeria one of the largest importers of fish in the developing world.

The African Catfish, *Clarias gariepinus*, which belongs to the family Clariidae, is important to the Nigerian economy. It serves as a source of income and increases the Gross Domestic Product

(GDP). The African Catfish is more economical than the tilapia as it has two to three times market value of Tilapia and can be sold live in the market. In addition, it requires less space, time, money and has a higher feed conserving rate [5,6].

Different challenges including postharvest losses [7], High cost of feeds [8], (Ohen and Abang 2009), unimproved fingerling [9], scarcity of quality brooding stocks [10], poor market structure [11] among others have reported as the major hindrances against the growth of catfish farming in Nigeria [12,13].

It must be noted that a number of studies have been carried out on the economic analysis of production of catfish in Nigeria with specific attention given to the nutritional aspect and little focus on the challenges of catfish farming. This study determined different practices catfish farmers use in culturing of *Clarais gariepinus* and the problems associated with it. This is to provide valuable insights for policymakers, agricultural extension agents, potential investors, and catfish farmers to improve in Owerri West LGA.

Materials and Method

After obtaining informed consent from each participant, A well-structured questionnaire was used to collect information based on the practices, challenges and other essential information of the farming of *Clarias gariepinus* from 26 selected catfish farmer in Owerri West.

Statistical Analysis

Data obtained was analyzed using descriptive analysis for ease of understanding by all concerned. It involved the use of frequency and percentage tables, bar chart and pie chart to analyze the data.

Results

Table 1 shows the demographic data the cat fish farmers with majority of them (43.3%) between the age bracket of 45-65 and about 73.7% were male. It further shows the level of education of the cat fish farmers. The majority had SSCE as their highest education attainment.

Table 1: Demographic data of the farmers.

	PARAMETERS	FREQUENCY	PERCENTAGE
1	AGE		
	18-25	1	3.3
	25-35	9	30
	35-45	5	16.7
	45-65	13	43.3
	>65	2	6.7
2	GENDER		
	MALE	22	73.7
	FEMALE	8	26.7
	FINGERLINGS SOURCE		
	Other farms	24	80
	Natural source	0	0
	Others (Breeding)	6	20
3	LEVEL OF EDUCATION	FREQUENCY	PERCENTAGE
	SSCE	14	46.6
	OND	3	10
	HND	5	16.7
	Bsc	8	26.7
4	POND SIZE		
	3m by 4m	5	16.7
	Others	8	26.7
	Both	17	56.6
5	SOURCE OF WATER		
	Borehole	30	100
	River/Stream	0	0

How to cite this article: Remmy Fortune O, Ezeafulukwe C, Micheal Abimbola O, Moses Adondua A, Eliezer Oluwatimileyin A. Practices and Challenges of *Clarias gariepinus* (African Giant Catfish) In Owerri West Local Government Area. Oceanogr Fish Open Access J. 2025; 18(2): 555985. DOI:10.19080/OFOAJ.2025.18.555985

Table 2 shows the impact of different challenges on cat fish farmers (respondents) in Owerri West LGA. About 66.7% of the catfish farmers reported high impact of inadequate finance on their operations, Majority of the farmers (73.3%) reported high impact of high cost of fish feed on their expenses. Inadequate power supply highly affected 56.7% of the farmers while marketing challenges highly affected 56.7% of farmers' ability to sell their produce.

Table 2: Challenges facing the farmers.

	Parameters	Frequency	Percentage
1	INADEQUATE FINANCE		
	High impact	20	66.7
	Medium impact	7	23.3
	Low impact	3	10
2	FISH FEED COST		
	High impact	22	73.3
	Medium impact	7	23.3
	Low impact	1	3.3
3	INADEQUATE POWER SUPPLY		
	High impact	17	56.7
	Medium impact	9	30
	Low impact	4	13.3
4	PREDATION		
	High impact	5	16.7
	Medium impact	14	46.7
	Low impact	11	36.6
5	MARKETING CHALLENGES		
	High impact	17	56.7
	Medium impact	7	23.3
	Low impact	6	20
6	POOR STORAGE FACILITIES		
	High impact	6	20
	Medium impact	8	26.7
	Low impact	16	53.3
7	LACK OF GOVERNMENT SUPPORT		
	High impact	19	63.3
	Medium impact	8	26.7
	Low impact	3	10
8	TRANSPORTATION COST		
	High impact	17	56.7
	Medium impact	7	23.3
	Low impact	6	20
9	DISEASE AND DRUG SUPPLY		
	High impact	4	13.3
	Medium impact	15	50
	Low impact	11	36.7
10	POOR ROAD NETWORK		

