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Small Holder Fish Farmer's Information and Training Needs in Ogun State of Nigeria

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Abstract- The study was carried out to examine the small holder fish farmer's information and training needs in Ogun State of Nigeria. Simple random sampling was used to select forty (40) fish farmers from each of the selected four agricultural extension zones. These data were collected from field through the use of structured interview; data obtained was subjected to descriptive statistics and inferential statistics. The study revealed that majority of the respondents fell between the age bracket of 41 and 50 years, over 60.0% were males and were married, with an household size ranges between 4 - 6 persons on average of 5 persons per house hold. The result indicated that majority of fish farmers sold fishes above N300:00 in all the four extension zones. The study show that majority of the respondents in the four agricultural extension zones performed fish farming management practices (cleaning, weeding, water quality) maintenance more frequently. Also fish production constraints faced includes high cost of feed, farm microcredit procurement and inadequate capital. The result of the hypotheses (ANOVA) revealed that there is a significant difference between the socioeconomic characteristics othe fish farmers and thier information and training needs at $p<0.05$ except for sex which showed a significant difference.Based on the research, more extension workers should be employed to give the technical knowledge to fish farmers on how to use some equipment and dissemination of new innovations on how to improve their fish farming system and productivity.

Keywords: *fish farming, information, training.*

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Keywords: fish farming, information, training.

I. Introduction

Fish and fish products are known worldwide as a very important diet because of their high nutritive quality and significance in improving human health. Fish plays a vital role in feeding the world's population and contributing significantly to the dietary protein intake of hundreds of millions of the populace (Amao et al., 2006).

A decline in landing from capture fisheries as indicated that fish stocks have approached the point of maximum sustainable yield; therefore fish farming remains the only possible option for increasing fish production in order to meet the protein need of the people.

Fish farming activity in Nigeria started about 50 years ago, with the establishment of a small experimental station at Onikan Lagos and an industrial farm about 20ha at Panyam in Plateau State by Federal Government (Ekwegh, 2005). The primary aim of fish culture is to provide enough fish seeds for restocking open waters like natural and artificial lakes, reservoirs and running streams in order to prevent the extinction of commercially important species of fish especially when and where there is over-exploitation (Omitoyin, 2007) .

As population increases, the demand for fish and fish products increases, especially with its nutritional advantage over meat also there are numerous challenges confronting fish farming practices, among which are poor management, inadequate supply of good quality seed, lack of capital, high cost of feed, availability of extension services and marketing of products. This calls for improved fish farming technologies and other information needed for improved production level. However, in spite of research and extension services efforts there are improved packages on fish production; they are not being adequately used by farmers. This is either because there no information on these improved production packages or there is no adequate training on them (Adereti et al., 2006). Moreover, extension provides a channel through which fish farmers' problems could be identified for research and formulation of appropriate policies to the benefit of farmers.

a) Objective of the study

This study is conducted in order to determine small holder fish farmer's information and training needs in Ogun State of Nigeria. Also, the socio-economic characteristics of small holder fish farmers are to be determined and the paper additionally aims at determine the management practices in which small holder fish farmers need information and training needed for effective fish production.

b) Test of Hypotheses

The test of the hypotheses includes the following:

- There is no significant difference between the socioeconomic characteristics of small holder fish farmers and their information needs.
- There is no significant difference between the socioeconomic characteristics of small holder fish farmers and their training needs.

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II. Material and Methodology

a) The study area

The study was conducted in Ogun State, the state is bounded in the West by the Benin Republic, in the South by Lagos State and the Atlantic Ocean, in the East by Ondo State and in the North by Oyo and Osun State.

The study covered the whole four agricultural extension zones as classified by the Ogun State Agricultural Development Programme (OGADEP) based on ecological views for effective, adequate and complete improved technologies dissemination. The four zones are Ikenne, Ilaro, Ijebu-ode and Abeokuta zone located in southwestern Nigeria.

b) Sampling procedure and sample size

Simple random sampling was used to select forty (40) fish farmers from each of the selected four agricultural extension zones making a sample size of one hundred and sixty (160) fish farmers. These data were collected from field through the use of structured interview guides which were designed to achieve the objectives of the study. The reliability of the study is based on the information provided by the farm manager/owner of those farm sampled. Data obtained from the field was subjected to descriptive statistics and inferential statistics

