THE SOCIO-ECONOMIC ANALYSIS OF SMALL SCALE FISH FARMERS IN LAGOS STATE FISH FARM ESTATE, IKORODU, NIGERIA

[1*]OLAOYE, O. J.; [2]ODEBIYI, O. C.; [3]OMOYINMI, G. A. K; [4]AKINTAYO, I. A.; [2]UDOLISA, R.E.K; [2]EZERI, G.N.O. ; [2] HUNDEYIN-AGORO, O. C.

[1]*Agricultural Media Resources and Extension Centre (AMREC), University of Agriculture, P. M. B. 2240, Abeokuta, Nigeria*
[2]*Department of Aquaculture and Fisheries Management, University of Agriculture, P.M. B. 2240, Abeokuta, Nigeria*
[3]*Agricultural Education Department, Federal College of Education, Abeokuta*
[4]*Nigerian Institute of Marine Research and Oceanography, Victoria Island, Lagos, Nigeria*
***Corresponding authors: Dr. O. J.** Olaoye;*
olaoyejacob@yahoo.co.nz

ABSTRACT

This study was conducted to evaluate the socio-economic analysis of small scale fish farmers in Lagos state fish farming estate in Ikorodu, Nigeria. The primary data were obtained from 60 respondents with structured interview guides and face to face interview, which were selected using simple random sampling techniques. The result revealed that most (88.3%) of the fish farmers are male while (31.40%) are in the active age distribution of 31-40 years, university education (63.0%) and 58.3% were married, 73.4% had a household size that ranged between 3 - 5 persons. Results of the descriptive analyses and tests of significance however showed that there was a significant relationship between socio-economic characteristics and constraint of fish farmers in the estate, there is also a significant relationship between income of fish farmers and constraints of the fish farm enterprise. Implications of these findings were critically examined, and pertinent recommendations were proffered based on the salient findings in the study.

KEYWORDS: Farm estate, fish farming enterprises, Ikorodu, small scale, socio-economic, Nigeria

INTRODUCTION

Presently, fish as an important component of the population's diet in many parts of the world has increased rapidly over the past hundred years due to improved technology, which showcases powerful engines and sonar equipment, and led to over fishing, causing a worldwide decrease in wild stocks. Accounting for the decline in the fish population dynamics there is need to increase fish production by farming became an urgent matter. The term 'Aquaculture' covers all forms of cultivation of aquatic animals and plants in fresh, brackish and marine habitats. Aquaculture can be seen as an aspect of agricultural practices, mainly to increase the production of food above the level that would be produced naturally. Today, aquaculture is responsible for an ever-increasing share of global aquatic food production, which has increased from 3.9 percent in 1970 to 46 percent in 2009 (FAO, 2010). In Nigeria, Agriculture provides between 80 to 90 percent of the country's food needs (Odife, 2002). It however has diverse aspects and this includes fish farming which involves the rearing of fish for the purpose of consumption or sale. Fish is acclaimed to be the principal source of animal protein for over one billion people globally and provides many important nutritional and health benefits. Fish has the highest level of easily metabolisable proteins; it is reputed for its high quality proteins, fats, vitamins, calcium, iron and essential amino acids. The per capital consumption of animal protein in the country has been put at 5gm per day, this is a far cry from the FAO's recommended level of 35gm per day (Olaoye *et al.*, 2010).

Fish farming is a profitable venture and it is rapidly expanding and it will continue to be profitable if the planning and management are well taken care of. It started in Nigeria over 40 years ago (Olaoye *et al.*, 2010). The Nigerian government has recognized the importance of the fishery sub-sector and it has made several attempts over the years to increase their productivity through institutional reforms and the various economic measures. Some of these measures provided subsidy for inputs and

