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The *Journal of Agriculture and Rural Development* focuses on advancing knowledge in the various areas of agriculture and rural development including crops, livestock, soils and water, agricultural extension, education, economics, home economics and other disciplines interested in sharing knowledge for the development of agriculture and the rural sector. The Journal therefore publishes peer reviewed research based articles, reviews, theory construction, new experimental and methodological techniques, and significant field experiences.

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INFORMATION AND TRAINING NEEDS OF FISH FARMERS IN SELECTED LOCAL GOVERNMENT AREAS OF EDO STATE, NIGERIA

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ABSTRACT

This study assessed the information and training needs of fish farmers in selected Government Areas LGAs of Edo State, Nigeria. A multi-stage sampling technique was used to select 100 fish farmers while, primary data were collected with the aid of structured questionnaire complemented with an interview schedule. Data analysis was done using descriptive statistics such as frequency, percentage, mean, and inferential statistics such as logit regression as well as attitudinal measuring scale of 5-point Likert scale. Findings from the study revealed that majority (77%) of the respondents were males while the average age and household size of the respondents was 41 years and 4 people, respectively. Most respondents had formal education, with majority (82%) attaining tertiary education. However, information needs of the respondents existed in water quality management (58%), hatching (57%), source of fingerlings (53%) and disease symptoms (43%) ranked 1st, 2nd, 3rd and 4th, respectively. Training needs existed in disease control (82%), water quality maintenance (68%) and pond stocking (42%) ranked 1st, 2nd and 3rd, respectively. The fish farmers had a good perception of management practices employed in fish farming such as disease control, pond stocking, liming and others. Some of the constraints indicated by the respondents were lack of capital (92%) of fish feed (92%), difficulty in procuring good fingerlings and others. Logit regression results revealed that there was significant relationship between age (1.735), cooperatives (1.827) and extension contact (2.243) of the respondents and their information and training needs, hence the null hypothesis was rejected. It was therefore recommended that Government and other stakeholders should invest in extension services that will sensitize fish farmers on the various ways in which fish farming activities can be carried out.

KEY WORDS: Information, training, fish farmers, pond, respondents.

INTRODUCTION

In agriculture, the role of information in improving the quality of agricultural development cannot be over-emphasized. Information is essential for having larger production, reconstructing marketing and distribution methods or plan required for any sustainable agriculture (Oladele, 2006). It has been recognized, and generally accepted that pov

strong connection with agricultural stagnation due to reduction in the consequence of low use of information and improved technologies (Akinbile, 2010). The deficiency of information has strongly affected the processes in agriculture. Therefore, information should be seen as being personal, physical and concrete to fish farmers, most especially through extension services (Akinbile and Alabi, 2010). In Nigeria, agricultural information is provided by the National Agricultural Extension Research Liaison Service (NAERLS) and extension services (Ekoja, 2003). Information is available in the many research institutes and Schools of Agriculture in the Universities (Adomi *et al.*), as well as the Federal and State Ministries of Agriculture. Several studies concur that the main problem of fish farmers is approach to agricultural information; and the arrival of information technologies which has succeeded in eliminating stagnation or blockage in information dissemination, limitation or restrictions on information is still encountered (Oladele, 2006). According to Akinbile and Alabi, information essential for agricultural development may be categorized as scientific, social, commercial and legal information.

Fish has a unique position in the agricultural sector of Nigerian economy. Fish is a rich source of protein and a very good source of protein to both man and animals. Fish is the world's latest revolution in food production, and it is interesting to know that fish production outweighs the supply with 1.6 tonnes of supply as against 2.5 tonnes of demand (Akinbile, 2004). The rapid growth in population has led to insufficient supply of food including fish. Although, the outlook of aquaculture is promising, given the growing demand for fish and the declining yield of fish stocks due to excessive harvest, fish farming still holds the greatest potentials to increase domestic animal protein supply in Nigeria (Adekoya, 2010).

Adekoya and Miller (2004), fish and fish products constitute more than 60% of the total protein intake in adults especially in rural areas. Fish farming has a great potential for reducing under-nutrition and poverty. As a matter of fact, fishery sub-sector provides employment opportunities for young and old people due to the low capital outlay required to start up the farm. It also serves as a source of foreign exchange and as a feasible alternative to the already used up resources of captured fisheries. Fish farming can be done on a small scale, making use of family labour or at medium and high cost under contract farming (Adekoya, 2010). This makes it possible for both the poor and the rich to improve their standard of living through incomes generated from fish production.