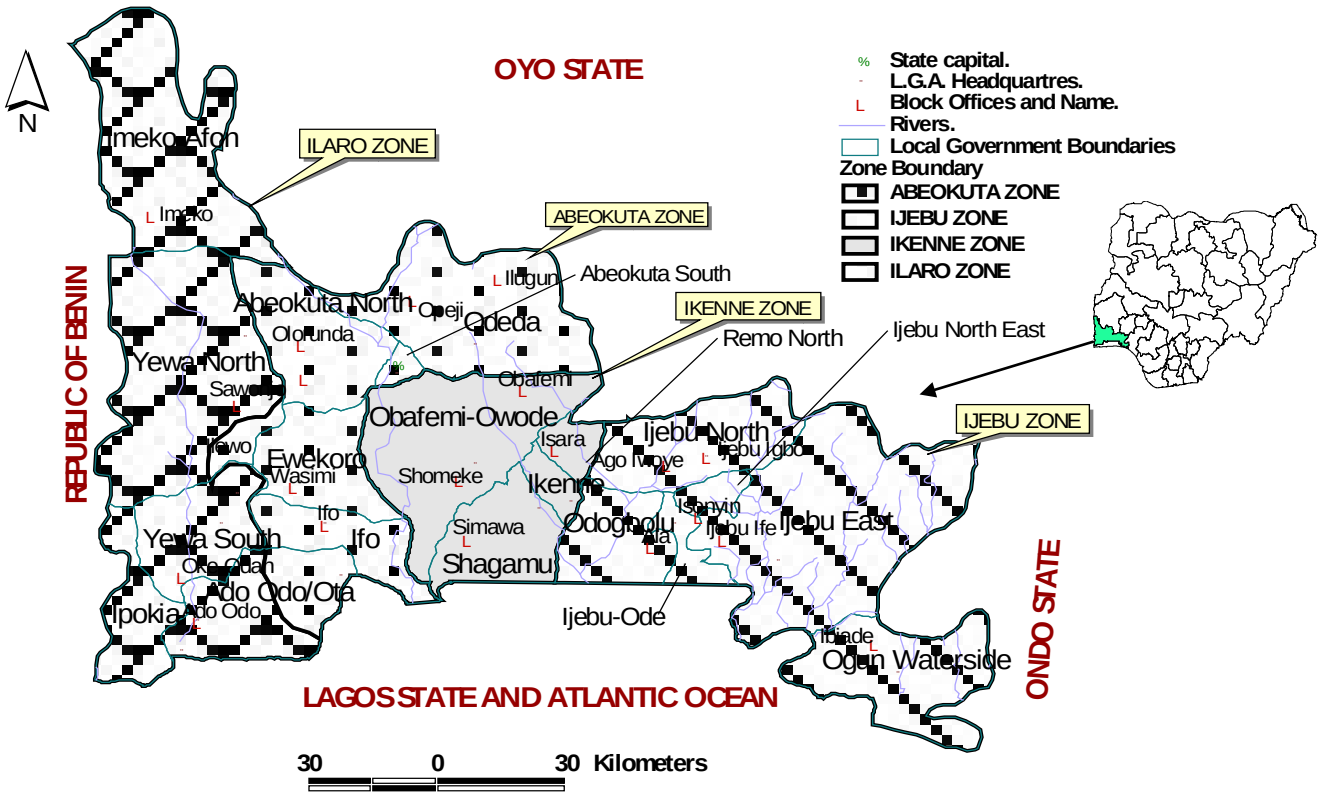

Figure 2 : Ogun State Map showing study location

Source: Olaoye, 2010

III. Results

The study examines the information and training needs of small holder fish farmers which are spread across the four agricultural zones (Abeokuta, Ijebu-ode, Ikenne, and Ilaro) in Ogun state of Nigeria.

a) Socio-economic characteristics of fish farmers

Table 1 shows that out of 160 respondents that are interviewed, 57.5%, 50%, 40%, and 40% of the respondents in Abeokuta, Ilaro, Ikenne and Ijebu-ode zones respectively were within the active age bracket of 41-50 years. It was also observed that 65.0%. 62.5%, 57.5% and 65.0% of the respondents are males while 35.0%, 37.5%, 42.5% and 35.0% of the respondents are females in the four zones further more 87.5%, 80.0%, 82.5% and 87.5% of the respondents in Abeokuta, Ijebu-Ode, Ikenne and Ilaro zones respectively are married while a few percentage of the fish farmers in the four zones have secondary widowed, divorced and single.