exemption from tax for fishermen. Despite the efforts of government, there is still a deficit in the supply and demand for fish by the population (Dada, 2004). Nigeria has a population of over one hundred and forty million people and has her national fish demand at over 2.66 million metric tonnes. Most of the fish farming in Nigeria is carried out by small scale operators in small fresh water ponds hovers around 0.62 million metric tonnes (FDF, 2008). These combined with ever decreasing catch (due to over exploitation) from the capture fisheries have not been able to meet the ever-increasing protein demand of the country. Thus, the challenge to increase protein consumption in Nigeria appears to be more urgent now than ever (Mbanasor, 2002). Poor people are facing new barriers in both their production and returns on fish. Even by the standards of developing countries, artisanal fishers and fish workers are often among the poorest people and they generally operate on a small scale and use traditional fishing practices yet new technologies and environment requirement favour large scale capital intensive operation at the expense of traditional and small scale commercial fishing (Delgado *et al.*, 2003). Whereas small scale fishing supplies the greatest (511,362 tonnes in 2008) of the Nigerian's annual fish production output (1,622,083 tonnes) while aquaculture supplies 143,207 tonnes in 2008. Lagos state artisanal production of 79,208MT and 93,420 MT with percentage change of 15.21% while aquaculture supplies 11,556MT and 15,007MT with percentage change of 23% in 2009 and 2010 respectively (NAERLS & NPAFS, 2010).

Objectives of the study

The main objective is to investigate the socio- economic analysis of small scale fish farmers in Lagos state fish farm estate, Ikorodu, Nigeria.

The specific objectives are to:

- ascertain socio-economic characteristics of the fish farmers in the study area;
- identify various forms at which fish is sold in the study area;
- highlight constraints of sustainability of the fish venture amongst fish farmer in the study area;
- assess the source of capital and marketing structure of fish farmers in the study area

Justification of the study

Lagos state has great potentials to develop fish farming to absorb a sustainable fraction of the Nation fish product deficit. Based on World Health Organization (W.H.O) minimum recommendation of 34kg animal protein per caput, Lagos state requires a minimum of 380,000 metric tons annually (LAMAC, 2010). The state is endowed with inland and coastal waters pulse adequate infrastructure; of which there is a high demand for fish and its sale price are favorable. In spite of the potentials of aquaculture there are lots of problems militating against its development. The major constraint to increased fish production in Nigeria is poor rate of capital formation and lack of credit facilities amongst other (FAO, 2005; Olaoye and Odebiyi, 2010). In the less developed countries, the rate of credit is closely related to providing needed resources which farmer cannot source from their own capital (Rahji, 2000). Hence, this study attempts to identify the socio-economic determinant of fish farmers, to identify various sources of capital and water available to farmers, constraints faced by allotees in the farm estate and proffer recommendation to improve the fish farming in the estate.

METHODOLOGY

Study Area: The study was conducted in Lagos State Fish Farm Estate, Ikorodu, Nigeria; the department of Fisheries realized the importance of rural communities in the development of the States fisheries potentials and other rural based industries. Hence, initiated various programmes, such as the: Ikorodu Fish Farm Estate. This is the first concrete Fish Farm Estate established on 34hectares parcel of land at Odogunyan in Ikorodu Local Government Area in year 2004. A total of 750 concrete tanks of 6m×4m× 1m each have been constructed on 262 plots. These have been allocated to 176 allottees thus making the Estate fully subscribed as at May, 2008. Infrastructures such as drainage, water, farm, road, electricity have also been provided. Estimated fish production from this estate is 10,000 tonnes of fish / annum. Ketu- Ereyun Fish Estate: This estate is set to be

one of the greatest aquaculture centers for fish production in West Africa with the largest concentration of fish farmers in one location. It is established on 60 hectares land at Ketu-Ereyun in Ikosi-Ejirin local council development area.

Data collection and analysis

The major instrument use for obtaining the data was a thorough pre-test, well structured and validated interview schedule and face to face interview directed to the fish farmers of the Lagos State fish Farming Estate Odogunyan, Ikorodu which was designed to achieve the objective of the study. Sixty respondents were randomly selected and administered research instrument. The collected data were collated and analyzed using descriptive statistics and tests of differences between means and proportions.