How to cite this article: Remmy Fortune O, Ezeafulukwe C, Micheal Abimbola O, Moses Adondua A, Eliezer Oluwatimileyin A. Practices and Challenges of *Clarias gariepinus* (African Giant Catfish) In Owerri West Local Government Area. Oceanogr Fish Open Access J. 2025; 18(2): 555985. DOI:10.19080/OFOAJ.2025.18.555985

	High impact	19	63.3
	Medium impact	9	30
	Low impact	2	6.7
11	WATER SOURCE CHALLENGES		
	High impact	6	20
	Medium impact	6	20
	Low impact	18	60
12	HIGH TEMPERATURE AND EVAPORATION		
	High impact	8	26.7
	Medium impact	14	46.6
	Low impact	8	26.7
13	SCARCITY OF VIABLE SEED		
	High impact	22	73.3
	Medium impact	6	20
	Low impact	2	6.7
14	SMALL POND SIZE AND CANNIBALISM		
	High impact	3	10
	Medium impact	8	26.7
	Low impact	19	63.3
15	LACK OF EXTENSION SERVICE		
	High impact	18	60
	Medium impact	7	23.3
	Low impact	5	16.7

Majority of the farmers were highly affected by poor storage facility and transportation costs present a major challenge for 56.7% of farmers. The poor road infrastructure was a significant concern for 43.3% of farmers, a moderate issue for 36.7%, and a minor issue for 20% of those in Owerri West. The scarcity of viable fingerlings posed a major challenge for 73.3% of farmers. Additionally, small pond sizes and cannibalism among fish severely affect the growth and health of stock for 10% of farmers, have a moderate impact for 26.7%, and minimal impact for 63.3%. Lastly, lack of access to extension services, as well as limited experience and technical expertise, was a major constraint for 60% of farmers.

Discussion

The study conducted in Owerri West LGA, Imo State, Nigeria, aimed to evaluate catfish farming practices and identify the challenges faced by farmers. In this study, older males were observed to dominate the industry in Owerri west. This indicates that the sector relies on the expertise of the older generation. The low involvement of youth poses a risk to the industry's future. Most farmers were observed to be less educated, and this suggests a need for educational and technical training enhancements in Owerri west. The results revealed that majority of the farmers sourced their initial capital investment from their personal savings. This agrees with the Adewuyi et al. [14] in a study conducted in Ogun State that majority of the fish farmer financed their farms from their personal savings.

In this study most catfish farmers used earthen ponds to raise their fish. This agrees with a study conducted in Calabar, Nigeria by Ele et al. [15] where earthen pond was reported to as the most preferred by fish farmers. This is common across Nigeria because earthen ponds are less expensive to build and relatively easy to manage, especially for small-scale farmers. The farming production system mainly carried out in Owerri West LGA is a grow out pond. Most of these catfish farmers also get their fingerlings (young fish) from hatcheries. This can be advantageous as it tends to reduce transport costs and helps the fish adjust more easily to the local environment, it however subjects the farmers to many challenges including difficulties in identifying quality fingerlings as they tend to vary, and not all farmers know what healthy fingerlings should look like. Since fingerlings are the starting point of the production cycle, poor-quality stock can affect the entire farming process. Educating farmers on how to identify strong, healthy fingerlings

How to cite this article: Remmy Fortune O, Ezeafulukwe C, Micheal Abimbola O, Moses Adondua A, Eliezer Oluwatimileyin A. Practices and Challenges of *Clarias gariepinus* (African Giant Catfish) In Owerri West Local Government Area. Oceanogr Fish Open Access J. 2025; 18(2): 555985.
DOI:10.19080/OFOAJ.2025.18.555985

and possibly setting standards or certifications for local hatcheries could help solve this issue [16-25].

It was observed from the study that all the farmers used both spot and broadcasting feeding method, also most of the catfish farmers use commercial fish feed, and most of them use floating feeds. Despite how this can lead to better fish growth, not all farmers can afford enough feed as often as needed. This suggests that even though commercial feeds are used, the fish would not be adequately fed. This could slow down growth and make farming less profitable. Teaching farmers how to produce affordable homemade feed using local materials could help lower costs and improve feeding practices. Most of the farmers practiced both partially and total harvesting and most of them store them in a holding tank. So, this implies the fish are not always stored or transported in a way that keeps them fresh and could affect their selling price. Teaching farmers better harvesting and post-harvest practices could help improve the quality of their product and increase their earnings [26-33].