Date on educational status as shown in table 1 reveal that 55%, 47.5%, 47.5% and 55% of the respondents in Abeokuta, Ijebu-Ode, Ikenne and Ilaro zones had tertiary education while a few percentage of the fish farmers in the four zones have secondary

education, primary education, adult education and no formal education, majority of the respondents in Abeokuta (47.5% and 50.0%), Ijebu-Ode (52.5% and 42.5%), Ikenne (42.5% and 55.0%) and Ilaro (45.0% and 52.5%) zones are Christians and Muslims respectively, while a minute percentage of the fish farmers of the four zones have traditional religion. It also show membership of fish farmers association in the state 85.0%, 77.5%, 75.0% and 75.0% of the respondents in Abeokuta, Ijebu-Ode, Ikenne and Ilaro zones are members of fish farmers association while 15%, 22.5%, 25% and 25% of the four zones are not a member of any fish farmers association. Majority of the respondents have fish farming experience of between 1 – 5 years, about half of the fish farmers in the four zones purchased their land for fish farming. Majority of the respondents in Abeokuta, Ijebu-ode, Ikenne and Ilaro zones have their household size ranging between 4-6 persons with an average of 5 persons.

Table 1 : Socio-economic characteristics of fish farmers

Socioeconomic characteristics	Abeokuta zone		Ijebu-Ode zone		Ikene zone		Ilaro zone	
	Freq	%	Freq	%	Freq	%	Freq	%
Age								
21 – 30	3	7.5	2	5.0	2	5.0	2	5.0
31 – 40	5	12.5	7	17.5	7	17.5	8	20.0
41 – 50	23	57.5	20	50.0	16	40.0	16	40.0
Above 50	9	22.5	11	27.5	15	37.5	14	35.0
Sex								
Male	26	65.0	25	62.5	23	57.5	26	65.0
Female	14	35.0	15	37.5	17	42.5	14	35.0
Educational Status								
Adult education	1	2.5	1	2.5	1	2.5	1	2.5
Primary education	2	5.0	2	5.0	1	2.5	2	5.0
Secondary education	15	37.0	18	45.0	19	47.5	15	37.5
Tertiary education	22	55.0	19	47.5	19	47.5	22	55.0
Religion								
Christians	19	47.5	21	52.5	17	42.5	18	45.0
Muslims	20	50.0	17	42.5	22	55.0	21	52.5
Traditional	1	2.5	2	5.0	1	2.5	1	2.5
Membership of fish farmers association								
Yes	34	85.0	31	77.5	30	75.0	30	75.0
No	6	15.0	9	22.5	10	25.0	10	25.0
Fish farming experience (Years)								
Less the 6	20	50.0	18	45.0	20	50.0	18	45.0
6 - 10	9	22.5	8	20.0	10	25.0	9	22.5
11 - 15	6	15.0	6	15.0	6	15.0	6	15.0
16 – 20	4	10.0	7	17.5	3	7.5	6	15.0
Above 20	1	2.5	1	2.5	1	2.5	1	2.5
Mode of land acquisition								
Inheritance	9	22.5	10	25.0	7	17.5	9	22.5
Gift	3	7.5	3	7.5	3	7.5	3	7.5
Lease/Rent	9	22.5	9	22.5	9	22.5	9	22.5
Purchase	18	45.0	18	45.0	21	52.5	19	47.5
Type of labour								
Hired	32	80.0	31	77.5	29	72.5	32	80.0
Self	8	20.0	9	22.5	11	27.5	8	20.0
Household size								
Less than 4	10	25.0	10	25.0	9	22.5	10	25.0
4 – 6	19	47.5	20	50.0	20	50.0	19	47.5
7 – 9	9	22.5	8	20.0	9	22.5	9	22.5
10 and above	2	5.0	2	5.0	2	5.0	2	5.0

Source: Field survey, 2010

b) Fish production system

Table 2 show the fish production system of small holder fish farmers in all the four extension zones of Ogun State. It was observed that majority of the respondent's uses monoculture fish production system while a few make use of integrated and polyculture system of fish production.

