Training Needs of Table Size Fish Farmers Operating in Niger State, Nigeria

Ifejika, PI[1], Uzokwe, UN[2], and Oladosu, OI[3]

[1]National Institute for Freshwater Fisheries Research, Extension and Commercialization Programme, P.M.B. 6006, New-Bussa, Niger State, Nigeria
[2]Department of Agricultural Economics and Extension, Delta State University, Asaba campus, Delta State, Nigeria
[3]Department of Agricultural Extension and Rural Development, Ladoke Akintola University of Technology, Ogbomoso, Oyo State, Nigeria
Corresponding Author Emails: ifejikaphilip@gmail.com & ifejikaphilip@yahoo.com

Abstract: This study assessed the training needs of 110 contact table size aquaculture farmers operating in Niger State. Semi-structured questionnaire were used to elicit primary information through face to face interview from respondents and analysed with descriptive tools of frequency, mean, percentage and standard deviation as presented in tables, figures and charts. The result showed that the young and middle aged categories (95.5%) are the contending forces piloting fish farming who are mostly graduates (81.8%). But gender involvement is skewed against women while in the past four years more than half (54%) had no training. As revealed, the pressing training needs of fish farmers in high demand (≥ the mean of 43.1%) were found to be in fish disease control and treatment (50.5%), water quality parameters (46.5%), fish feed formulation (46.0%) and fish processing (44.5%). While training needs on low demands below (≤ the mean of 43.1%) were management practices, pond construction, record keeping and fish breeding. Overall categorization of respondent training needs revealed that 71.3% were in the high category against small proportions on medium category (13.8%) and low category (14.9%). Interesting, respondents showed more confidence in federal establishments to provide quality extension training in fisheries than state agencies. The preferred choices federal government agencies to conduct the training were fisheries research institute (68.0%) and federal ministry of agriculture and rural development (59%). Based on the findings, it is recommended that fisheries research institutions and federal ministry of agriculture should embark on aggressive capacity training of fish farmers on the identified training needs particularly those on high demand to reduce the high incidence of no training as well as to improve skill and knowledge of practicing fish farmers in the state. While the state and local council extension agencies should be mobilised for training of fish farmers in their domain.
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1.0 Introduction

Since 2001, Nigerian aquaculture production is rapidly growing at a fast rate to achieve double digits of 14.1% in 2010, attracting investment, significantly contributing to domestic food and nutrition security, creating wealth, generating employment and jobs for both gender in different age categories in the value chain. Between 1991 and 2010, aquaculture fish production growth tripled to 14.5% from 4.6% (Ifejika, 2012). Nigeria is now the fastest and highest aquaculture producing countries in Sub Saharan Africa and second to Egypt in Africa due to present pace of growth in fish farming production. According to Hempel (2010) the value of Nigerian catfish produced and sold by aquaculture farmers is about US$75 million from production level of about 30,000 tons of catfish per year. Hempel added that at sector wide consumer spending levels, this tonnage rises in value to about US$180 million made-up of US$120 million for retail and US$60 million dollars for restaurant.

To sustain present tempo of the booming enterprise in fish farming, old and new operators require periodic update and upgrading of their technical knowledge and skill. In view of this development, fish farmers need training to remove barriers, improve technical competency and efficiency for better resource utilization, increase productivity and performance. In view of this, Ifejika et al (2008) and Hempel (2010) advocated for training of fish farmers and extension agents to get the desired result among end users. This is necessary to support the adoption of emerging aquaculture innovations and technologies for positive impact on wellbeing. But prerequisite to conducting training that meets the requirements and felt need of target group is situation analysis on clients training needs. According to Gerster-Bentaya and Hoffmann (2011), training need assessment is a gap between the present and the desired future. Benefits of training need assessment include determining felt need, categorization of trainees, identification of adequate

training methodology and knowing the appropriate time to deliver.

On benefit of training, Ifejika and Ayanda (2012) showed how institutional training in aquaculture boosted participants' knowledge to develop positive attitude to invest in fish farming. While recent literatures provided insight on the subject of training needs in aquaculture. For instance, Egbufor1 et al (2012) studied capacity needs of 105 fish farmers in Edo State, Nigeria, and revealed that low training was needed by (26.7%), average training needed by (62.9%) and high training needed by (10.5%). Areas respondents needed the training were on sourcing of fingerlings (87.6%), fertilizer application (59%), harvesting methods (59%), water inlets/outlets screen cleaning methods (58.1%) and feed and feeding techniques (56.2%). Also Baruah et al (2013) surveyed 50 fish farmers in Assam, India on their training need and observed that majority of the respondents needed trainings on water quality management (80%), fish seed handling and transportation (16%) and nutrition and feeding (10%). Equally Hosseni et al (2012) investigated training need of 108 fish farmers in Kermanshah Province of India and found that they the top five competencies needed were on prevention of disease, ways to prevent fish stress, protecting fish against deadly poisons, understanding diseases caused by nutritional, viral and parasite, as well as health care and disinfection of fry.