In this study, different challenges were observed among the farmers. High cost and irregular supply of fish feed were observed to be greatest threat to their effective operation. This makes it difficult for farmers to feed their fish properly and in turn could affect growth rates and profit. One possible solution is to support the local production of fish feed using leftover crops and by-products from local farms. This could reduce costs and make feed more available. Disease outbreaks were also observed as a frequent threat to catfish farming in Owerri West LGA. This is often made worse by poor water quality and a lack of proper care. These outbreaks could lead to financial losses. Fixing this problem requires a combination of better water management, biosecurity and easier access to fish health services and medicine.

In addition, Unreliable electricity was observed as other challenges in this study. Poor electricity supply could affect water pumping and storage, especially for farmers who want to keep their fish alive until they are sold. Improving local infrastructure could make a big difference in the success of these farms.

Conclusion

The following could be concluded can be concluded from this study:

a) Most farmers in Owerri West practice the usage of earthen ponds to raise their catfish, getting their fingerlings (young fish) from local hatcheries and usage of inadequate commercially produced fish feed.

b) Most farmers in Owerri West face different challenges ranges from high cost and irregular availability of good-quality feed, getting healthy fingerlings from hatcheries, financial problems, poor storage facility, adequate power supply.

It could be recommended from the study that adequate training and empowerment should be made available for the fish farmers.

Acknowledgment

We want to thank all the researchers who contributed to the success of this research work.

References

1. Anthonio OR, Akinwumi JA (2002) Supply & distribution of fish in Nigeria. Geographical Journal 14: 16-16.
2. Okoli EC, Abah MA, Olawale O, Yohanna ER, Hananiah ZS (2022) Ecological risk assessment of heavy metals in fish samples from Donga River, Taraba State, Nigeria. Asian J Appl Sci 15: 24-28.
3. FAO Fisheries Report NO. 644. RAF1.1R644 (Bi) Food & Agriculture Organization (2002). Fishstat Plus: Universal software for fishery statistical time series. Rome.
4. FAO Fisheries Department, Fishery Information, Data & Statistics Unit. (2007) Food & Agriculture Organization.
5. Olagunju FI, Adesiyan IO, Ezekiel AA (2007) Economic Viability of Cat Fish Production in Oyo State, Niger. J Human Ecol 21(2): 121-124.
6. Emokaro CO, Ekunwe PA, Achille A (2010) Profitability & viability of catfish farming in Kogi State, Nigeria. J Agric Biol Sci 6(3): 215-219.
7. Anko EO, Eyo AA (2001) Fisheries development in Nigeria with special reference to Cross River state. In: 16th annual conference of the Fisheries Society of Nigeria (FISON), Maiduguri, Nigeria, pp. 303-312.
8. Ugwumba COA, Chukwuji CO (2010) Economics of Catfish production in Anambra State, Nigeria: A Profit Function Approach. J Agric Soc Sci 6(4): 105-109.
9. Nwaobiala CU, Ebeniro LA (2012) Effect of socio-economic variables on the profit levels of homestead catfish farmers in Edo state, Nigeria. Intl journal of agric & rural dev 15(3): 1292-1297.
10. Sadiq MS, Kolo MD (2015) Problems & prospects of small-scale fish farming in Minna agricultural zone of Niger state, Nigeria & it's implications on increased fish food security. Int J Agric Res Rev 3(2): 157-160.
11. Olaoye OJ, Adejuyigbe SB (2013) Certain roles of the food scientist in ameliorating food insecurity in Nigeria. Journal of Food Science and Technology 50(6): 1081-1085.
12. Ezeonu CS, Tatah SV, Imo C, Yakubu OE, Garba QH, et al. (2022) Antioxidant potential of ginger extract on metals (lead, cadmium, and boron) induced oxidative stress in maize plant. Asian J Trop Biotechnol 19: 45-51.
13. Olawale O, Abah MA, Grace OT, Habibu B, Okoli EC, et al. (2022) Risk assessment of pesticide residues in water samples from River Gongola, Adamawa State, Nigeria. World J Adv Res Rev 13(1): 424-432.
14. Adewuyi SA, Philip BB, Ayinde IA, Akerele D (2010) Analysis of Analysis of Profitability of Fish Farming in Ogun State, Nigeria. J Hum Ecol 31(3): 179-184.
15. Ele IE, Ibok OW, Antia OEA, Okon IE, Udoh ES (2013) Economic analysis of fish farming in Calabar, Cross River State, Nigeria.
16. Abdullah MA, Chowdury MBH (2016) Problems & prospects of fish farming in some selected area of Bangladesh and it's implication on increased fish production. AJAEES 10(4): 1-6.