It was also gathered that 56%, 57.5%, 57.55 and 60% of the respondents in the four zones sold their fish above N 300:00/kg. Majority (70%, 67.5%, 67.5%

and 67.5%) of the respondents in the four zones make use of earthen ponds for rearing of fish. It was to the fact that they are small holder fish farmers and they can't bear the cost of constructing concrete ponds.

Table 2 : Fish production system

Zones	Abeokuta zone		Ijebu-Ode zone		Ikene zone		Ilaro zone	
	Freq	%	Freq	%	Freq	%	Freq	%
Fish production system								
Integrated	6	15.0	3	7.5	3	7.5	6	15.0
Monoculture	28	70.0	22	55.0	22	55.0	19	47.6
Polyculture	6	15.0	15	37.5	15	37.5	15	37.5
Price of fish sold cat fish (₦)								
Less than 300:00	18	45.0	17	42.5	19	47.5	16	40.0
Above 300:00	22	56.0	23	57.5	21	57.5	24	60.0
Type of fish enclosure								
Earthen ponds	28	70.0	27	67.5	27	67.5	27	67.5
Concrete tanks	11	27.5	12	30.0	12	30.0	10	25.0
Plastic tanks	1	2.5	1	2.5	1	2.5	3	7.5

Source: Field survey, 2010

c) Frequency of performance of fish production management practice

Table 3 reveals the frequency of performance of fish production management practice indicating that cleaning, weeding and water quality maintenance was done more frequently in all the four zones of the State.

Table 3 : Frequency of performance of fish production management practice

Management	Seldomly (1)		Biweekly (2)		Weekly (3)		Daily (4)	
	Freq	%	Freq	%	Freq	%	Freq	%
Cleaning	4	10.0	10	25	7	17.5	19	47.5
Fertilization	22	55.0	4	10.0	6	15.0	8	20.0
Water quality maintenance	7	17.5	7	17.5	14	35.0	12	30.0
Weeding	7	17.5	9	22.5	11	27.5	13	32.5
Disease control	22	55.0	8	20.0	3	7.5	7	17.5
Liming	28	70.0	3	7.5	3	7.5	6	15.0
Harvesting	17	42.5	12	15.0	6	15.0	5	12.5
Marketing	14	35.0	16	40.0	5	12.5	5	12.5
Preservation	22	55.0	7	17.5	6	15.0	5	12.5
Processing	22	55.0	9	22.5	5	12.5	4	10.0
Security	22	55.0	9	22.5	5	12.5	4	10.0
Ijebu-Ode zone								
Cleaning	4	10.0	10	25.0	8	20.0	18	45.0
Fertilization	22	55.0	5	12.5	6	15.0	7	17.5
Water quality maintenance	8	20.0	7	17.5	14	35.0	11	27.5
Weeding	8	20.0	9	22.5	11	27.0	12	30.0
Disease control	23	57.5	8	20..0	3	7.5	6	15.0
Liming	29	72.5	3	7.5	3	7.5	5	12.5
Harvesting	18	45.0	12	30.0	6	15.0	4	10.0
Marketing	15	37.5	16	40.0	5	12.5	4	10.0
Preservation	23	57.5	7	17.5	6	15.0	4	10.0
Processing	23	57.5	8	20.0	5	12.5	4	10.0
Security	4	10.0	1	2.5	5	12.5	5	12.5
Ikenne zone								
Cleaning	4	10.0	10	25.0	9	22.5	17	42.5
Fertilization	22	55.0	4	10.0	5	12.5	9	22.5
Water quality maintenance	7	17.5	6	15.0	13	32.5	14	35.0

Weeding	7	17.5	9	22.5	12	30.0	12	30.0
Disease control	21	52.5	9	22.5	3	7.5	7	17.5
Liming	27	67.5	4	10.0	3	7.5	6	15.0
Harvesting	17	42.5	13	32.5	5	12.5	5	12.5
Marketing	14	35.0	16	40.0	5	12.5	5	12.5
Preservation	23	57.7	7	17.5	6	15.0	4	10.0
Processing	23	57.7	9	22.5	4	10.0	4	10.0
Security	4	10.0	1	2.5	5	12.5	30	75.0
Ilaro zone								
Cleaning	4	10.0	20	25.0	7	17.5	19	47.5
Fertilization	22	55.0	4	10.0	6	15.0	8	20.0
Water quality maintenance	7	17.5	7	17.5	14	35.0	12	30.0
Weeding	7	17.5	9	22.5	11	27.5	13	32.5
Disease control	22	55.0	8	20.0	3	7.5	7	17.5
Liming	28	70.0	3	7.5	3	7.5	6	15.0
Harvesting	17	42.5	12	30.0	6	15.0	5	12.5
Marketing	14	35.0	16	40.0	5	12.5	5	12.5
Preservation	22	55.0	7	17.5	6	15.0	5	12.5
Processing	22	55.0	9	22.5	5	12.5	4	10.0
Security	4	10.0	1	2.5	5	12.5	30	75.0

