Training Needs on Improved Catfish Farming Technologies among Small-Scale Farmers in Anambra State, Nigeria

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ABSTRACT

The study assessed the training needs on improved catfish farming technologies among small-scale farmers in Anambra State, Nigeria. it identified respondents 'areas of training needs on improved catfish farming technologies; ascertained the socio-economic factors influencing the areas of training needs; and identified constraints to training needs on improved catfish farming technologies in the study area. Multi-stage involving purposive and random sampling techniques were used to select (120) respondents. The areas of training needs were highly needed in techniques of improving water quality ($\bar{x}=3.39$), pond management ($\bar{x}=3.35$).Farmers' socio-economic characteristics and their level of training needs showed that farming experience and educational attainment statistically and significantly influenced the catfish level of training needs at 5% probability level. The study showed that inadequate of qualified instructors ($\bar{x}=3.78$), limited number of instructors ($\bar{x}=3.54$), were among the major constraining factors that militated against access to training needs of the catfish

1 INTRODUCTION

Agriculture has long been and will continue to be the mainstay of rural economies in sub-Saharan Africa, Asia and throughout the developing world. Besides agricultural produce such as food grains like cereal and pulses; horticultural produce such as food and vegetables and reared animals for slaughter, milk, eggs and fish are common foods in most part of the world and plays great role in agricultural development for food production (Nirala et al, 2018). In Nigeria, various governments have established programmes in order to increase production of fish and to ensure Food security and Agricultural Organization's mandate of consuming of protein per day (Anugwa et al, 2020).

Fish farming is culturing fish commercially in tanks such as fishponds, for human consumption (Wikipedia, 2019). Similarly, it is defined as an act of raising fish for commercial purpose. Which involves construction of the earthen, tarpaulin or concrete pond, fertilizing the pond, filling with fingerlings in good water and feeding the mackerel, tilapia or catfish till market size (Steve, 2021). In the recent times, Nigeria has become one of the fastest growing fish producer in Africa. Fish is cheap and high in protein, always available in the market and also meeting the nutritional needs of the poor, who cannot afford animal protein in the diets. Apart from being a good source of protein, fish is rich in omega-3 oils, vitamin D and other nutrients (Ume et al, 2018).

Famuwagun, (2020) defined training as an act of acquisition of skills, concept or behavior that improved performance within job environment. He further opined that training improves farmers' capacity to minimize and manage risks, improve productivity as well as aids better understanding of new technologies transferred, in addition to improving efficiency and effectiveness. Also it provides new skills, knowledge, changes attitude and help farmers gain self-confidences in their ability to manage their own problems. Ajala et al (2019) succinctly stated that fish farmers needed trainings on improved fish farming technologies in the following areas; construction of pond/tank, quality seed and stocking, water quality management, feed and fertilizer management, record keeping; harvesting, processing and marketing. Famuyiwa et al, (2020) opined that reasons for training programmes in agriculture are to develop farmers for better entrepreneurs and decision makers. According to Osei et al (2019) farmers' training is organized in order to change farmers' behavior and improve their performance. The acquisition of increased knowledge, improved skills and positive changes in attitude and aspirations are also reasons for farmers training.

Adinya et al, (2016) stated that fish farming business is laborious because lack skills to use modern technology. Reason is that they lack awareness regarding to fish farming technologies which are; non availability of quality seed and feed, lack of water, misuse of subsidy, and lack of proper exposure on information, institution credit, and non-availability of insurance cover were the main constraints faced by fish farmers. With the efforts of research and extension services, there are improved packages on fish production. However, farmers are not adequately utilizing them and this may be as a result of lack of information on those improved production packages or there is no adequate training on them. (Michael and Koyenikan, 2020).

