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IMPACT OF AFRICA REGIONAL AQUACULTURE CENTRE ON FISH FARMERS LIVELIHOOD IN OBIO/AKPOR LOCAL GOVERNMENT AREA, RIVERS STATE

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ABSTRACT

This study is design to examine the impact of African regional aquaculture Centre on fish farmers livelihood in Obio/Akpor, Rivers state. Data were collected with the aid of structured questionnaires administered to 150 respondents using a purposive selection of 10 communities in the study area. Data collected from the study area were analyze using descriptive statistical tools (mean, frequency and percentage). The socio-economic characteristics considered in the study include gender, age, marital status, educational level, household size, farming experience, source of income and source of information. The major source of income of the respondents is farming. Fish farmers in the study area obtain information through extension agents, radio, pamphlets and meetings. Findings indicate that ARAC has played major roles in motivation, in food security, employment etc. Constraints faced are; theft, high tax, lack of loan, government intervention to fish farming problems etc. Of which all limits the efficiency of fish farming.

Keywords: fish farmers, Africa Regional Aquaculture Centre, Livelihood

INTRODUCTION

Fish is very important in the diet of many Nigerians, high in nutritional value with complete array of amino acids, vitamins and minerals (Akinrotimi, 2007a). In addition, fish products are relatively cheaper compare to beef, pork and other animal protein sources in the country (Amao, 2006). FAO (2007) reported that fish contribute more than 60% of the world supply of protein, especially in the developing countries. In Nigeria, fish supply is from four major sources viz., artisanal fisheries, industrial trawlers, aquaculture and imported frozen fish. Production from aquaculture is increasing compared to artisanal sources and supplied between 5 – 22% of total domestic fish production between 2000 – 2007 (FDF, 2007). This increasing production is not able to meet the increasing rate of consumption because of the wide gap between fish demand and supply, which is on the rise as a result of population explosion in the country in recent years Falaye & jenyo (2009). Aquaculture in Nigeria, which started in panyam fish farm in jos in 1951, has now spread to all parts of the federation, including the Obio/Akpor region of Rivers state where the African Regional Aquaculture Centre (ARAC) is situated, which is the center of research for this discussion. The need for aquaculture development in the African region led to the birth of ARAC in 1980 which originated as a result of recommendations of the aquaculture planning regional workshop that was held in Accra, Ghana in 1975. The establishment of ARAC was also in line with the recommendation of the FAO technical conference on aquaculture held in Kyoto, Japan in

1976 when a world strategy for aquaculture development was conceived. The pilot operations phase of ARAC started in 1979 with the assistance of FAO/UNDP and the project took off in 1980 and was operationally completed on 31st august, 1987. ARAC has contributed greatly in reaching the nutritional demand of farmers and people in the Obio/Akpor LGA and other Areas in Rivers State as it produce about 30% of sea food in the State and 85% to the rural people in the Obio/Akpor LGA. ARAC in the recent years has contributed greatly in creation of jobs to farmers, as a means of livelihood through which the farmers make income in sustaining there rural homes. Although production in the country is largely based on small-scale operations in most parts, there is a wide consensus that aquaculture has the potentials to meet the growing demand for nutrition food fish, contribute to the growth of economy and support the sustainable livelihoods of many communities, especially in the rural parts of the country (FAO, 2006). Aquaculture is the science, art and business of farming or cultivating fish under controlled conditions. For statistical reasons, FAO defines aquaculture as the farming of aquatic organisms, including fish, crustaceans, molluscs and aquatic plants in halwart, et al (2000). Aquaculture has been referred to as alternative agriculture but this does not suggest that it is a new activity. The farming and husbandry of fresh water and marine organisms has been practiced for centuries. Oyster culture in ancient Rome and carps reared in ponds in china during the 5th century B.C have been documented, Daniel (2001). There has been an increase in the production of world fisheries, but wild stocks of aquatic organisms are still limited. Ecological theory suggests that we have already reached a maximum sustainable yield for many aquatic wild populations. The survival of wild fish populations is today threatened by over fishing or is caught in ways that are environmentally undesirable. Therefore, in order to meet the demand for dietary protein in the world, aquaculture makes a significant impact. Methods to farm organisms have been developed and, since the technologies are sustainable, farmed products can supplement the decreasing wild supply. Aquaculture has the potential of producing large quantities of lower-cost, protein rich food and this has been done in many parts of the orient, but elsewhere, applied scientific, technological and managerial skills need to be improved if aquaculture is to assume importance. Christiane (1998) further stresses that aquaculture can potentially contribute to the livelihoods of the rural farmers and people because it generates food of high value, especially for the vulnerable groups such as pregnant and lactating women, infants and pre-school children. Aquaculture therefore is the most important source of growth in fish supply for human consumption.