RESULTS AND DISCUSSION

Demographic characteristic of respondents

Table 1 revealed that most (85.0%) of the respondents in the study area fell between 21 and 60years of age with mean age of 42±13.6 years. This implies an average age in which they are considered highly productive and active to undertake strenuous task associated to the farm work, Bello, (2000) ascertain that age has positive correlation with acceptance of innovation and risk taking. Most of the respondents are male (95%) while (58.3%) of them were married and only (3.3%) are divorced. This is a throwback to the tradition belief on woman access to productive resources and however contrary to Lahia *et al.* (2000), which suggest that women participated more than man in most farming activities. Aquaculture practices were not limited to a particular gender, both male and female were engage in fish farming to increase fish production, reduce hunger and improve food security. 73.3% of the respondents had one wife while 26.7% had more than a wife. 51.7% of the respondents have less than three children. Most (73.3%) of the respondents in the fish farm estate had 3-4 dependent while (8.3%) had more than 5 dependent. The implication is that the relatively small household size may increase the number of labour needed as against (Adegbite and Oluwalana, 2004; Adegbite *et al.*, 2007) that the larger the household size, the more likelihood of suitable labour efficiency on farmers farm given the constant labour and of which the most common type of labour in the fish farm estate is the high permanent labour (76.7%). Majority (63.3%) of the respondents spent over 20 years in school. This is contrary to the general opinion that most farmers had no formal education or were unable to complete either primary or secondary education, school system as evidence from their study of Ozor (1998) and Okwoche *et al.*

Table 1: Percentage distribution of the democratic character of the respondents

Age of respondents	Frequency	%	Mean	SD	SE
21 – 30	13	21.6	-	-	
31 – 40	19	31.7	-	-	
41 – 50	10	16.6	-	-	
51 – 60	9	15	-	-	
Above 60	9	15	-	-	
Total	**60**	**100**	**42**	**13.58**	**1.78**
SEX					
Male	57	95			
Female	3	5			
Marital status					
Single	23	38.3			
Married	35	58.3			
Divorce	2	3.3			
Number of wife					
Monogamy	44	73.3			
Polygamy	16	26.7			
Total	**60**	**100**			
Number of children					
1 – 3	31	51.7			
4 – 6	26	43.3			
> 6	3	5.0			

Total	**60**	**100**	**4**	**1.5**	**0.20**
Number of dependents					
1-2	11	18.3			
3-4	44	73.3			
>5	5	8.3			
Total	**60**	**100**	**3**	**1.25**	**0.17**
Household Size					
0 – 4	8	21.6			
5 – 8	44	65.0			
Above 8	8	13.3			
Total	**60**	**100**	**8**	**2.25**	**0.15**
Educational level					
Unable to complete primary education	3	5.1			
Unable to complete secondary education	4	6.6			
NCE/OND	15	25.0			
University	38	63.3			
Total	**60**	**100**			
Number of years spent in school					
1 – 10	2	3.3			
10 – 20	20	33.3			
Above 20	38	63.3			
Total	**60**	**100**	**15**	**2.69**	**0.35**

Source: Field survey, 2010

Continuation of demographic characteristics of respondents

Table 2 shows that 50% of the respondents in the estate were fish farmers while 33.4% are civil servants, 71.7% of the respondents does not belong to any fish farming association.

Table 2: Continuation of demographic characteristics of respondents

Occupation (primary)	Frequency	Percentage (%)
Civil servant	25	33.4
Fish farming	30	50
Total	**60**	**100**
Secondary occupation		
Valid	18	30
Farming	12	20
Fish farming	20	33.3
Politics	10	16.7
Total	**60**	**100**
Member of fish farming association		
Yes	17	28.3
No	43	71.7
Total	**60**	**100**
Member of social organization		
Yes	34	56.7
No	11	18.3
Null	15	25
Total	60	100

Source: Field survey, 2010

Nature of fish farming production

Production Information

Table 3 shows the forms of various source of capital for fish farming, of which 73.3% of the respondents runs the farm from personal saving mainly while 1.7% obtain loan.

Table 3: Production Information (Sources of capital for fish farming)

Production	Frequency	Percentage
Loan	1	1.7
Friends and family	15	25
Self	44	73.3

Form of selling fish

The form at which fish were sold in the fish farm estate can be determined from the figure below, which shows that 76.7% of fish sold in the farm are sold fresh while 18.3% sold either smoked or fresh.