Therefore, it remains a challenge to both the government and non-governmental organizations to implement effective, improved catfish farming and training in Anambra state that can increase fish farmers' productivity. Hence, catfish farmers need training for capacity building, utilized new modern technology, overcomes barriers, improve competency and efficiency, increase productivity and performance. Therefore, there is the need to assess training needs on improved catfish farming technologies among small-scale farmers in "Anambra State", Nigeria. Specifically, the aims were to;

 i. identify respondents' areas on training needs of improved catfish farming technologies;
 ii. ascertained the effects of socio-economic factors influencing area of training needs on improved catfish farming technologies;
 iii. identify constraints to training needs of improved catfish farming technologies;

2 METHODOLOGIES

The research was carried out in "Anambra", State Nigeria. It is made up of (21) LGAs (177) communities cutting across the (4) agricultural zones: Awka, Anambra, Aguata, and Onitsha, which is an inland state and the capital located in Awka, between longitude. $6^o36'$ and.$7^o21'$ E and "latitude" $5^o38'$ and. $6^o47'$ N. and occupies an "area" of 4,416 km^2, 70% of which is arable land. It has an estimated "population" of (5,527,800) people, with the male (population) of (50.9%). and female (49.1%), which stretches over about (60) "kilometers" between surrounding communities. it is bordered in the North by "Kogi State", in the West by "Delta State", in the South by "Imo State", and in the East by "Enugu State". Anambra, State is home to magnificent bronze works, iron works, pottery and artists that place the state in the "league" of the cultural endowed states in "Nigeria". Majority of the farmers are producing at the small-scale level while major food crops produced are rice, cassava, maize, yam, cocoyam, plantain, banana and a variety of fruits and vegetables. The farmers in "Anambra State' are involved in fish farming, particularly those living in the "riverine" areas of the state. Recently, agricultural activities in the state also involves more of fish farming as stakeholders across the value chain of the industry rise up to the challenges of re-engineering the sector for optimal performance.

The population for the study is made up of all the catfish farmers in "Anambra" State. "Multi-stage" involved purposive and random "sampling techniques" were used to select (120) respondents that were used in the research work... Stage I involved a "purposive" selection of two Agricultural Zones (Anambra and Onitsha) as the highest out of four agricultural zones in the state where fish farming is "well-practiced". Stage II involved a (simple random) selection of three (3) extension blocks from the selected "zones" to give (6) extension blocks. In stage III, two (2) circles were selected from each of the (blocks) using simple "random sampling" technique to give twelve (12) circles. Ten catfish farmers were selected "randomly" in stage IV from each of the twelve selected circles, which gives 120 respondents in the work. Questionnaires that is well structured were used and the data for the work were primarily sourced.In the analysis of data collected, descriptive and inferential statistical tools were employed.

in indicating the areas of training needs on improved catfish farming technologies, catfish farmers were asked to identify their training needs in four (4) point Likert-type scale and their responses follows on these categories ; Highly Needed: (HN) = 4, Averagely Needed (AN) = 3, Little Needed (LN) = 2, and Not Needed (NN) = 1. The mean (cut-off) point was 2.5, derived by dividing the value of 10 by 4 to get the mean cut-off of 2.5. The implication is that any variable with a mean score equal to (2.5) and above was regarded, as high level of training need while any variable, with a mean score less than 92.5) was regarded as a low level of training need.

To determine the benefits of training on improved catfish farming in this study, the farmers were asked to point out yes or no on the various benefits derived from training in catfish farming activities from the listed benefits such as; adequate information on good production practice, Reduced mortality rate, Improved farm records, Risk management, Increase in yield etc

To identify the constraints to improved catfish production, the respondents were asked to specify on a 4-point Likert-type scale, how serious: each of the various constraints preventing catfish

production in the town. Their responses were categorized as Very Severe (VS) = 4, Severe (S) = 3, Not severe (NS) = 2, and Not very severe (NVS) = 1. These values were added to get a value of (10), which was divided by 4 to get a mean score of (2.5). The respondents' mean was obtained: on each of the items. Any mean score greater or equal to (2.5) was regarded as a major constraint; while any mean score less than (2.5) was considered as a minor constraint, to the training needs on improved catfish farming technologies among small-scale farmers in the study area.