How to cite this article: Remmy Fortune O, Ezeafulukwe C, Micheal Abimbola O, Moses Adondua A, Eliezer Oluwatimileyin A. Practices and Challenges of *Clarias gariepinus* (African Giant Catfish) In Owerri West Local Government Area. Oceanogr Fish Open Access J. 2025; 18(2): 555985. DOI:10.19080/OFOAJ.2025.18.555985

17. Adebayo OO (2012) Determinants of Extension Service Needs of Catfish Farmers in Oyo State, Nigeria (A case Study of Ido Local Government Area). J Humanities & Soc Sci 1(4): 54-58.

18. Anoop KR, Sundar KSG, Khan BA, Lal S (2009) Common Moorhen Gallinula chloropus in the diet of the African catfish Clarias gariepinus in Keoladeo Ghana National Park, India. Indian Birds 5(2): 22-23.

19. Ayinla OA (2012) Aquaculture Development and Appropriate Enterprise Combination in the BRACED states commissioners for agriculture. Songhia Farms, Port Harcourt. pp. 1-41.

20. Bentancur RR, Wiley EO, Arratia G, Acero A, Bailly N, et al. (2017) Phylogenetic classification of bony fishes. BMC Evolutionary Biology 17(1): 162.

21. Food & Agriculture Organization (2001) Report of the eleventh session of the committee for Inland Fisheries of Africa. Abuja, Nigeria.

22. Mwangi OG (2008) Political corruption, party financing, and democracy in Kenya. The Journal of Modern African Studies, 46(3): 345-367.

23. Mynard J (2017) Book review: Language learner autonomy: Theory, practice & research by David Little, Leni Dam & Lienhard Legenhausen. Studies in Self-Access Learning Journal 8(4): 362-370.

24. Ocmer R (2006) Raising & Production of Catfish (Hito).

25. Okwu OJ, Acheje S (2011) Socio-Economic Analysis of Fish Farming in Makurdi Local Government Area, Benue State, Nigeria. Eur. J Social Sc 23(4).

26. Okwu OJ, Acheje S (2011) Socio-Economic Analysis of Fish Farming in Makurdi Local Government Area, Benue State, Nigeria. Eur. J Social Sc 23(4).

27. Sikiru BO, Omobolanle NM, Ayorinde BJO, Adegoke OO (2009) Improving Clarias productivity. J Biol Res 3.

28. Olaoye OA, Onilude AA, Idowu OA (2013) Production and evaluation of cookies from whole wheat and date palm fruit pulp as sugar substitute. Journal of Food Science and Technology 50(6): 1132-1137.

29. Olaoye OJ, Onilude AA (2013) Catfish farming: A sustainability study at Eriwe fish farming village. Journal of Food Science and Technology 50(6): 1138-1143.

30. Olaoye OJ, Onilude AA (2013) Dynamics of the adoption of improved aquaculture technologies among fish farmers in Lagos State, Nigeria. Journal of Food Science and Technology 50(6): 1144–1149.

31. Sullivan DP, Diener ML, Mangelsdorf SC, Brown GL, McHale JL, et al. (2006) Attachment and Sensitivity in Family Context: The Roles of Parent and Infant Gender. Infant and Child Development 15(4): 367-385.

32. Ugwumba COA, Orji EC (2007) Comparative study on financial implications of flow-through and re-circulating aquaculture practices in Anambra State, Nigeria. Nigerian J Res Prod 10: 62-68.

33. Ugwumba COA, Nnabuife ELC (2008) Comparative study on the utilization of commercial feed and home-made feed in catfish production for sustainable aquaculture. Multidiscipline Journal of Resource Development 10: 164-169.

How to cite this article: Remmy Fortune O, Ezeafulukwe C, Micheal Abimbola O, Moses Adondua A, Eliezer Oluwatimileyin A. Practices and Challenges of *Clarias gariepinus* (African Giant Catfish) In Owerri West Local Government Area. Oceanogr Fish Open Access J. 2025; 18(2): 555985.
DOI:10.19080/OFOAJ.2025.18.555985