Observed differences on the training needs of fish farmers is an indication of gap in skill and knowledge on various technical issues pertaining to production, breeding, marketing, management practices, group organisation and credit facilities. Thus, confirming the findings of Sarker et al (2006) on the potential barriers of pond fish culture entrepreneurships as low knowledge, lack of training experience, poor extension services and ineffective information dissemination. In corroboration was Ifejika et al (2007) result that fish farmers operating in Borgu council area of Niger state had challenges of water shortage, high cost of feed, lack of credit and high cost of fingerlings. While Ayanwale et al (2012) study in Minna, Niger State, confirmed significant differences in conductivity, alkalinity, hardness, dissolved oxygen, and biochemical oxygen demand of cultured fish and concluded that some ponds had bad parameters, thus, making them least ideal for fish rearing. These challenges have linkage to under-utilization of resources and technical inefficiency of fish farmers which affected fish growth, pond productivity and profitability of enterprise across the country. These constraints are indications of disparity on know-how of practicing fish farmers which affects knowledge, skill and attitude with serious consequences on adoption, productivity and performance. This informed the decision to carry out the study in Niger State to find out fish farmers training needs.

As such, the general objective of the study was to identify the training need of fish farmers in Niger states. While the specific objectives were to;
1. determine the socio-economic profile of the fish farmers
2. identify their training needs,
3. categorize respondents on training need, and
4. ascertain preferred institution to conduct the training

2.0 Methodology

Niger State is located in the north central geo-political zone and had a long history of fish as a result of the situation of Fisheries Research Institute and Federal College of Fisheries in New-Bussa. In the State, fish farming is practiced at different levels in Minna, New-Bussa and Bida areas. Secondary information collected from the Agricultural Development Programme (ADP) and NIFFR, projected the number of fish farmers in the State at 450 to 550 which formed the population of the study. Whereas the sample size were contact fish farmers with State ADPs and NIFFR extension programme estimated at 250. Therefore, respondents for the study were randomly selected 110 contact farmers representing 44% of the 250 sample size. Primary data was generated from respondents in the three ADP zones (Minna, Bida and Kontagora) with semi-structured questionnaire through face to face interview in the months of April to July, 2013. Generated data was analysed with descriptive tools of frequency, mean, percentage and standard deviation which was presented in tables, figures and charts.

3.0 Measurement of variables: The variables in the study were determined thus:

Age was measured at interval level and categorized into young age, middle age and old age. Education was measured at ordinal level based on highest academic qualification obtained and scored thus, no schooling-0; primary-2, secondary-3; degree-4.

Sex was determined at nominal level and scored for differentiation thus; Female-1; Male-2

Training experience was determined at nominal level of Yes-1 and No-0.

Training need was determined on eight parameters which were measured at ordinal levels of No-1; Low need-2 and High need-3 while the maximum score was 24 and 1 the minimum score.

Categorisation of respondents was based on the procedure of Dasgupta (1989) and the three categories were measured thus; High= 17-24; Medium= 9-16; Low= 1-8

Preferred institution to conduct the training was measured at ordinal level and scored thus; No-1, Sometimes-2 and Always-3.

4.0 Results and Discussion

Table 1 shows the personal profile of respondents in terms of age, education and sex. As shown, respondents' age was categorised into three groups of young, middle and old age groups. The dominant age groups engaged in fish farming were those between 41 to 60 years classified as middle group accounted for slightly more than half (51%) and the young group (44.5%) whereas minority were the old age (4.5%). Egbufor1 et al (2012) study corroborated the finding on the active age groups of young and middle category involvement in fish farming but differ slightly with Ifejika et al (2007). As revealed, the young and middle age are the contending forces for supremacy in aquaculture production unlike before when it was the middle and old. Sustenance of the observed rising interest of young people in aquaculture enterprise is imperative with incentives like training, access to credit and innovations. On educational qualification, majority (82.8%) were found to be graduates of various degrees compared to few secondary holders (15.5%) and no schooling (2.7%). Outcome indicates that fish farming is attractive to educated elites with various degrees such as National Diploma or NCE (32.7%), HND or BSc (33.6%) and MSc (15.5%). Studies in agreement with the high proportion of graduates' engagement in aquaculture were Baruah et al (2013), Ofuoku et al (2008) and Ifejika et al, (2007). High literacy implies that most respondents can seek information from different sources and has the ability to translate information to knowledge due to reading and writing skill. In addition to economic pursuit, other incentives attracting graduates to aquaculture might be emerging technologies which simplify operations and make it less drudgery. The table further revealed that male (81.8%) out number female (18.2%) in fish farming in the study area. As seen from the result, even though

men are controlling the aquaculture production livelihood, women interest and engagement is gradually rising in the area. Both sexes need encouragement like capacity building to improve knowledge and skill.