Descriptive statistics: like frequency, percentage, mean and mean score were used to achieve Objective 1,2,and 4 while objective 3 was realized using multiple regression analysis. The multiple regression analysis was used to estimate that, there is no significant influence of the socio-economic characteristics; of the farmers and areas of training needs on improved catfish farming technologies was explicitly given as;

$Y=f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_{8......} e_i)$

Where

Y=catfish farmers' areas of training needs.

X_1 = Age of the catfish farmers measured in years.

X_2 = Gender measured as dummy variable, male =1, otherwise = 0

X_3 = Educational level measured as number of years spent at school.

X_4 = Household size measured as number of persons living in the same house and eating from the pot.

X_5 = Years of farming experience measured in years

X_6 = Farm size measured in hectares.

X_7 = Extension visit measured in number of times visited by extension agents per production period in a year.

X_8 = Annual income measured in naira (₦).

e_i = Stochastic error team.

3 RESULTS AND DISCUSSION

3.1 Areas of Training Need on Improved Catfish Farming Technologies
The fish farmers' level of training needs in catfish farming is presented in Table 4.2. The results of the analysis reveal that training was mainly needed on techniques on improving water quality ($\bar{x}$=3.39), pond management ($\bar{x}$=3.35), construction of fishpond ($\bar{x}$=3.30), site selection ($\bar{x}$=3.10), hatching techniques ($\bar{x}$=3.08), value addition ($\bar{x}$=2.98), fertilization($\bar{x}$=2.87), feed formulation and preparation ($\bar{x}$=2.80), prevention and control of fish diseases ($\bar{x}$=2.65) and disease diagnoses ($\bar{x}$=2.55) as they were ranked 1st, 2nd, 3rd, 4th, 5th, 6th, 7th,8th,9th and 10th respectively. This

implies that the respondents were trained in some of their areas of training needs in improved catfish farming technologies that would help them improve their production potentials in catfish farming. This implication is that the fish farmers in the town lacked some necessary trainings skills in catfish farming management practices and as such, requires urgent training. The finding disagrees with the Famuwagun (2020) who indicated that "training" were not needed by the fish farmers in the area of water quality maintenance; stock production; spawning; fingerlings sourcing; and production, disease control; and prevention, feed formulation; and production/sourcing and fish processing and storage. Therefore, training helps farmers acquire necessary skills which have positive implication on their production and marketing efficiency. In other words, if the fish farmers can learn, adopt and utilize the various management practices offered to them through training.

Table 1: Catfish farmer's areas of training needs on improved catfish farming technologies (n=120)

Areas of Training Needs	Mean ($\bar{x}$)	Rank
Techniques of improving water quality	3.39*	1st
Pond management	3.35*	2n
Construction of fish pond	3.30*	3rd
Site selection	3.10*	4th
Hatching techniques	3.08*	5th
Value addition	2.98*	6th
Fertilization	2.87*	7th
Feed formulation and preparation	2.80*	8th
Prevention and control of fish diseases	2.65*	9th
Diseases diagnosis	2.55*	10th
Breed selection	2.48	11th
fish preservation and storage techniques	2.44	12th
Identification of diseases	2.32	13th
Sorting of fish	2.28	14th
Record-keeping practices	2.23	15th
Usage of drugs	2.10	17th

Source: Field survey, 2023.

3.2 Constraints to Adoption of the Training Needs on Improved Catfish Farming Technologies

Analysis of constraints to the catfish training needs on improved catfish farming technologies in the study area as shown in Table 3, reveal that lack of qualified instructors (($\bar{x}$=3.78), limited number of instructors (($\bar{x}$=3.58), lack of facilities for training (3.09), inadequate fund for training ($\bar{x}$=2.98), corruption among trainers ($\bar{x}$=2.81), poor transportation network ($\bar{x}$=2.71), financial resources ($\bar{x}$=2.66) and physical location of the trainers ($\bar{x}$=2.58) were among the major constraints militating against the adoption of the training needs on improved in the study area.