The study area has a great potential to provide information for developing fish farming in order to absorb a substantial fraction of its fish production deficit, but the growth of fish farming is hindered by the low levels of knowledge of fish farmers on fish farming practices (quality fingerlings, feed and size of pond) and pond management such as water management, change of pond water, number of fishes per pond among others. The low fish production to meet the demand of the people had created a gap that needs to be filled and there is currently no relevant information on production packages to the fish

farmers or adequate training for them. Therefore, there is need for a process to improve and implement the available knowledge, which will ameliorate the performance of the fish farmers. This study identifies the information and training needs of fish farmers, and it will help the government to direct their programmes towards providing adequate training that will improve the production of good quality and marketable fish. It was in this light that the aforementioned position that this study was conceived to determine the information and training needs of fish farmers in the study area, hence the objectives stated below.

Objectives of the study

The following objectives were set to:

- i. describe the socio-economic characteristics of the fish farmers in the study area;
- ii. identify the information and training needs of the fish farmers;
- iii. assess the fish farmers' perception of fish management practices; and
- iv. identify the constraints associated with fish farming in the study area.

Null hypothesis

The null hypothesis tested in this study was that there was no significant relationship between the selected socio-economic characteristics of fish farmers and their information and training needs.

Alternative hypothesis

The alternative hypothesis was that there was a significant relationship between the selected socio-economic characteristics of fish farmers and their information and training needs.

METHODOLOGY

The study was conducted in some Local Government Areas (LGAs) of Edo state, Nigeria. The State was created on the 27th August, 1991 from the defunct Bendel State. Edo State is located in the heart of the tropical rain forest between $05^{\circ}44'N$ and $07^{\circ}34'N$ latitudes and $05^{\circ}4'E$ and $06^{\circ}45'E$ longitudes of the equator. It is bounded in the South by Delta State, West by Ondo State, in the North by Kogi State and the East by Anambra State. It occupies a total land mass of 19,794 square kilometers while the climate is tropical with two seasons - the wet (rainy) and the dry (harmattan) seasons. The population of the State is estimated to be about 5million peoples (NBS, 2012). There is a regional communication network linking the Northern, South-South, Western and Eastern regions and a rich deposit of on-shore hydrocarbons and solid minerals.

Multistage sampling technique was used to select respondents for the study. First stage involved random sampling of five (5) LGAs out of the eighteen (18) in the State. Second stage involved random sampling of one (1) community from each of the LGAs selected. In the third stage, the number of registered and active fish farmers was obtained from

... Agricultural Development Project (EDADP). The fourth stage was the proportionate sampling (60%) of the registered fish farmers in the selected communities to give a total of 100 fish farmers. Primary data were collected with the aid of structured questionnaire complimented with an interview schedule. Data collected was analyzed using descriptive (frequency distribution, percentage, mean) and inferential statistics (logit regression) as well as attitudinal measuring scale of 5-point Likert scale categorized as Strongly Agree = 5, Agree = 4, Undecided = 3, Disagree = 2, Strongly Disagreed = 1. The mean score for decision was 3.0 (5+4+3+2+1 = 15, 15/5 = 3). Calculated mean scores of less than 3.0 were considered as disagreed, while those equal to or above 3.0 were considered as agreed.

Model Specification

Logit regression model is a particular model which assumes a dichotomous or binary value. It is a qualitative choice variable that was used to test the hypothesis of the study. The explicit form of the model is given as:

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, + e)$$

The general logit regression model in its explicit form is expressed as below:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_6 X_6 + e$$

Where:

Y = Information and training needs (access = 1, otherwise = 0)

α = Model intercept

$\beta_1, \beta_2, \dots, \beta_6$ = Coefficients of the independent variables

$X_1 - X_6$ = Independent variables

e = error term

The explanatory variables are:

X_1 = Age (in years)

X_2 = Marital status (married = 1, otherwise = 0)

X_3 = Farming experience (in years)

X_4 = Cooperative (member = 1, otherwise = 0)

X_5 = Agricultural credit (access = 1, otherwise = 0)

X_6 = Extension visit (number of visits)

RESULTS AND DISCUSSION

Socio-economic characteristics of respondents

The result of the socio-economic characteristics of the respondents is revealed. The characteristics include gender, age, marital status, household size, occupation, farming experience and cooperative membership. Majority (77%) of respondents were males, implying that more men than women practiced fish farming in the study area. This is in agreement with Adekoya (2010) who stated that the male dominance in fish farming is probably due to the laborious nature of fish farming operations from pond construction to management, which their female counterparts cannot undertake. Majority (82%) of the respondents falls within the age bracket of 21-40 years with a mean age of 41 years. This implies that they are in the most productive stage of life. Majority (93%) of the respondents were married indicating that fish farming is a means of livelihood to them, while about 60% had household size of 1 - 5 people with a mean household size of 4 people implying that the farmers had a fairly large household which could serve as an insurance against short falls in supply of farm labour. This is in agreement with Olorunshola (2014) who posited that household size has a great influence on family labour provision in the agricultural sector. All the respondents acquired secondary or tertiary education, and the majority (82%) had tertiary education. This implies that the respondents were literate and will be able to easily respond to training on fish farming.

