

UTILIZATION AND CONSTRAINTS OF INDIGENOUS AQUACULTURE TECHNIQUES AMONG FISH FARMERS IN SELECTED AREAS OF IBADAN CITY, OYO STATE, NIGERIA

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ABSTRACT

Traditional aquaculture techniques referred to as Indigenous Technical Knowledge (ITK) remain central to small-scale fish farming in southwestern Nigeria, yet systematic evidence on how farmers perceive and utilize these techniques is sparse. Using a cross-sectional survey of 122 catfish and tilapia farmers drawn from four purposively selected local-government areas (LGAs) of Ibadan City, this study examined, awareness and cultural perception of Traditional Aquaculture Techniques, degree of knowledge and day-to-day utilization of specific techniques. Descriptive statistics, knowledge–adoption indices, were employed. Over two-thirds of respondents (65.6 %) were aware of Traditional Aquaculture Techniques and 60.7 % reported actively using at least one traditional practice. Fifteen discrete techniques were documented and grouped as pond maintenance (20 %), water-quality management (20 %), fish-health management (20 %), feed management (6.7 %), and post-harvest handling (33.3 %). The findings affirm that Traditional Aquaculture Techniques retains both cultural relevance and practical efficacy in urban aquaculture, but targeted training and participatory validation are required to unlock its full potential alongside modern innovations.

Keywords: Traditional Aquaculture Techniques, Fish Farming, Utilization, Adoption

INTRODUCTION

Aquaculture makes the fastest-growing contribution to global animal-protein supplies, yet more than 70 % of farm output worldwide is still produced by smallholders who rely heavily on low-cost innovations grounded in place-based knowledge. In Nigeria, these innovations are captured by the concept of Indigenous Technical Knowledge (ITK)—practices derived from cumulated observation, experimentation, and cultural heritage. Few studies have scrutinized how farmers in an urbanizing context such as Ibadan perceive and utilize these practices. Ibadan, the third-largest city in Nigeria, serves as a major hub for aquaculture. However, the growing trend toward modernized systems raises concerns about the preservation and continued use of ITK. This study investigates the perception, awareness, and utilization of ITK among fish farmers in selected LGAs of Ibadan, Oyo State,

highlighting how these practices remain relevant despite contemporary shifts.

MATERIALS AND METHODS

Ibadan is Nigeria's third-largest city and the commercial hub of Oyo State. Four LGAs with the highest density of registered fish farms Akinyele, Egbeda, Ido and Ona-Ara were purposively selected. A two-stage procedure combined purposive selection of LGAs with simple random sampling of individual farms from local producer lists, yielding 122 respondents (catfish: 94; tilapia/polyculture: 28). Semi-structured questionnaires captured demographics, awareness and use of ITK, and perceived constraints. A complementary panel of 24 fisheries scientists (≥ 4 years professional experience) rated the scientific rationality of each technique. Data were coded in SPSS 26.

RESULTS AND DISCUSSIONS

Results

Fifteen traditional techniques were recorded, categorized into pond maintenance (20%), water-

quality management (20%), fish-health management (20%), feed management (6.7%), and post-harvest handling (33.3%). Most commonly used were salt-bath dips, salting and sun-drying, and smoking.

Table 1: Inventory of Traditional Techniques

<i>Category</i>	<i>Techniques (n)</i>	<i>Share (%)</i>
<i>Pond maintenance</i>	3	20.0
<i>Water-quality management</i>	3	20.0
<i>Feed management</i>	1	6.7
<i>Fish-health management</i>	3	20.0
<i>Post-harvest handling</i>	5	33.3

Perception and utilization of Traditional Aquaculture Techniques

The study revealed (table 2) that the majority of fish farmers showed that 50.8% knowledge of the traditional aquaculture techniques is based knowledge system developed by a community and also, 27.9% agree that it is cultured value with a mean score of 1.97. And that 65.6% of the fish farmers believe that they are aware of the traditional

aquaculture techniques practiced in their fish farming community and that the traditional aquaculture techniques were learnt through cultural knowledge. More so, 60.7% of the total respondents practice any indigenous knowledge on their farm. However, 65.6% of the respondents think that the practiced traditional aquaculture techniques are still relevant.

Table 2: Perception and utilization of Traditional Aquaculture Techniques

S / N	Awareness	Culture Value	Knowledge System developed by a community	Tradition	Folklore	None of the above	Mean
1	What term do you think describe traditional aquaculture techniques?	34(27.9%)	62(50.8%)	16(13.1%)	7(5.4%)	3(2.1%)	1.97
2	Are you aware of the traditional aquaculture techniques practiced in your fish farming community?	Yes 80(65.6%)		No 33(27.0%)		May be 9(7.4%)	1.42
3	Do you practice any traditional techniques on your farm?	Yes 74(60.7%)		No 21(17.2%)		Sometimes 27(22.1%)	1.61
5	Are traditional techniques practiced still relevant?	Yes 80(65.6%)		No 13(10.7%)		Not Always 29(23.8%)	1.57

Constraints Faced by Fish Farmers practicing traditional Aquaculture Techniques

Table 3 shows that many fish farmers face challenges using traditional aquaculture techniques. About 36.0% of respondents did not achieve the desired results, and 27.9% strongly agreed it was a challenge. The average rating was 3.20. this suggest many farmers struggle with these methods. Lack of expert guidance was a key issue, 65.5% agreed this limit effective use of traditional methods, while 22,2%

disagreed. This aligns with Agrawal (1995), who emphasized the role of extension services in promoting traditional farming practices. Weak coordination between research bodies and development organizations was seen as a constraint by 61.5% of the respondents, with a mean score of 3.50. This indicates that better collaboration could enhance utilization of traditional aquaculture techniques.