The inadequate of qualified instructors and limited number of instructors may be because fish farming is new in the state, only a few institutions are offering Aquaculture and Fisheries in the study area and the experts in the field is scarce. Inadequate of qualified instructors and limited number of instructors threatens fish farmers' ability to learn and; the instructors' shortage makes it more difficult to establish sustainable and reputable fish farms for teaching. Also, lack of facilities for training and inadequate fund for training may be attributed to government's inability to manage resources or as a result of corruption practices among the administrative staff who are not enlightened about trainee's welfare and the programmes goals and objectives (Yemi and Okiemute, 2021).

Table 2.Constraints to training needs on improved catfish farming technologies

Constraints to training needs	Mean ($\bar{x}$)	Rank	Remarks
Inadequate of qualified instructor	3.78	1st	Major constraint
Limited number of instructors	3.54	2nd	Major constraint
Inadequate of facilities for training	3.09	3rd	Major constraint
Inadequate fund for training	2.98	4th	Major constraint
Corruption among trainers	2.81	5th	Major constraint
Poor transportation network	2.71	6th	Major constraint
Financial resources	2.66	7th	Major constraint
Physical location of the trainer	2.58	8th	Major constraint
Political interference	2.19	9th	Minor constraint
Poor level of involvement	2.03	10th	Minor constraint
Farmers' attitude and expectations	1.83	11th	Minor constraint
Physical location of the trainee	1.67	12th	Minor constraint

3.3 Relationship between Farmers' Socio-economic Factors and areas of Their Training Needs

Multiple regression analysis was conducted to predict the influence of the respondents' socio-economic factors (independent variables) on their level of training needs (dependent variable). The socio-economic variables considered were farm size, farm experience, gender, educational attainment, household size, age, and number of extension visits. Table 4 reveals that seven

independent variables fitted into the model, farming experience and educational attainment statistically and significantly influenced the catfish farmers' level of training needs at 5% level of probability. It also show that the co-efficient of age and gender were negatively signed .This implies that there was no significant relationship between age and gender of people and level.. of training needs of catfish farmers. Household size, extension visits and farm size were positively signed but did not have significant influence on the fish farmers' level of "training needs".

Coefficient of educational attainment was significant and had a positive relationship with the fish farmers' level of training needs at (5%) probability level. This implication shows that an increase in the fish.. farmers' level of educational attainment will result an increase in their level of training needs. According to Kudroli Foundation (2019), education and training are substitutes agricultural production. In other words, increase in education level raises productivity, promotes entrepreneurship advancement and plays a very important role in securing both economic progress and improving income distribution (Vakili et al, 2017).

Table 3: Relationship between farmers' socio-economic characteristics and areas of their training needs

Variables	Unstandardized Coefficient		Standardized Coefficient	
	B	SD Error	Beta	T
Constant	67.034	20.382	-	3.289
Age	-0.001	0.449	0.000	-0.003
Gender	-2.539	1.500	-0.191	-1.692
Educational attainment	0.226	0.091	0.197	2.614**
Farm size	0.045	0.029	0.238	1.731
Household size	1.635	0.407	0.462	3.908
Farming experience	1.674	0.356	0.297	3.944**
Extension visits	-0.700	3.630	-0.020	-0.193

Source: Field survey, 2023. Note: $P \leq 0.05$, R = 0.912, R^2 = 0.832, Adjusted R^2 = 0.810, ** = significant at 5%

Conclusion

In order to achieve and maintain a sustainable fish farming yield, there is need for training programmes to be put in place. This is because training helps farmers to acquire necessary skills that later translates into better productivity, income and improved standard of living. most of the catfish farmers shows that they needed training on improving water quality maintenance, pond management and construction of fishpond, hatching techniques, value addition fertilization etc. inadequate of qualified instructors, limited numbers of instructors, inadequate of facilities for training and inadequate fund for training were among the main constraints preventing training needs of the fish farmers in the study area**.**

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