Nigeria like other developing countries depends on agriculture for food and foreign exchange. Aquaculture is an important revenue earning sector especially at such a time when the nation seeks to diversify its productive base from the monolithic nature of total dependence on the oil sector to other sectors like agriculture. Though, aquaculture is an important revenue earning sector, the socio-economic approaches to aquaculture have not been given high priority and focus on techniques that allow the full participation of communities in the identification, analysis and evaluation of agricultural projects especially ARAC. Giving the foregoing, the study seeks to examine the impact of African Regional Aquaculture Centre to farmer's livelihood in Obio/Akpor local government of Rivers State.

Objectives of the study

The aim of this study is to assess the impact of African regional aquaculture centre on farmers' livelihoods in Obio/Akpor area of Rivers State. Specifically, the study seeks to;

i. Identify socio-economic characteristics of respondents in the study area.
ii. Determine the impact of African regional aquaculture centre on livelihoods of respondents.
iii. Identify the constraints faced by fish farmers in the study area.

METHODOLOGY

This study was conducted in Obio/Akpor local government area of Rivers State, Nigeria. Rivers state is divided into 23 local government areas and is situated in the south-south geopolitical zone of Nigeria. Rivers State is a predominating cow-lying pluvial state in southern Nigeria, local in the eastern part of the Nigeria-delta on the ocean ward extension of the Benue trough. The inland part of the state consist of tropical rainforest, and towards the coast, the typical Niger delta environment features many mangrove swamps. The land surface of Rivers State can be divided into 3 zones which are the freshwater swamps, mangrove swamp and coastal sand ridges. It has an annual rainfall of about 4,700mm (185in) on the coast, to 1,700mm (67in) in the extreme north. It has 4,698mm (185in) at bonny along the coast and 1,862mm (73in) at Degema. The state is one of the most notable states in Nigeria due to its natural resources. It has a population of 7,043,800 according to census data release in 2015, (Online Nigeria 2018). Obio/Akpor is made up of 3 clans which include Obio, Apara and Akpor kingdom. Obio/Akpor local government area in Rivers State with its headquarters in Rumuodumaya. The study will compose of all the fish farmers in Obio/Akpor local government area of Rivers State. Stratified random sampling technique was used to select representative of fish farmers in Obio/Akpor local government area for the study, the first stage, simple random selection of the representative will be based on the communities which they come from. This would be carried out to give 10 communities namely Choba, Rumuolagu, Rumuekini, Rumuoji, Alakahia, Rumuosi, Ozuoba, Rumudogo, Rumuibekwe and Rumuokrusi. The second stage, a random selection of 15 fish farmers from each of the communities would be carried out giving a total of 150.

Primary data would be collected using a well-structured questionnaire and would comprise of the personal data of fish farmers in the study area; the level of awareness of ARAC to fish farmers in the study area; secondary source of data collection would involve the use of journals, articles, reviewed literature materials, previous research projects, which are of importance to the research study. Personal interview and observations were carried out on fish farmers and data collected from the study were analyzed using descriptive statistics such as mean, frequency and percentage.