| Table 1: Personal profile of respondents		
Age	Frequency	%
Young age (<40)	49	44.5
Middle age (41-60)	56	51.0
Old age (>61)	5	4.5
Education		
No Schooling	3	2.7
SSS	17	15.5
ND/NCE	36	32.7
HND/BSC	36	33.6
MSc	17	15.5
Sex		
Male	90	81.8
Female	20	18.2

Source: Field survey, 2013

Figure 1 represents percentage responses on respondents' attendance to training in aquaculture within the past four years. As shown, more than half of the respondents (54%) attended no training in aquaculture as against 46% that attended training. Frequency of training attended revealed that most beneficiaries were once (24%), twice (10%), thrice (6%) and quadrant (4%). Result on training attendance and frequency is low and inadequate to scale up adoption of innovations and technologies. Solomon et al (2009) and Adesoji et al (2006) found that over 60% did not attend any training among farmers. While Sarker et al (2006) established that lack of training was among the potential barriers facing fish farmers. Observed high incidence of no training among farmers has serious negative consequences on improving competency due to poor knowledge and skill.

Figure1: Percentage response on attended training in aquaculture
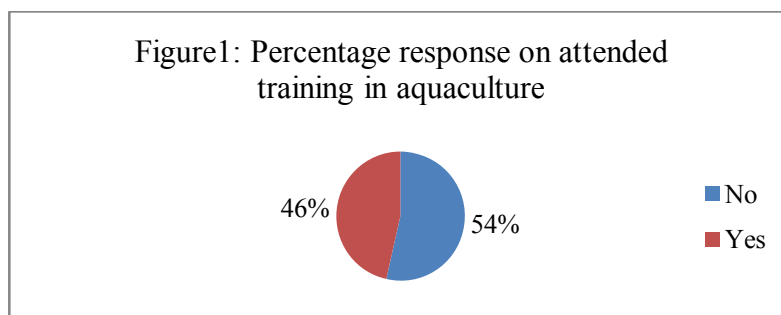
Source: Field survey, 2013

Interestingly, overwhelming majority (97.3%) of respondents' use fish feed as against 2.7% without any feeding which indicates high practice of both intensive and semi-intensive systems against low extensive system (Figure 2). As further shown, semi-intensive system was practice by 45.5% that use pelleted extruded fish feed against 16.4% that use local compounded fish feed to feed once in a day. While intensive practice with pelleted extruded feed was by 51.8% against 41.8% for local feed to feed fish two or three times a day. The use of extruded pelleted feed was mostly at fry to post juvenile stages (1-2months) before introducing local compounded feed for the

remaining period to reduce cost of feed and increase profitability. Field observations showed high use of locally compounded feed around New-Bussa axis than Minna and Bida areas. Also, nine brands of extruded fish feeds was found in circulation, but, the most widely used were coppens (39.1%), multi (27.3%) and durante (16.4%) while the least used brand were Rana, okin and dizengoff feeds. Olaoye et al (2010) agreedt with the use of local compounded feed, extruded pelleted feed, and coppens popularity. Choice of fish feed was determined by cost, quality and availability unlike local compounded feed determined by expertise to produce the feed.
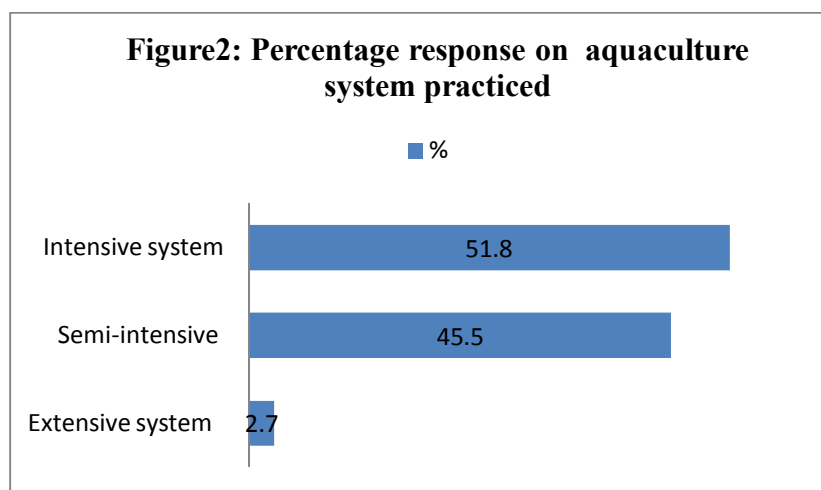
Source: Field survey, 2013