Majority (66%) of the respondents had farming experience between 1 - 5 years with a mean farming experience of 4.5 years, while 79% and 91% of the respondents did not belong to cooperative associations, and had no access to agricultural credit. This implies that the respondents were not involved in cooperative associations and did not have access to various assistance cooperative associations could have provided in terms of inputs and other benefits. Therefore, respondents would have found it difficult to finance their fish farms. According to Yahaya and Omokhaye (2001), social involvement of fish farmers through participation in fish farmers' cooperative associations will enable dissemination of information among the farmers.

Distribution of respondents based on their socio-economic characteristics

	Frequency	Percentages	Mean
	77	77	
	23	23	
	11	11	
	39	39	41
	32	32	
	18	18	
	5	5	
	93	93	
	2	2	
	60	60	4
	39	39	
	1	1	
	3	3	
	15	15	
	82	82	
	66	66	4.5
	27	27	
	5	5	
	2	2	
	79	79	
	21	21	
	91	91	
	9	9	
	100	100	

field survey, 2015

Information needs of the respondents

reveals various information needs of the respondents which were on water quality management (58%), hatching (57%), source of fingerlings (53%), identification of disease symptoms (43%) among others and ranked 1st, 2nd, 3rd and 4th, respectively. This implies that respondents are more in need of information on water quality management, hatching, source of fingerlings and identification of disease symptoms. This is in agreement with the findings of Adekoya (2010) who stated that the information needs of Nigerian fish farmers revolve around the resolution of problems such as fish diseases, weed control in the pond and management of parent stock.

Table 2: Distribution of respondents based on their information needs

Information needs	Frequency*	Percentage	Rank
Water quality management	58	58	1
Hatching	57	57	2
Source of fingerlings	53	53	3
Identification of disease symptoms	43	43	4
Feed formulation	40	40	5
Fish processing	31	31	6
Fish marketing	19	19	7
Fish preservation	18	18	8
Brood stock selection	18	18	8
Pond construction	15	15	9
Record keeping	7	7	10
Fish transportation	2	2	11

Source: Field Survey, 2015

*Multiple response

Training needs of the respondents

Training helps people in obtaining necessary skills, knowledge and attitude to run progressive and flexible enterprises. Table 3 reveals that the major training needs of respondents were on diseases control and management (82%), water quality management (68%) and pond stocking (42%) ranked 1st, 2nd and 3rd, respectively. The least training need was on weeding of pond (2%) ranked 9th. Each of the parameters in Table 3 is important in fish farming activities as the respondents are in need of information for these farming activities. According to Muyepa (2002), need is a simple four lettered word but it is probably the most complex, basically significant and far reaching in its implications. It is all major terms in the vocabulary of adult educator extension or otherwise.

Table 3: Distribution of the respondents based on their training needs

Training needs	Frequency*	Percentage	Rank
Diseases control	82	82	1 st
Water quality maintenance	68	68	2 nd
Pond stocking	42	42	3 rd
Fertilization of pond	38	38	4 th
Processing of fishes	31	31	5 th
Liming of pond	29	29	6 th
Preservation of fishes	10	10	7 th
Cleaning of pond	9	9	8 th
Weeding of pond	2	2	9 th

Source: Field Survey, 2015
 *Multiple responses

Perception of respondents on fish management practices

Data in Table 4 reveal that the respondents agreed to the importance of the various fish management practices including disease control ($X = 4.66$), pond stocking ($X = 4.00$), liming ($X = 3.57$) among others in order of preference. This implies that there was good perception of the respondents concerning the importance of the various fish management practices. Respondents should therefore be willing to accept information and training on fish farming management activities, This position collaborates the work of Aphunu and Mwanuzi (2010) who stated that the respondents in their study had a good perception of the organization and administration of the training programmes executed by the Extension Agents.

