

Skills Need of Fish Farmers in the Establishment of Fish Pond for Fish Production in Akwa Ibom State, Nigeria

Ekpeno Aniedi EKONG

Department of Agricultural Education

Faculty of Vocational Education Library and Information Science

University of Uyo, Uyo

Email: ekongekpeno2015@gmail.com

Abstract

The study sought to determine the skills need of fish farmers in the establishment of fish pond for fish production in Akwa Ibom State. The research design adopted for this study was descriptive survey research design. The population of this study comprised of 575 consisting of 308 male and 267 female registered fish farmers in Akwa Ibom State. The sample size for the study was 334, consisting of 174 males and 160 females registered fish farmers. It was statistically determined using Taro Yamane Formula and selected from the population using stratified random sampling technique. The instrument for data collection was questionnaire entitled "Skills Need of Farmers in the Establishment of Fish Pond for Fish Production Questionnaire" (SNFEFPFQ). The face validity was established using three experts. The instrument had the reliability coefficient of 0.86 with Cronbach's Alpha Statistic. 334 copies of questionnaires were administered out of which 326 were properly completed and used for data analysis. The data collected were analyzed using mean and standard deviation to answer research questions while independent t-test was used to test the null hypotheses at 0.05 level of significance. Findings of the study indicated that pond site selection, pond construction and pond maintenance were highly needed by fish farmers for fish production in Akwa Ibom State. Findings also showed that significant difference exist between the mean rating skills need of male and female fish farmers on pond construction and pond maintenance while no significant difference exist between the mean rating skills need of male and female fish farmers on site selection for fish production in Akwa Ibom State. It was concluded that there is critical gaps in the knowledge and competencies required for effective fish farming operations in pond construction and pond maintenance among male and female farmers. It was recommended among others that Government Agencies should develop and implement comprehensive training and capacity-building programmes to help farmers in selecting pond sites for fish farming.

Keyword: Establishment, Farmers, Fish, Pond, Production

Introduction

Fish production is currently becoming a very lucrative business in Akwa Ibom State because there is a continuous rise in demand for fish. The increase in human population, dietary shifts and advanced in science and technology among other factors exerted great demands for fish resources for the development of human society. In attempt to meet the supply need for

fish resources, there is a strong need to break out of the traditional dependency on fish harvesting from the wild. Fish production or pisciculture has emerged as a critical sector of agriculture worldwide, contributing significantly to the global food security, economic development and livelihoods (Sadiq & Kolo 2015). Fish production involves raising fish in tanks or enclosures usually for food, commercial purposes or medicine which need skills for better production. Fish farming according to Food and Agricultural Organization (FAO) (2021), is the rearing of fish in ponds or tanks for meat, oil, bone meal and fish meals for livestock feeds; it is the art of producing fish and making them available in the market for consumers and industries. Fish production can be achieved through application of skills and a variety of methods including; stocking, genetic disorder, improved fish farming technology, precision fish farming in a protected breeding areas and closed fishing seasons (Adeniji *et al.*, 2014).

Fish production is a source of foreign exchange earnings through fish exportation for the country, source of vitamin for man and livestock, rich in oil such as cod liver oil, source of calcium and phosphorous (Okwo *et al.*, 2023). The importance of fish farming cannot be over emphasized; therefore, there is a need to encourage fish farmers to acquire the necessary agriculture skills needed for improve fish pond establishment for a successful fish production. Skills for the establishment of fish pond for fish production is clearly needed to meet the demand because captured fisheries according to Federal Department of Fisheries, FDF (2016), are at capacity of showing decline due to overfishing, habitat destination and pollution.

Skills need is a gap between the present and the desired future skills that fish farmers expected to possess for fish pond establishment and fish production. Wombo *et al.* (2017) asserted that skill is the ability to efficiently demonstrate the knowledge of something practically. Skill is also expertness, practiced ability, proficiency executed and usually displaying a flexible but systematic temporal patterning. Skills need involve some technical expertise that fish farmers need to acquire as a pathway to increasing productivity and income. Sanni (2017) stated that skills need is a process by which new skills, attitude and knowledge are acquired in preparation into a fish improvement in ones productivity. For any fish production venture to be viable and profitable, both male and female fish farmers need skills for appropriate fish culturing productions ranging from pond site selection, pond construction and pond maintenance.