Table 2 was on respondents training needs examined on eight technical issues. As revealed, the pressing training needs of fish farmers in high demand (≥ the mean of 43.1%) were found to be in fish disease control and treatment (50.5%), water quality parameters (46.5%), fish feed formulation (46.0%) and fish processing (44.5%). While training needs on low demands below (≤ the mean of 43.1%) were

management practices, pond construction, record keeping and fish breeding. The result obtained showed similarity on training needs of fish farmers with previous studies of Egbufor1 et al (2012) and Baruah et al (2013) in Nigeria and India respectively. Meanwhile, identified high training needs on water quality parameters and fish feed are two critical issues in production that determine fish yield in pond.

Table2: Percentage distribution of respondents on training needs

Training Needs	No (%)	Low need	High need	Mean	SD
Pond construction	37(33.6)	14(12.7)	59(53.6)	36.5*	31.8
Fish disease control & treatment	9(8.2)	6(5.5)	95(86.4)	50.5**	62.9
Fish feed formulation	18(15.5)	27(7.3)	65(77.3)	46.0**	26.8
Water quality parameters	17(15.5)	8(7.3)	85(77.3)	46.5**	55.4
Management practices	24(21.8)	14(12.7)	72(65.5)	43.0*	41.0
Fish processing	21(19.1)	33(30.0)	56(50.9)	44.5**	16.2
Record keeping	36(32.7)	25(22.7)	49(44.5)	37.0*	16.9
Fish breeding techniques	28(25.5)	22(20.0)	60(54.5)	41.1*	26.8
Standard deviation	**28.2**				
Mean score	**43.1** (* indicates ≤ the mean & ** ≥ the mean)				

Source: Field survey, 2013

Overall categorization of respondent training needs revealed that 71.3% were in the high category against small proportions on medium category (13.8%) and low category (14.9%). Established high proportion on training need category is an after effect of prolonged lack of training on key technical issues pertaining to fish farming. Therefore, urgent attention should be given to the high priority training needs of fish farmers to improve competency in the area.

Table 3: Categorization of respondents on training need

	Frequency	%
High	78	71.3
Medium	15	13.8
Low	17	14.9
Total	110	100

Source: Field survey, 2013

As shown in Figure 3, respondents showed more confidence in federal establishments than state establishments to provide quality extension training in fisheries. This was demonstrated by the composite choices of Fisheries Research Institute (68.0%) and Federal Ministry of Agriculture and Rural Development (FMARD) (59%) to conduct the fisheries training needs in aquaculture compared to low choice of State agencies like ADP (42.5%), NGO (42.7%) and Local Government Council (38.2%). Popular choice of most respondents was an indication of their confidence in fisheries research institutes' competency to deliver on the technical issues raised in the training needs over the state advisory service providers.

Figure2: Percentage response on preferred institutions to conduct the training
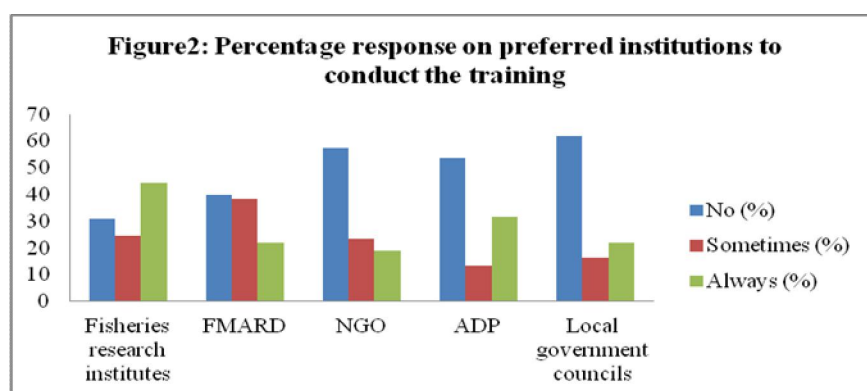
5.0 Conclusion and Recommendations

The study established that educated people in the middle and young age groups were spearheading fish farming enterprise while women involvement is rising gradually. Also, most of the fish farmers practice semi-intensive and intensive system of aquaculture using local compounded and extruded pelleted fish feed. Prolong lack of training has a linkage with high demand for training needs in key table size fish in production such as disease, processing and feed formulation of which respondents preferred fisheries and federal ministry to conduct the training rather than ADP, NGO and LGA. It is recommended that extension services providers should give the identified training needs urgent attention to reduce the high incidence of no training and to improve skill and knowledge of practicing fish farmers in the area. While phone services should be established to facilitate information exchange on the identified areas from experts in the various discipline.

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