Tables 3: Constraints Faced by the Traditional Farmers in practicing them

S/N	Constraints	SA	A	UND	D	SD	Mean
1	do not get the desired results	8(6.6%)	26(21.3%)	45(36.9%)	32(26.2%)	11(9.0%)	2.90
2	Lack of expert guidance/extension support for the use of the indigenous knowledge	17(13.9%)	63(51.6%)	15(12.3%)	18(14.8%)	9(7.4%)	3.50
3	Weak coordination between research and development organizations	23(18.9%)	52(42.6%)	21(17.2%)	15(12.3%)	11(9.0%)	3.50
4	There are no trainings about indigenous knowledge	16(13.1%)	58(47.5%)	16(13.1%)	22(18.0%)	10(8.2%)	3.39
5	Effectiveness is slow	9(7.4%)	42(34.4%)	35(28.7%)	27(22.1%)	9(7.4%)	3.12
6	Materials are not easily available	14(11.5%)	41(33.6%)	25(20.5%)	28(23.0%)	14(11.5%)	3.11
7	No measurement to the use of some materials	18(14.8%)	60(49.2%)	20(16.4%)	11(9.0%)	13(10.7%)	3.48
8	Unwillingness to share the knowledge by some elders	15(12.3%)	36(29.5%)	40(32.8%)	19(15.6%)	12(9.8%)	3.19
9	May not always be accurate	20(16.4%)	57(46.7%)	22(18.0%)	11(9.0%)	12(9.8%)	3.51

CONCLUSION AND RECOMMENDATIONS

Conclusion

The findings of this study underscore the enduring relevance of traditional aquaculture techniques in urban fish farming systems, particularly in Ibadan, Nigeria. These techniques are deeply rooted in local culture and have evolved through generations of experimental knowledge. They encompass

environmentally adaptive and resource-efficient methods that are aligned with ecological conditions of the region (Agrawal, 1995; Warren, 1991). Beyond technical utility, traditional aquaculture practices also carry cultural, social significance, contributing to the identity and resilience of local communities (Posey, 1999).

Recommendations

To enhance the role of traditional aquaculture techniques the following recommendations are made

1 it is essential to strengthen institutional frameworks that supports and validates local knowledge systems.

11 This can be achieved through participatory research, policy inclusion, farmer-led innovation, and targeted extension programs that validate and adapt traditional practices in response to contemporary challenges By

111 integrating these practices into formal aquaculture development

REFERENCES

- Agrawal, A. (1995). Dismantling the divide between indigenous and scientific knowledge. *Development and Change*, 26(3), 413-439.
- Ajana, A. M. (1995). Review of Aquaculture Extension and Training in Nigeria. National Institute for Freshwater Fisheries Research.
- Berkes, F., Colding, J., & Folke, C. (2000). Rediscovery of Traditional Ecological knowledge as Adaptive Management. *Ecological Applications*, 10(5), 1251-1262.
- Food and Agriculture Organization (FAO). (2020). The State of World Fisheries and Aquaculture 2020: Sustainability in action. Rome.
- Nnaji, J. C., & Ude, F. (2022). Application of Indigenous Knowledge Systems in Aquaculture in Southeast Nigeria. *Journal of Rural Extension and Development*, 11(2), 45-58.
- Posey, D.A. (1999). Cultural and Spiritual values of Biodiversity. A Complementary contribution to the Global Biodiversity Assessment. Nairobi: United Nations Environment Programme.
- Seyi-Gbangbayau, Y. A. & Omitoyin, SA (2025). Awareness and Adoption of Indigenous Technical Knowledge (ITK) in Aquaculture in Some Local Government Areas of Ibadan Metropolis, Oyo State. *International Journal of of Women in Technical Education and Employment*, 6(1), 94-102. <https://fpwitedjournal.federalpolyilaro.edu.ng>
- Smith, J. (2018). Extension Services and Traditional Knowledge: Bridging the gap in Sustainable Aquaculture. *Journal of Aquaculture Development*, 12(2).45-56.
- Warren, D.M.1991, Using Indigenous Knowledge in Agricultural Development. World bank discussion paper 127. Washington, DC: World Bank
- World Bank. (2013). Fish to 2030: Prospects for fisheries and aquaculture. Report Number 83177-GLB.