RESULTS AND DISCUSSION

Socio-economic characteristic of respondents

Result from table 1 shows that 59.3% of the respondents were male and 40.1% were female in terms of gender. The respondents 66.0% fall between the age bracket of 31-40 and 20.7% fall between age brackets of 21-30 in terms of age grouping. And it implies that people in this age bracket tend to be in their youthful age and participate in most programs organized by ARAC. The respondents 45.3% were married while 54.7% were single. Its distribution shows that married individual and single individuals are involved in ARAC programs organized at community level. The respondents 13.3% had no education, 40% attain primary education, and 30.7% attain secondary school education, while 16% of the respondents attain education up to the tertiary Level. Findings showed that 54% have a household size of 1-5, 43.3% have a house hold size of 6-10,

while 2.6% have a house hold size of 11 and above. Responding to their farming experience, 60% of the respondents have a farming experience of 6-10 years, 25.3% have a experience of 1-5 years, 14.7% have 11 and above in terms of year of experience in fish farming, 34% get their income from farming, 32% got their income from trading, 33.3% get their income from fishing while 1% got their income from teaching in terms of source of income.

Fish farmers interviewed 21.3% got information on fishing farming activities from program organized in radio station that is aired out, 64% got their information from extension teaching 8.7% got their information from meetings while 6% get updated information on fish farm publication of pamphlets.

Table 1: Socio-economic characteristics of respondents

Variable	Frequency (n=150)	Percentage (%)
Gender		
Male	89	59.3
Female	61	40.7
Age		
21-30	31	20.7
31-40	99	66
41-50	15	10
51-60	5	3.3
Marital status		
Married	68	45.3
Not married	82	54.7
Educational level		
None	20	13.3
Primary	60	40
Secondary	46	30.7
Tertiary	24	16
House size		
1-5	81	54
6-10	65	43.3
11 and above	4	2.6
Farming experience		
1-5	38	25.3
6-10	90	60
11 and above	22	14.7
Source of income		
Farming	51	34
Trading	48	32
Fishing	50	33.3
Teaching	1	7
Source of information		
Extension Agent	96	64
Radio	32	21.3
Pamphlets	9	6
Meetings	13	8.7

Impact of ARAC on fish farmer's livelihood

Results from table 2 show that a mean of 3.63 suggest that the activities of ARAC has led to increase knowledge of fish farmers in the study area through its extension programs on pond fish culture practices such as, pond biology, pond preparation, species selection and stocking density, water color monitoring, pond fertilization, feed and feeding, disease control, harvesting and restocking. Aquaculture has also led to increase knowledge of fish farmers on technology use and application (Alam, et al., 2017). The study shows that ARAC provides solutions to problems faced during farming (M=3.49). Problems faced by the local farmers such as spawning and high rate of mortality of brood stocks are given solutions by ARAC centre through its extension lecturers and meetings held by extension agents with the fish farmers of Obio/Akpor. Aquaculture has also solved the problems associated with cultural practices etc. Pandey & Kushwaha (2010). A mean of 3.46 agreed that ARAC have created employment through fish farming and distribution of high valued fish and by employing workers to work in the centre. Obongifreke (2015) Also suggest that fish is an economic and employment opportunity. A mean of 3.45 admit that ARAC is a source of motivation in fish farming in Obio/Akpor of Rivers State.

Through its activities, fish farmers tend to learn from its inaugural lectures and also see the reason to further and improve fish farming practices(Cliffe & Ansa, 2010). A mean of 3.45 admit to the fact that ARAC has helped them in practicing low cost fish production. Due to its smallholder operating size and free from high advanced-technology machinery, thereby making it labour intensive account to this, villagers who do not have access to land can at least earn a living by providing manpower to other aquaculture farms (Ahmed & Lorica, 2002). A mean of 3.37 of the total respondents attest that ARAC contribute to the increase in the availability of low cost fish in the local market through its rapid multiplication techniques (spawning). A mean of 3.37admit that ARAC have also improve level of production among fish farmers through its scientific knowledge and multidisciplinary training which aid to improve production as to one of the purpose of establishing the centre (Wali, 1992). ARAC also increase the standard of living through income generation by employing workers to work in the site and by sales of affordable quality fish to the farmers who later resale them for income and this amount to a mean of 2.93.A mean of 2.73 agreed that ARAC have contributed its share to securing food for the country. Food security is the situation where all the people existing, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life, as claimed by the definition of Food and Agriculture Organization (FAO) (Schmidhuber & Tubiello, 2007). Aquaculture in small farmer system in rural areas provides a high quality of animal protein and essential nutrients, especially for nutrition vulnerable groups, such as pregnant and lactating women, infants, and pre-school children. In fact, almost half of the child deaths around the globe are linked to malnutrition. In numerical reading, it is around 3 million young lives every single year (“UNICEF STATISTICS 14”, 2015).