Pond site selection is crucial in fish production irrespective of the type and state of the pond. Pond site selection requires some level of technical skills and environmental considerations. Udoh *et al.* (2023) outline some of the factors that must be considered before embarking on fish pond production to include; topography, soil characteristics, water availability, access road and safety. According to Offem *et al.* (2020), pond site selection skills involves selecting the soil that is either clayey or loamy clay, as these types can retain water

and support good growth of filamentous algae and micro benthic organism. The soil pH of 6.5 to 7.5 is recommended but soil with pH lower than 6.5 needs heavy liming while higher than 7.5 needs acidic fertilization.

Onipede (2020) conducted a study to determine the technical skills improvement needs of agricultural science teachers in animal production and the result showed that teachers of agricultural science needed improvement in technical skills in poultry and rabbit production. Similarly, Okwo *et al.* (2023) studied on vocational agriculture skills needed by senior secondary school students in fish farming for food security. The result identified 8 vocational agriculture skills in planning operations, 12 in pond construction operations, 7 for stocking and feeding operations, 13 for routine management operations, 8 for pest and disease control operations and 13 for harvesting, processing and marketing operations needed by secondary school students for fish farming.

A fish pond is a confined body of water where fish are raised under controlled conditions. Udoh and Offiong (2017) asserted that pond fish farming is the technology of controlled raising and growing of fish in enclosed bodies of water which require special skills in the construction because of a variety of raw materials such as plastics tank, earthen pond, Gee-pee tank, fiber starts, concrete pond, and wooden rafts among others. In the study of Ekanem *et al.* (2024), found out that there is no significant difference in the response of cat fish farmers and extension workers pond construction skills need of retired secondary school teachers. Okeme (2015) reiterated that pond construction is the art of providing or building artificial place or habitat to raise fish which require some basic skills. Okeme (2015) further reported that there was no significant difference in the mean rating of male and female agricultural science teachers on their skill improvement needs in all the skills identified in the study. However, the finding is also in-line of Udoh *et al.* (2017) reported that out-of-school youths required skills in pond construction and maintenance management skills.

Pond maintenance involves regular inspections, leak detection, and shoreline erosion control. Assefa, and Abunna (2018) asserted that pond maintenance is important for preserving the health of the pond and its ecosystem by cleaning of debris, addition of beneficial bacteria, addition of plants, and aeration of the pond, can cut-down cost of repairing and maintain a healthy fish population. In the same vein, Ajala *et al.* (2017) found that the following practices were carried out by farmers: pond/vats/fibre glass/tank cleaning, water quality maintenance and management, pond fertilization, brood stock production, spawning, fingerlings sourcing/production, disease prevention, control and management. Ochieng (2023) study the effect of farmer production management skills on the status of the economic stimulus aquaculture projects. The result showed that personal-financed farms experienced better production levels and fewer dropout rates compared to those funded by the government. Though farmers were trained on pond management skills by extension officers but were not satisfactorily done to ensure farmer acquisition of the required skills.

Statement of the Problem

Fish farming has emerged as a vital sector of agriculture in Akwa Ibom State of Nigeria, contributing significantly to food security, local economy and national development at large. Despite the potential for sustainable development in the aquaculture industry, fish production in the state faces challenges and stagnation ranging from as low capital outlay, scarcity of fingerlings, high cost of transportation, high cost of feed, poaching, inadequate water supply, poor storage facilities, low farming interest and low level of skills among farmers. The challenges have affected the fish production levels in the state, leading to a gap between local supply and market demand for fish products.

The researcher observed that some fish farmers in Akwa Ibom State still find it difficult to produce fish in large quantity because they lack skills in large scale fish production. As a result, there is reduction in the supply of the products with associated increase in price since demand of fish is higher than supply especially during festive periods.

It is also observed that fish farmers are faced with problems of inadequate skills in pond construction and maintenance, pond inlet and outlet water drainage management, pond linkages, poor water management and inability to control pests. This seems farmers lack the basic skills in pond establishment for fish production business. It is against this background that this study sought to determine skills need of farmers for pond establishment for fish production in Akwa Ibom State.

Purpose of the Study

The main purpose of the study is to determine the extent of skills need of fish farmers in pond establishment for fish production in Akwa Ibom State. Specifically, the study sought to:

- (i) determine the extent of skills need of fish farmers in pond site selection for fish production in Akwa Ibom State.
- (ii) determine the extent of skills need of fish farmers in pond construction for fish production in Akwa Ibom State.
- (iii) determine the extent of skills need of fish farmers in pond maintenance and repair for fish production in Akwa Ibom State.