Table 4: Distribution of respondents' perception on fish management practices

Practices	Sum weight	Mean score	Decision
Cleaning	318	3.18	Agreed
Fertilization	334	3.34	Agreed
Water Quality Maintenance	328	3.28	Agreed
Weeding	309	3.09	Agreed
Diseases Control	466	4.66	Agreed
Pond Stocking	400	4.00	Agreed
Liming	357	3.57	Agreed
Processing	340	3.40	Agreed
Preservation	322	3.22	Agreed

Source: Field Survey, 2015 X = Mean score on a scale of 1 - 5
 Scores less than 3.0 was considered "disagreed", while equal to or above 3.0 was considered "agreed"

Constraints associated with fish farming by the respondents

From Table 5, it was revealed that majority (92%) of the respondents lack capital and were faced with high cost of fish feed. About half (51%) of the respondents had difficulty in procuring good fingerlings, 31% were faced with scarcity of feeds, 26% of the respondents were faced with the problem of disease or pest incidence, while 25% of the respondents indicated poor government policies as constraints faced in fish production in the study area. This implies that most of the respondents were constrained by lack of capital, which agrees with the study of Omotoyin (2007) who posited that many fish farmers lack adequate capital to either operate their fish farms or enterprises profitably or expand them.

Table 5: Distribution of respondents based on their constraints

Constraints	Frequency	Percentage	Rank
Lack of capital	92	92	1 st
High cost of fish feed	92	92	1 st
Difficulty in procuring good fingerlings	51	51	3 rd
Scarcity of feed	31	31	4 th
Incidence of disease/pest	26	26	5 th
Poor government policies on fish production	25	25	6 th
Scarcity of quality water in farm area	14	14	7 th
Lack of readily available market for fish	9	9	8 th
Lack of technical skill	9	9	8 th
Lack of extension workers	9	9	8 th
Inability to expand pond size	5	5	11 th
Theft	3	3	12 th

Source: Field Survey, 2015

*Multiple responses

Test of Hypothesis

Logit regression analysis was carried out to test the hypothesis that there is no significant relationship between the selected socio-economic characteristics of the respondents and their information and training needs. The z-test results of the analysis is presented in Table 6 where age (1.735), cooperative (-1.827) and extension contact (2.243) were statistically significant at 5% and 10% levels of probability. Age and extension contact were positive implying that there was direct relationship between these characteristics of respondents and their information and training needs, hence one unit increase in any of the variables increase the information and training needs. Cooperative was negative implying inverse

relationship to information and training needs, hence one unit increase in cooperative participation will decrease the information and training needs of the farmers. Since age, cooperative and extension contact were statistically significant and influence the information and training needs of the respondents, the null hypothesis was therefore rejected while the alternative was accepted.

Table 6: Regression coefficients of factors influencing information and training needs

Variables	Coefficient	Standard Error	z - test
Constant	-2.59616	1.23031	- 2.110
Age	0.04871	0.02806	1.735***
Marital Status	-0.29674	0.46310	- 0.641
Farming Experience	0.14247	0.10986	1.297
Cooperatives	-0.91332	0.49994	-1.827***
Agricultural Credit	0.14930	0.45570	0.328
Extension Contact	1.00734	0.44907	2.243**

Source: Field Survey, 2015

***Significant at 10% and **Significant at 5% level of probability

CONCLUSION

Most of the respondents in the study area were male, married and in their productive stage of life implying that men were more into fish farming than female due to labourious nature of fish farming operations. The information needs of the respondents in fish farming were mainly on water quality management, hatching, source of fingerlings among others, while their training needs were on disease control and management, water quality maintenance, pond stocking among others. The respondents had a clear perception of various fish management practices with disease control ranking first in order of preference implying that they were willing to accept information and training on fish farming. Constraints associated with fish farming include lack of capital, high cost of fish feed, disease and pest attack. Some socio-economic variables, namely age, cooperative and extension contact, were found to influence information and training needs of the respondents.

RECOMMENDATIONS

From the findings of the study, the following recommendations were made:

1. Extension agents should intensify effort in reaching out to the respondents with regards to information disseminated and training provided that will help to boost production capacity through effective management practices.

2. Government and other stakeholders should invest in extension services that will help sensitize the respondents to the various ways in which fish farming activities can be carried out, while adequate production inputs should be made available to the respondents at a subsidized rate.
3. The respondents should join cooperative societies as it would facilitate their access to vital information and credit provided mostly by financial institutions.
4. More so, financial institution should assist in providing flexible and low interest rate credit to the fish farmers in order to improve their fish production.

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