Source: Field survey, 2010

d) Fish production constraints facing farmers

Table 4 reveals of fish production constraints facing farmers indicating that majority of the fish farmers were faced, High cost of Feed, Fingerling procurement, Incidence of diseases/pests as their major constraints.

Table 4 : Fish production constraints facing farmers

Constrains	Not a constraint		Mild constraint		Severe constraint	
	Freq	%	Freq	%	Freq	%
Abeokuta zone						
High cost of Feed	3	7.5	10	25.0	27	67.5
Poaching	11	27.5	25	62.5	4	10.0
Fingerling procurement	11	27.5	22	55.0	7	17.5
Government policy	28	70.0	9	22.5	3	7.5
Incidence of diseases/pests	16	40.0	19	47.5	5	12.5
Poor water quality in farm Area	28	70.0	8	20.0	4	10.0
Water scarcity	34	85.0	4	10.0	2	5.0
Farm microcredit procurement	17	42.5	11	27.5	12	30.0
Inability to expand pond size	29	72.5	6	15.0	5	12.5
Inadequate capital	11	27.5	13	32.5	16	40.0
Lack of technical skills	34	85.0	4	10.0	2	50
Ijebu-ode zone						
High cost of Feed	3	7.5	10	25.0	27	67.5
Poaching	11	27.5	25	62.5	4	10.0
Fingerling procurement	11	27.5	22	55.0	7	17.5
Government policy	28	70.0	9	22.5	3	7.5
Incidence of diseases/pests	16	40.0	19	47.5	5	12.5
Poor water quality in farm Area	28	70.0	8	20.0	4	10,0
Water scarcity	34	85.0	4	10.0	2	5.0
Farm microcredit procurement	16	40.0	11	27.5	13	32.5
Inability to expand pond size	29	72.5	72.5	15.0	5	12.5
Inadequate capital	10	25.0	14	35.0	16	40.0
Lack of technical skills	34	85.0	4	10.0	2	5.0
Ikenne zone						
High cost of Feed	4	10.0	10	25.0	26	65.0
Poaching	13	32.5	23	57.5	4	10.0
Fingerling procurement	10	25.0	23	57.5	7	17.5
Government policy	28	70.0	9	22.5	3	7.5
Incidence of diseases/pests	16	40.0	18	45.0	6	15.0
Poor water quality in farm Area	27	67.5	9	22.5	4	10.0

Water scarcity	34	85.0	4	10.0	2	5.0
Farm microcredit procurement	18	45.0	10	25.0	12	30.0
Inability to expand pond size	28	70.0	7	17.5	5	12.5
Inadequate capital	11	27.5	14	35.0	15	37.5
Lack of technical skills	8	20.0	20	50.0	12	29.5
Ilaro zone						
High cost of Feed	3	7.5	10	25.0	27	67.5
Poaching	11	27.5	25	62.5	4	10.0
Fingerling procurement	11	27.5	22	55.0	7	17.5
Government policy	28	70.0	9	22.5	3	7.5
Incidence of diseases/pests	16	40.0	18	45.0	6	15.0
Poor water quality in farm Area	16	40.0	19	47.5	5	12.5
Water scarcity	28	70.0	8	20.0	4	10.0
Farm microcredit procurement	34	85.0	4	10.0	2	5.0
Inability to expand pond size	17	42.5	11	27.5	12	30.0
Inadequate capital	29	72.7	6	15.0	5	12.5
Lack of technical skills	11	27.5	13	32.5	16	40.0

Source: Field survey, 2010

e) Sources of information for fish farming

Table 5 reveals of sources of information for fish farming indicating that majority of the fish farmers used extension agent, Friends, and relations and Telephone (GSM) more frequently.