Research Questions

- (i) What is the extent to which fish farmers need skills in pond site selection for fish production in Akwa Ibom State?

- (ii) What is the extent to which fish farmers need skills in pond construction for fish production in Akwa Ibom State?
- (iii) What is the extent to which fish farmers need skills in pond maintenance for fish production in Akwa Ibom State?

Research Hypotheses

The following null hypotheses will be tested at 0.05 level of significance.

- (i) There is no significant difference between the mean rating of skills need of male and female fish farmers on pond site selection for fish production in Akwa Ibom State.
- (ii) There is no significant difference between the mean rating of skills need of male and female fish farmers on pond construction for fish production in Akwa Ibom State.
- (iii) There is no significant difference between the mean rating of skills need of male and female fish farmers on pond maintenance for fish production in Akwa Ibom State.

Methodology

The research design adopted for this study was descriptive survey research design. The study was conducted in Akwa Ibom State, Nigeria with the population of 575 consisting of 308 males and 267 female registered fish farmers. The sample size for the study was 334, consisting of 174 males and 160 female registered fish farmers which was statistically determined using Taro Yamane Formula. Stratified random sampling technique was used to group the State into three Senatorial Districts, while simple sample technique was used to select three Local Government Areas from each Senatorial District.

A 21 items researcher's made instrument entitled "Skills Need of Fish Farmers for the Establishment of Fish Pond for Fish Production Questionnaire" (SNFEFPFPQ) was used for data collection. A four-point rating scale of Very Highly Needed (VHN), Highly Needed (HN), Moderately Needed (MN) and Not Needed (NN) with numerical values of 4, 3, 2, and 1 respectively was used in the instrument. Face validity was established using three validates from the Department of Agricultural Education, and testes for reliability using Cronbach's Alpha Statistics to establish reliability coefficient which yielded 0.86. The researcher administered 334 copies of questionnaires with the two assistants that were brief on the procedure for distribution and collection, and retrieved them on the spot for data analysis. Mean and standard deviation was used to answer research questions while independent t-test was used to test the null hypotheses at 0.05 level of significance. The decision on the items for answering

research questions was taken based on the high real limit while on the testing of the null hypotheses, where the observed P-value was greater than the $P > .05$, the null hypotheses was retained and where P-value was less than or equal to $P < .05$, the null hypotheses was rejected.

Results

Research Question 1: What is the extent to which fish farmers need skills in pond site selection for fish production in Akwa Ibom State?

Results of research question 1 are presented in Table 1

Table 1: Summary of mean and standard deviation showing the extent to which fish Farmers need skills in pond site selection for fish production in Akwa Ibom State
n = 326

s/n	Items	$\bar{X}$	SD	Remarks
1	Select site with good clay soil for water retention	2.63	.76	Highly Needed
2	Site that the topography is in level elevation	2.16	.81	Lowly Needed
3	Site with availability of water	2.64	.84	Highly Needed
4	Check exposure to direct sunlight	2.12	.59	Lowly Needed
5	Free from pollutant like organic substances	2.44	.50	Lowly Needed
6	Evaluate proximity to basic amenities	2.17	.62	Lowly Needed
7	Ensure easy transportation of farm inputs	2.14	.66	Lowly Needed
Grand Mean		2.33	0.68	Lowly Needed

Source: Field Survey, 2025; Cut-off mean = 2.50

Table 1 shows the extent to which fish farmers need skills in pond site selection for fish production in Akwa Ibom State. It indicates that the mean score of two of the items are within the real limit of 2.50 and 3.49 which indicates that two of the site selection skills for fish production are highly needed by fish farmers. More so, the mean score of five of the items were below the real limit of 2.50 and 3.49 indicating not needed. Furthermore, the grand mean of 2.33 implies that to a low extent fish farmers rarely need skills in pond site selection for fish production in Akwa Ibom State.

Research Hypothesis 1: There is no significant difference between the mean rating of skills need of male and female fish farmers on pond site selection for fish production in Akwa Ibom State.