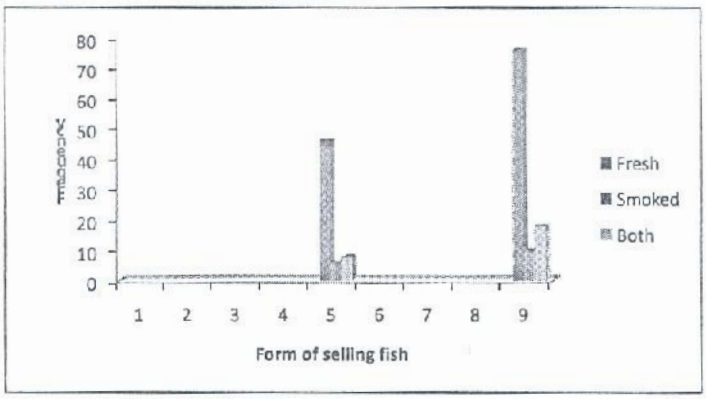

Figure 1: Bar chart representing form of selling fish

Market structure

All the respondents agreed that there is a ready-made market for fish. Table 4 show that; 45.0% of the fish sold at the fish farm estate were sold to fish mongers while, (23.3%) sell to market women, the survey reveals that 70% of the cultured fish weighted at least 1kg per one at harvest while, 30% of them said 2 pieces of fish make 1kg. As seen in the table below, the price per kilo fish ranges from N430- N450 representing 53.4% of the total sample respondent while 26.7% of the respondent assumed price ranges between N400 and N420.

Table 4: Market structure

Market for harvest fish	Frequency	(%)	Mean	SD	SE
Yes	60	100			
To whom do you sell?					
Fish mongers	27	45.0			
Fisher folks/mongers	19	31.7			
Market women	14	23.3			
Quantity of fish					
1.00	42	70			
2.00	18	30			
Price per kg					
420	16	26.7			
450	32	53.4			
480	12	20			
Total	60	100	443.66	25.46	3.31

Source Field survey 2010

Processing of fish before Sales

The survey reveals the strength of fish preservation in the fish farm estate which accounts for (91.7%) of fish farmer who do not process their fish but sell fresh and (8.3%) of respondent readily process the fish. Table 9 shows that (66.7%) of fish are sold in the study area are at high demand while the median accounted for (33.7%) from the data obtain, form the table below (46.7%) of the respondent do not want to disclose the amount in the fish production cycle while (13.4%) of them produced below 1 ton in the fish farm estate.

Table 5: Farm Production

Fish demand	Frequency	Percentage
High	40	66.7
Medium	20	33.7
Last production cycle		
500kg	11	18.5
Above 1 ton	13	21.7
Below 1 ton	8	13.4
Null	28	46.7

Source: Field survey, 2010

Constraint/problems encountered by the respondent in the fish farming Estate

Table 6: Constraint/problems encountered by the respondent in the fish farming Estate

PROBLEMSTATEMENT					
Inaccessibility of credit		**Frequency**		**Percentage**	
very severe					
non- severe		30		50	
Sever		30		50	
Disease problem					
very severe		4		6.7	
non- severe		44		73.3	
Sever		12		20	
High cost of equipment					
very severe		10		16.7	
non- severe		29		20	
Severe		21		48.3	
Marketing problem					
very severe		0		0	
non- severe		57		95	
Severe		3		5	
Poor infrastructure					
very severe		0		0	
non- severe		51		85	
Severe		9		15	
Climatic condition					
very severe		10		16.7	
non- severe		39		65	
Severe		11		18.3	
High cost/poor quality					
feed					
very sever		29		48.3	
non- severe		20		33.3	
Severe		11		18.3	
Inadequate power supply					
very sever		0		0	
non- sever		50		83.3	
Sever		10		16.7	
High cost and poor quality seed					
very sever		4		6.7	
non- sever		44		73.3	
Sever		12		20	
Insufficient extension agent visit					
very sever		42		70	
non- sever		10		16.7	
Sever		8		13.3	

Source: Field Survey, 2010

CONCLUSION AND RECOMMENDATION

The result of this study revealed that majority of the fish farmers in Lagos state fish farming estate, were male and most of the farmers age range was within the economically active range, which favored fish farming development. The source of capital of most fish farmers were personal investment and militating against the output structure in data collection but (21.7%) of the fish farmer produced more than 1 ton in their last production cycle, which is a positive indication with the aim of establishment of the fish farming estate: to produce 10,000 tonnes of fish per annum to improve the welfare of fish farmers and other people, to reduce poverty and increase fish supply to the ever growing population of ikorodu and Lagos state. Adding to the estimated fish yield potential of aquaculture from 1,313,510 hectares of perennial fresh water, brackish water swamp available in Lagos state placed at 3,940,530 tonnes and generally, to the national fish deficit.