Table 5 : Sources of information for fish farming

Constrains	Always used		Occasionally used		Not used	
	Freq	%	Freq	%	Freq	%
Abeokuta zone						
Extension agent	27	67.5	7	17.5	6	15.0
Radio broadcast	5	12.5	13	32.5	22	55.0
Television broadcast	4	10.0	18	45.0	18	45.0
News papers	4	10.0	7	17.5	29	72.5
Friends and relations	26	65.0	11	27.5	3	7.5
Extension guide/bulletin	27.5	11	14	35.0	15	37.5
Telephone (GSM)	11	27.5	2	5.0	27	67.5
Village criers	2	5.0	3	7.5	35	87.5
Posters	6	15.0	3	7.5	31	77.5
Ijebu zone						
Extension agent	27	67.5	7	17.5	6	15.0
Radio broadcast	5	12.5	14	35.0	21	52.5
Television broadcast	4	10.0	19	47.5	17	42.5
News papers	3	7.5	7	17.5	30	75.0
Friends and relations	27	67.5	11	27.5	2	5.0
Extension guide/bulletin	12	30.0	14	35.0	14	35.0
Telephone (GSM)	12	30.0	2	5.0	26	65.0
Village criers	2	5.0	3	7.5	35	87.5
Posters	6	15.0	3	7.5	31	77.5
Ikenne zone						
Extension agent	27	67.5	6	15.0	7	17.5
Radio broadcast	5	12.5	13	32.5	22	55.0
Television broadcast	4	10.0	19	47.5	17	42.5
News papers	4	10.0	8	20.0	28	70.0
Friends and relations	26	65.0	10	25.0	4	10.0
Extension guide/bulletin	10	25.0	15	37.5	15	37.5
Telephone (GSM)	11	27.5	2	5.0	27	67.5
Village criers	2	5.0	4	10.0	34	85.0
Posters	6	15.0	4	10.0	30	75.0
Ilaro Zone						
Extension agent	27	67.5	7	17.5	6	15.0
Radio broadcast	5	12.5	13	32.5	22	55.0
Television broadcast	4	10.0	18	45.0	18	45.0
News papers	4	10.0	7	17.5	29	72.5

Friends and relations	26	65.0	11	27.5	3	7.5
Extension guide/bulletin	11	27.5	14	35.0	15	37.5
Telephone (GSM)	11	27.5	2	5.0	27	67.5
Village criers	2	5.0	3	7.5	3.5	87.5
Posters	5	15.0	3	7.5	31	77.5

Source: Field survey, 2010

f) Training needs of fish farmers

Table 6 reveals the training needs for fish farming indicating farmers needed training on feed formulation, fish breeding and hatchery management practices severely.

Table 6 : Training needs of fish farmers

Constrains	Highly needed		Moderately need		Not need	
	Freq	%	Freq	%	Freq	%
Abeokuta Zone						
Pond construction	14	35.0	14	35.0	12	30.0
Feed formulation	30	75.0	10	25.0	0	0.0
Fish breeding	28	70.0	9	22.5	3	7.5
Site selection	13	32.5	19	47.5	8	20.0
Hatchery management Practices	22	55.0	12	30.0	6	15.0
Diseases treatment and Prevention	19	47.5	17	42.5	4	10.0
Water quality management	9	22.5	27	67.5	4	10.0
Record keeping	13	32.5	15	37.5	12	30.0
Ijebu Zone						
Pond construction	13	32.5	15	37.5	12	30.0
Feed formulation	80	75.0	10	25.0	0	0.0
Fish breeding	28	70.0	9	22.5	3	7.5
Site selection	12	30.0	20	50.0	8	20.0
Hatchery management Practices	22	55.0	11	27.5	7	17.5
Diseases treatment and Prevention	19	47.5	16	40.0	5	12.5
Water quality management	9	22.5	26	65.0	5	12.5
Record keeping	9	22.5	16	40.0	15	37.5
Ikene Zone						
Pond construction	14	35.0	14	35.0	12	30.0
Feed formulation	29	72.5	11	27.5	3	7.4
Fish breeding	28	70.0	9	22.5	8	20.0
Site selection	14	35.0	18	45.0	5	12.5
Hatchery management Practices	28\4	60.0	11	27.5	4	10.0
Diseases treatment and Prevention	20	50.0	16	40.0	5	12.5
Water quality management	8	20.0	27	67.5	14	35.0
Record keeping	9	22.5	17	42.5	12	30.0
Ilaro Zone						
Pond construction	14	35.0	14	35.0	12	30.0
Feed formulation	30	75.0	10	25.0	0	0.0
Fish breeding	28	70.0	9	22.5	3	7.5
Site selection	13	32.5	19	47.5	8	20.0
Hatchery management Practices	22	55.0	12	30.0	6	15.0
Diseases treatment and Prevention	19	47.5	17	42.5	4	10.0
Water quality management	9	22.5	27	67.5	4	10.0
Record keeping	9	22.5	17	42.5	14	35.0