Results of research hypothesis 1 are presented in Table 2

Table 2: Summary of Independent t-test showing difference between the mean rating on the extent of skills need of male and female fish farmers on pond site selection for fish production in Akwa Ibom State

Items	Category	N	$\bar{X}$	Std. Deviation	Cal t-value	Sig-Value	Decision
1. Select sit with good clay soil for water retention	M	196	2.63	.79	.052	.959	NS
	F	130	2.62	.73			
2. Site that the topography is in level elevation	M	196	2.19	.80	.803	.422	NS
	F	130	2.12	.81			
3. Site with availability of water	M	196	2.64	.85	.088	.930	NS
	F	130	2.64	.83			
4. Check exposure to direct sunlight	M	196	2.11	.59	.162	.872	NS
	F	130	2.12	.60			
5. Free from pollutant like organic substances	M	196	2.44	.50	.177	.860	NS
	F	130	2.45	.50			
6. Evaluate proximity to basic amenities	M	196	2.16	.62	.302	.763	NS
	F	130	2.18	.63			
7. Ensure easy transportation of farm inputs	M	196	2.12	.66	.419	.675	NS
	F	130	2.15	.66			

Source: Field Survey, 2025; NS = Not Significant at $p \leq 0.05$ and $df = 324$

The result of the analysis presented in Table 2 shows that the t-values are within the range of 0.052 to 0.803 and the p-values are within the range of .422 and .959 is greater than .05 level of significance with 324 degree of freedom. Since the p-values of .422 to .959 are greater than .05 level of significance, implies the result is not significant for each of the items respectively, thus, the null hypothesis is accepted. Hence, there is no significant difference between the mean rating of skills need of male and female fish farmers on pond site selection for fish production in Akwa Ibom State.

Research Question 2: What is the extent to which fish farmers need skills in pond construction for fish production in Akwa Ibom State?

Results of research question 2 are presented in Table 3

Table 3: Summary of mean and standard deviation showing the extent to which fish farmers need skills in pond construction for fish production in Akwa Ibom State: n = 326

s/n	Items	$\bar{X}$	SD	Remarks
1	Surveying the land for pond construction	3.02	0.63	Highly Needed
2	Ensure all construction can withstand environmental factors	3.09	0.66	Highly Needed
3	Determining suitable pond size	3.03	0.64	Highly Needed
4	Apply liners to enhance water retention in permeable soils	3.36	0.67	Highly Needed
5	Constructing water inlet and outlet channels	2.71	0.46	Highly Needed
6	Building the drainage system and spillway	3.07	0.68	Highly Needed
7	Ability to make sure the dike is rest on water tight ground properly	3.33	0.57	Highly Needed
Grand Mean		3.09	0.62	Highly Needed

Source: Field Survey, 2025; Cut-off mean = 2.50

Table 3 shows the extent to which fish farmers need skills in pond construction for fish production in Akwa Ibom State. It indicates that the mean score of all the items are within the real limit of 2.50 and 3.49 which indicates that all the pond production skills for fish production are highly needed by fish farmers. These skills are surveying the land for pond construction, ensuring all construction can withstand environmental factors, determine suitable pond size, applying liners to enhance water retention in permeable soils, constructing water inlet channel, building the drainage system, and ability to make sure the dike is rest on water tight ground properly. Furthermore, the grand mean of 3.09 implies that to a high extent fish farmers need skills in pond construction for fish production in Akwa Ibom State.

Research Hypothesis 2: There is no significant difference between the mean rating of skills need of male and female fish farmers on pond construction for fish production in Akwa Ibom State.

Results of research hypothesis 2 are presented in Table 4

Table 4: Summary of Independent t-test showing difference between the mean rating on the extent of skills need of male and female fish farmers on pond construction for fish production in Akwa Ibom State

Items	Category	N	$\bar{X}$	Std. Deviation	Cal t-value	Sig-Value	Decision
1. Surveying the land for pond construction	M	196	3.05	.65	1.26	.210	NS
	F	130	2.96	.60			
2. Ensure all construction can withstand environmental factors	M	196	3.06	.66	.935	.350	NS
	F	130	3.13	.65			
3. Determining suitable pond size	M	196	3.04	.64	.279	.781	NS
	F	130	3.02	.66			
4. Apply liners to enhance water retention in permeable soils	M	196	3.36	.67	.043	.965	NS
	F	130	3.35	.68			
5. Constructing water inlet and outlet channels	M	196	2.72	.46	.471	.638	NS
	F	130	2.70	.46			
6. Building the drainage system and spillway	M	196	3.10	.68	.927	.355	NS
	F	130	3.03	.68			
7. Ability to make sure the dike is rest on water tight ground properly	M	196	3.34	.57	.409	.683	NS
	F	130	3.32	.57			