From the study, the following are recommended to the Lagos state government:

- to educate fish farmers and owners on the needs and method of fish processing and preservation
- to educate fish farmers on need to feedback government with necessary production data
- to educate the fish farmers on importance of participation in fish farming co-operatives and organization
- to increase the number and frequent visit of extension agents to the fish farming estate

REFREENCES

Adegbite, D. A. and Oluwalana. E. O, (2004). Revolving loan scheme as a poverty alleviation strategy: A case study of women Groups in UNAAB Extension villages", *FAMAN Journal* , Vol. 7 (2). 2004 P.P 18 – 32.

Bello, M.O. (2000). "cauterization of potential Adopters for organic-based fertilizer among vegetable farmers in Ojo LGA state. B. Agric. Project University of Agriculture Abeokuta.

Dada, B. F. (2004). Fisheries development in Nigeria. The challenges and prospect of assessing fund. The chairman address deminered by Otunbe Bamidele Dada OON at the public lecture organized by FISON in Lagos

Delgoda,, C. L. j Wada, N. J Rosegrant, M. W., Meijer, S and Ahmed M. (2008) fish to 2020 supply and demand in changing Global Market world fish centre technical report 62.

FAO (2005). Review of the state or world fishery resource in 2003: marine fisheries resources in 2003: marine fisheries, by S.M Garcia, I. DELEIRA Moremo & R J R Granjer. FAO. Fisheries Technical paper No. 457 Rome

Food and Agriculture Organization (FAO, 2010). The state of world fisheries and aquaculture, FAO Fisheries and Aquaculture Department, United Nations Rome, www.fao.org

Federal Department of Fisheries, (FDF, 2008). Fisheries statistics of Nigeria, Fourth edition (1995-2007), 48p.

Kalirajan, K (1990). "On measuring economic efficiency" Journal of Applied Econometric, 5: 75 – 85.

Lahai, A.N., Goldey, F.A. and Jones, G.E. (2000): The gender of the extension agent and farmers access to and participation in agricultural Extension in Nigeria. *Journal of Agricultural Education and* Extension vol. 6: No 4 pp 223-233

Lamac (2010): Lagos State Ministry of Agriculture and Cooperative Fisheries Development in Lagos State bulletin (2007 - 2010).

Mbanasor, J.A. (2002). Reserve use patterns among poultry enterprises in Abia State Nigeria. *Nigeria Journal of Animal Production* 29(1) pp.64-70.

NAERLS and NPAFS, (2010). Agricultural Performance survey of 2010 wet season Nigeria. NAERLS

press ISBN: 978-978-912-360-5. 151pp.

Odife, N. (2002). "Financing Agricultural venture" A report on Agricultural Financing by the Nigerian Agricultural Cooperative and rural Development Bank. P. 4-10.

Okwoche, V. A., J. P. Voh and S. A. Ogunwale (1998): socio – economic Olaoye O. J; Adekoya, (2010): Dynamics of the adoption process of Improved Fisheries Technology in lagos and Ogun State Nigeria. A Ph. D thesis in the Department Aquaculture and Fisheries.

Olaoye, O.J., Akintayo, I.A., Udolisa, R.E.K. Ezeri, G.N.O and Ogunrinde, A.B.(2010). Factors affecting farmed-fish production and marketing in Abeokuta agricultural extension zone of Ogun state, Nigeria. *Aquafield* 6: 109-134.

Ozor, N. (1998): "Adoption of improved rabbit technolouis by farmers in Nsukka LGA of Enugu state" B. Agric project, University of Nigeria, Nsukka.

Rahji, M. A. Y.(2000): "an analysis of the Determinant Of Agriculture Credit Approval/Loan Size by Commercial Banks in Southwestern Nigeria "Journal of Nigeria Development Studies 1(1):6-25.