Source: Field survey, 2010

g) Results of inferential statistics

The result of the hypotheses (ANOVA) in table 7 and 8 revealed that the variables tested (sex, age, marital status, education status and religion) showed there is no significant difference between the socioeconomic characteristics othe fish farmers and thier information and training needs at $p<0.05$ except for sex which show a significant difference between the sociorconomic characteristics and training needs.

Table 7 : There is no significant difference of between the socioeconomic characteristics the fish farmers and thier information needs.

	Sum of square	d.f	Mean square	F	sig	decision
Age	108.00	159	3.991	7.148	0.000	Accept H^1
Sex	36.400	159	0.876	3.396	0.001	Accept H^1
Marital status	31.600	159	0.587	2.172	0.022	Accept H^1
Educational level	77.775	159	1.511	2.631	0.004	Accept H^1
Religion	47.9	159	1.117	2.734	0.004	Accept H^1

Source: Field survey, 2010

- Decision criterion is reject null hypothesis when $p < 0.05$
- D.F= Degree of freedom

Table 8 : There is no significant difference of between the socioeconomic characteristics the fish farmers and thier training needs.

	Sum of square	d.f	Mean square	F	sig	decision
Age	108.000	159	2.786	3.668	0.001	Accept H^1
Sex	36.400	159	0.765	2.609	0.110	Reject H^1
Marital status	31.600	159	0.819	3.679	0.001	Accept H^1
Educational level	77.775	159	4.154	12.279	0.000	Accept H^1
Religion	47.900	159	1.413	5.830	0.000	Accept H^1

Source: Field survey, 2010

- Decision criterion is reject null hypothesis when $p < 0.05$
- D.F= Degree of freedom

IV. Discussion

Age is related to information and training need of fish farmers because the stage of life of farmers affects his attitude towards information usage and his attitude towards training. The older fish farmer becomes, the more he is willing to put fish farming related information into use and accept adequate training. According to the study, it was be shown that (47.5%, 50%, 40%, and 40%) in Abeokuta, Ilaro, Ikenne and Ijebu-ode zones respectively fell between the age bracket of 41 and 50 years. These are ages in which are considered highly productive and active to undergo strenuous task associated with farm work, indicating that the majority of the respondents were within economically active age distribution. This is in line with the assertion of Olowosegun et al., (2004) that age has positive correlation with acceptance of training in fish farming. However, this indicates that people between age the bracket of between 41 to 50 years of age are involved in fish farming. This is because fish farming requires adequate attention and a lot of sense of responsibility.

The sex of the respondents was an essential variable in this study as it focused on decision making in fish farming. Out of the 160 respondents that were interviewed (65.0%. 62.5%, 57.5% and 65.0%) in Abeokuta, Ilaro, Ikenne and Ijebu-ode zones respectively were males. This was in line with the work of Ajetumobi et al., (2001) who reported that females in this part of the country are usually involved as helpers or as suppliers of labour "light" farm operations such as planting, weeding, harvesting, processing and marketing. The survey also revealed that a large percentage (87.5%.80.0%. 82.5% and 87.5%) in Abeokuta, Ilaro, Ikenne and Ijebu-ode zones respectively are married, meaning that fish farming serves as a means of livelihood The male dominance in fish farming implies the laborious nature of fish farming operations right from pond construction to management which their female counterparts cannot easily undertake.

Education is an important factor which can influence farm productivity and determines the level of productivity and understanding of improved management techniques. The level of education according to the study, majority of the respondents in Abeokuta, Ijebu-ode, Ikenne, Ilaro zones had tertiary education. This is contrary to the general opinion that most farmers are illiterates or semi-illiterates; most of whom have dropped out of formal school system.