Source: Field Survey, 2025; NS = Not Significant at $p \leq 0.05$ and $df = 324$

The result of the analysis presented in Table 4 shows that the t-values are within the range of 0.043 to 1.26 and the p-values are within the range of .210 and .965 is greater than .05 level of significance with 324 degree of freedom. Since the p-values of .210 to .965 are greater than .05 level of significance, implies the result is not significant for each of the items respectively thus, the null hypothesis is accepted. Hence, there is a significant difference between the mean rating of skills need of male and female fish farmers on pond construction for fish production in Akwa Ibom State.

Research Question 3: What is the extent to which fish farmers need skills in pond maintenance and repair for fish production in Akwa Ibom State?

Results of research question 3 are presented in Table 5

Table 5: Summary of mean and standard deviation showing the extent to which fish farmers need skills in pond maintenance for fish production in Akwa Ibom State: n =326

s/n	Items	$\bar{X}$	SD	Remarks
1	Wash the pond before putting water	2.05	.70	Lowly Needed
2	Filling of cracks in pond dyke	2.63	.48	Highly Needed
3	Inspect the fish pond regularly for any leakages	3.11	.63	Highly Needed
4	Controlling the weeds in fish pond	3.26	.67	Highly Needed
5	Cleaning inlet and outlet drainage	2.67	.51	Highly Needed
6	Removing feed fish waste unconsumed	3.09	.65	Highly Needed
7	Cover the pond with net to prevent predator	2.14	.64	Lowly Needed
Grand Mean		2.71	0.61	Highly Needed

Source: Field Survey, 2025; Cut-off mean = 2.50

Table 5 shows the extent to which fish farmers need skills in pond maintenance for fish production in Akwa Ibom State. It indicates that the mean score of five the items are within the real limit of 2.50 and 3.49 which indicates that the five pond production skills for fish production are highly needed by fish farmers. The Table also showed that the mean score of two items are low as real limit of 1.49 and 2.49 which indicates that two of the pond production skills for fish production are lowly needed by fish farmers. Furthermore, the grand mean of 2.71 implies that to a high extent fish farmers need skills in pond maintenance number 2 -5 for fish production in Akwa Ibom State.

Research Hypothesis 3: There is no significant difference between the mean rating of skills need of male and female fish farmers on pond maintenance and repair for fish production in Akwa Ibom State.

Results of research hypothesis 3 are presented in Table 6

Table 6: Summary of Independent t-test showing difference between the mean rating on the extent of skills need of male and female fish farmers on pond maintenance and repair for fish production in Akwa Ibom State

Items	Category	N	$\bar{X}$	Std. Deviation	Cal t-value	Sig- Value	Decision
1. Wash the pond before putting water	M	196	2.05	.68	.061	.951	NS
	F	130	2.05	.72			
2. Filling of cracks in pond dyke	M	196	2.62	.49	.433	.665	NS
	F	130	2.65	.48			
3. Inspect the fish pond regularly for any leakages	M	196	3.11	.62	.044	.965	NS
	F	130	3.12	.65			
4. Controlling the weeds in fish pond	M	196	3.26	.67	.186	.853	NS
	F	130	3.27	.68			
5. Cleaning inlet and outlet drainage	M	196	2.67	.51	.280	.780	NS
	F	130	2.68	.51			
6. Removing feed fish waste unconsumed	M	196	3.10	.65	.166	.868	NS
	F	130	3.08	.67			
7. Cover the pond with net to prevent predator	M	196	2.11	.66	.888	.375	NS
	F	130	2.18	.62			

Source: Field Survey, 2025; NS = Not Significant at $p \leq 0.05$ and $df = 324$

The result of the analysis presented in Table 6 shows that the t-values are within the range of 0.044 to 0.888 and the p-values are within the range of .375 and .965 is greater than .05 level of significance with 324 degree of freedom. Since the p-values of .375 to .951 are greater than .05 level of significance, implies the result is not significant for each of the items respectively thus, the null hypothesis is accepted. Hence, there is a significant difference between the mean rating of skills need of male and female fish farmers on pond maintenance for fish production in Akwa Ibom State.

Discussion of Findings

The Extent of Skills Need of Fish Farmers in Pond Site Selection for Fish Production

The findings of the study indicate that to a low extent skill for site selection are needed among fish farmers in Akwa Ibom State. The assessment of the skills required for effective site selection and revealed that fish farmers in the state have critical knowledge and competencies in this area. Regarding site selection, the findings show that fish farmers often accurately evaluate land suitability for fish farming. Furthermore, there was no significant difference

between the mean rating on the extent of skills needed for pond site selection between male and female fish farmers in Akwa Ibom State. This suggests that the skills gap in this area is a universal challenge faced by both genders, irrespective of their gender-based differences.

The finding is in agreement with the findings of Okwo *et al.* (2023) identified 8 vocational agriculture skills in planning operations, 12 vocational agriculture skills in pond construction operations, 7 for stocking and feeding operations, 13 for routine management operations, 8 for pest and disease control operations and 13 for harvesting, processing and marketing operations needed by secondary school students for fish farming in Benin City. The finding is in-line with the findings of Onipede (2020) who found that teachers of agricultural science in senior secondary school in Gombe state needed improvement in 17 technical skills items in cattle production, 13 technical skills in pig production, 14 technical skills in poultry production and 11 technical skills in rabbit production.

The Extent of Skills Need of Fish Farmers in Pond Construction for Fish Production in Akwa Ibom State

The findings of the study reveal that to a high extent skills for pond construction are needed among fish farmers in Akwa Ibom State. The assessment of the skills required for effective pond construction indicates that fish farmers often struggle with the proper design and construction of fish ponds, wrong determination of appropriate pond size, depth, and layout to meet the specific requirements of the fish species they are cultivating. It was also observed that there was a significant difference between the mean rating on the extent of skills needed for pond construction between male and female fish farmers in Akwa Ibom State. The analysis further revealed that the mean rating for male fish farmers ($M = 2.69$) was significantly higher than the mean rating for female fish farmers ($F = 2.58$). This suggests that male fish farmers perceive the skills needed for pond construction to be of greater importance compared to their female counterparts.

The finding is in agreement with the finding of Ekanem *et al.* (2024) who found out that there is no significant difference in the response of cat fish farmers and extension workers pond construction skills need of retired secondary school teachers. The finding is contrary to the findings of Okeme (2015) who reported that there was no significant difference in the mean rating of male and female agricultural science teachers on their skill improvement needs in all the skills identified in the study. However, the finding is also in-line of Udoh *et al.* (2017) reported that out-of-school youths required skills in pond construction and maintenance management skills.

The Extent of Skills Need of Fish Farmers in Pond Maintenance for Fish Production in Akwa Ibom State

The findings of the study indicate that to a high extent skills for site selection and pond maintenance are needed among fish farmers in Akwa Ibom State. The study found that fish farmers in Akwa Ibom State often lack the necessary skills for the proper maintenance of their fish ponds in areas such as regular pond cleaning, water quality monitoring, and the

implementation of appropriate maintenance practices to ensure the long-term viability of the ponds. It was also found that there was a significant difference between the mean rating on the extent of skills needed for pond maintenance between male and female fish farmers in Akwa Ibom State. The finding may be attributed to traditional gender roles and societal norms often relegate certain tasks and responsibilities to men, while women are expected to take on more domestic or household-related duties.

The finding is in-line with the findings of Ajala *et al.* (2017) who found that the following practices were carried out by farmers: pond/vats/fibre glass/tank cleaning, water quality maintenance and management, pond fertilization, brood stock production, spawning, fingerlings sourcing/production, disease prevention, control and management, feed formulation and production/sourcing, record keeping, fish feeding, fish processing, fish storage, fish sorting, pest and predator control, fry care, transfer and feeding, siphoning, and fish transportation. The finding is also supported by the findings of Ochieng (2023) who found that farm status and cold storage, funds to restock, sourcing for the market, and value addition evidenced dependence, directly affecting fish pricing.

Conclusion

The study has revealed critical gaps in the knowledge and competencies required for effective fish farming operations. The findings underscore the urgent need for targeted interventions and collaborative efforts to address these skills gaps and empower fish farmers to enhance the productivity, profitability, and sustainability of the industry. The study has identified a range of skills that are highly needed among fish farmers in Akwa Ibom State, including those related to site selection, pond construction and maintenance. Interestingly, the study did not find any significant differences in skills needs between male and female fish farmers in site selection. The lack of these critical skills can have far-reaching implications for the fish farming industry in Akwa Ibom State, leading to reduced fish yields, increased operational costs, higher risks of disease outbreaks and mortality, and diminished market competitiveness.