From the result, one can infer that Christianity and Islam are mostly practiced than any other religion as majority of fish farmers in Abeokuta, Ijebu-ode, Ikenne, Ilaro zones respectively are Christians (47.5%, 52.5, 42.5, 45.0%) and Muslims (50.0%, 42.5%, 55.0%, 52.5%) while a small proportion were traditional

worshippers, this may be attributed to the fact that both religions have no tenets towards the consumption of fish. The study indicated that majority of the respondents in Abeokuta, Ijebu-Ode, Ikenne and Ilaro the four zones are members of fish farmers association which is in line Kumar (1992) who stated that been a member of any association contributes increased awareness on new methods of production towards an increase in productivity.

Household size also contributed to productivity of smallholder fish farmers. Majority of the respondents in Abeokuta, Ijebu-ode, Ikenne and Ilaro zones have their household size ranging between 4-6 persons with an average of 5 persons. The implication is that the relatively small household may increase the number of labour needed against Idowu (2001) that stated that the larger the household size, the more the likelihood of labour efficiency on farmer's farm given the constant labour. The relatively average sizes of household may be attributed to their belief, for instance, religious tenets such as in Christianity, teaches monogamist type of family. From the result, a large percentage of the fish farmers adopted monoculture fish farming in the four zones while only few operated pure poly culture and integrated fish farming system in Abeokuta, Ijebu-ode, Ikenne and Ilaro zones. This suggested that a large number of the respondents basically engage in integrated fish farming for profitability and not for personal consumption.

The result indicated that majority of fish farmers sold fishes above N300:00 in all the four extension zones. This is associated with high inflation rate in the economy and high cost of most fish feed ingredients, particularly fish meal and its competitive use by livestock farmers and also most of the fish farmers depend on imported quality fish feeds which were expensive and not affordable (Omitoyin, 2007). In the four zones majority of the respondents make use of earthen ponds for rearing of fish. In terms of the type of fish cultured, the study showed that 62.5% of the fish farmers cultured Clarias spp more than any other fish species. The reasons being that the species has a high market value and it can attain market size under few months of culture.

The study revealed that majority of the respondents in the four agricultural development zones performed fish farming management practices (cleaning, weeding, water quality) maintenance more frequently while other fish farming management practices (fertilization, diseases control, liming, harvesting, marketing, preservation, processing and security) were performed less frequently. Also the study, the respondents in the four agricultural development zones were faced with fish production constraints (high cost of feed, farm microcredit procurement and inadequate capital) severely while other constraints (poaching, government policy, incidence of diseases, poor water quality in farm area, water scarcity, inability to expand ponds size, lack of technical skills) are mild constraints faced by the fish farmers.

Awareness creation is often the first step in disseminating a technology package, and to a large extent, the level of awareness could determine the level of productivity. Access to information was one of the most valuable resources in agricultural development (William and Naven, 1995). From the findings, majority of the respondents always used information on fish farming through extension agents, telephones (GSM), through friends and relations while few accessed information through newspapers, radio broadcast, television broadcast, village criers, posters, extension guide/bulletin. This implies that research institutes and universities have not put in enough efforts to carry out their function of information generation and delivery to farmers. However, giving farmers access to a variety of information, which are accessible, affordable, relevant and reliable, is the ultimate aim of providing agricultural information services. The result also showed that of the respondents in the four agricultural development zones strongly required information on market price, treatment and prevention of diseases, sources of fingerlings and feed formulation. In terms of fish farm training, majority were grounded in one or more training. The result showed that of the respondents in the four agricultural development zones strongly required training on feed formulation, diseases treatment and prevention, fish breeding.

V. Conclusion and Recommendation

1. More extension workers should be employed to give the technical knowledge to fish farmers on how to use some equipment and dissemination of new innovations on how to improve their fish farming system and productivity.
2. Government should encourage fish farmers to establish registered cooperative societies in other to enjoy government provision of credit facilities.
3. Government should form policies to standardize the interest rate of financial institutions on micro-credits granted to fish farmers.
4. Government should provide good and on time information and training through extension agents on new innovations based on research outcomes to fish farmers.
5. Gender bias should not be allowed in the dissemination of information and training of fish farmers.

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