Recommendations

1. Government Agencies should develop and implement comprehensive training and capacity-building programmes to help farmers in selecting pond sites for fish farming.
2. State government should establish financial assistance schemes, such as subsidies and credit facilities, to support fish farmers in acquiring necessary resources and skills for construction of fish pond.
3. Educational Institutions should incorporate the pond maintenance into the curriculum of fisheries and aquaculture programmes to ensuring that prospective fish farmers are equipped with the relevant knowledge and skills in pond maintenance.

References

- Adeniji, O. V., Folorunsho, B. & Olooto, F. M. (2014). Baseline survey of small holder fish farming enterprise in Moro Local Government, Nigeria. *Journal of Agriculture and Veterinary Science (IOSR-JAVS)*. 7(1): 41-45.
- Ajala, A. O., Kolawole, E. A., Owolabi, A. O. & Faseyi, S. A. (2017). Analysis of training needs of fish farmers in Ikorodu Local Government Area of Lagos state, Nigeria. *Nigeria Journal of Animal Production*, 44(5): 45 – 57
- Assefa, B. & Abunna, F. (2018). Rangeland degradation and rehabilitation effort in the Somali National Regional State, Eastern Ethiopia: A review. *International Journal of Innovation research and Development*, 7 (5): 26-53
- Ekanem, E. J., Afia, O. E. , Ekong, A. O & Udoh, F. (2024). Assessment of cat fish pond construction and stocking skills training needs for self-employment by retired secondary school teachers. *International Journal of Educational and Scientific Research Findings*, 6 (1): 101-114
- Federal Department of Fisheries (FDF) (2016). *FisheriesStatistic of Nigeria*. 6th Edition, Abuja. Published by Federal Department of Fisheries, Pp 41
- Food and Agricultural Organization(FAO)(2021a). *Regional Review on Status and Trends in Aquaculture Development in Asia-Pacific*, Fisheries and Aquaculture Circular No. 1232/6. Rome, Italy.
- Ochieng, J. O (2023). Effect of farmer production management skills on status of economic stimulus aquaculture projects in Kisumu West Constituency, Kisumu. MasterThesis, Department of Arts in Project Planning and Management, Maseno University, Kenya
- Offem, B. O., Ikpi, G. U., & Ada, F. (2020). Fish culture technology in South-Eastern Nigeria. *African Journal of Fisheries Science*, 8(5): 1-8
- Okeme, I. (2015).Skill improvement needs of agricultural scienceteachers in fish pond constructionand stocking of fingerlings as a support business in Eastern Kogi State, Nigeria. *European Journal of Education Studies*, 91-102
- Okwo, C. R., Ojomu, A. A., & Nwoke, R.C. (2023). Vocational agriculture skills needed by senior secondary school students for fish farming in Benin City, Nigeria. *International Journal of Agricultural Education and Research*, 1(1) 62-72.

- Onipede, O., Lawal, O. I., & Ahmad M. Z. (2020) Technical skills improvement needs of agricultural science teachers in animal production for effective teaching of students in senior secondary school in Gombe State. *Vocational and Technical Education Journal (VOTEJ)* 2, (1):213-227
- Sadiq, M. S. & Kolo, M. D. (2015). Problems and prospects of small-scale fish farming in Minna Agricultural Zone of Niger State, Nigeria and its implications on increased Fish Food Security. *International Journal of Agricultural Research and Review*, 3(2): 157-160.
- Sanni, A. O (2017). Factors Influencing the Adoption of Improved Aquaculture Technologies by graduate in fish farming in Ebonyi State, Nigeria. *International Journal of Business Management and Social Research*, (3):186-189.
- Udoh, F. E. & Offiong, A. A (2017). Concrete management skills required by out-of-school youths for sustainable fish farming in Akwa Ibom State. *Journal of Educational Realities (JERA)*, 4(1):106-114
- Udoh, F. E., Offiong, A. A. & Okoko, A. C. (2021). Skills in fish supplementation for inclusion in secondary school aquaculture curriculum: Implication for cost reduction in culture fish enterprise. In: A. U. Okon and R. Hanson (ed). *Sustainable Innovation in Stem Development: Challenges and the Way Forward*. Africa Regional network (ARN) E-book, 1:131-143.