It was proven that after supplied with sufficient needed nutrition which can be found in fishes, such as vitamin B12, calcium, and potassium, unfortunate cases like child blindness and infant mortality has substantively decreased (Ahmed & Garnett, 2011). ARAC provide income through sale of high value fish product, which indicates a mean of 2.57. A mean of 2.41 disagreed to the fact that ARAC contribute greatly in the reduction of poverty through employing laborers to work in the centre. African regional aquaculture Centres has created job opportunities for illiterate men and women to earn side income for their household. Thereby reducing poverty. A mean of 2.34 of the respondent disagreed that ARAC help farmers to provide communities with

improve nutrition through the provision of valuable fish proteins. Small fishes when eaten together with their head and bones, added more micronutrients, vitamins and mineral that could not be found in larger fish (Ahmed & Garnett, 2011). ARAC help fish farming household to improve their diets through increased food accessibility with a mean of 2.03. This indicates that the respondents disagreed with the fact.

Table 2: Impact of ARAC on fish farmer's livelihood in Obio/Akpor local government Area of Rivers State.

Statement/variables	Mean	Remarks
The activities of ARAC has led to increase knowledge about fish farming	3.63	Agreed
Have helped you in practicing low cost fish production	3.49	Agreed
Improve level of production	3.46	Agreed
Provide motivations in fish farming	3.45	Agreed
Provide solution to problems faced during farming	3.49	Agreed
Created employment through fish farming and distribution	3.46	Agreed
Contributed to increase availability of low cost fish in local market	3.37	Agreed
Contributed its share to securing food for the country	2.73	Agreed
Contributed to increase living standard through income generation.	2.93	Agreed
Provided income through sale of high value fish produce	2.57	Agreed
Contributed greatly in poverty reduction through employing laborers to work in the centre	2.41	Disagreed
Help farmers provide communities with improve nutrition through the provision of valuable fish protein	2.39	Disagreed
Help fish farming house hold to improve their diets through increase food accessibility	2.03	Disagreed

The constraints faced by fish farmers in Obio/Akpor local government area of Rivers State.
Result from table 3 shows that a mean of 3.73 admit that lack of government loan is a constraint faced by fish farmers in Obio/Akpor LGA of Rivers State. A mean of 3.58 agreed that high cost

labor in carrying out farming activities is one of the major constraints faced by fish farmers in Obio/Akpor. Lack of reliable fish farmers to give loan amount to a mean of 3.47 which means that they accept it as a constraint. A mean of 2.90 assets the respondents complain of poor extension service. A mean score of 2.89 reflects respondent's admission that the effects of oil pollution affect their activities. A mean of 2.74 admit they lack government intervention for fish farmers in Obio/Akpor LGA of Rivers State. A mean of 2.63 attest to the fact that they face a low level of local consumption demand. High level of tax imposed on fish farmers by government indicate a mean of 2.61 of the total respondents who are faced by challenges. A mean of 2.55 respondents accepted that fish reared by farmers are attacked by predators. While an average of 2.45 of fish are stolen by thieves. An average of 2.33 respondents complained of poor access to credit facilities, the fish farmer complain of high cost of marketing fish product which indicate a value of 2.31. A mean value of 2.27 respondents admits that the community belief and value system on culture affect the activities of farming.

Table 3: The constraints faced by fish farmers in Obio/Akpor local government Area of Rivers state.

Statement/variables	Mean	Remarks
Lack of loan	3.73	Agreed
Effect of oil pollution	2.89	Agreed
Lack of reliable fish farms to give loan	3.33	Agreed
Lack of instrument for managing the risk by fish farmers	3.47	Agreed
High cost of Labour	3.58	Agreed
Poor extension services	2.90	Agreed
Lack of government intervention to fish farming problems	2.74	Agreed
Predation of fish by animals	2.55	Agreed
Effect of community beliefs and value system on cultured fish	2.27	Disagreed
Theft	2.45	Agreed
High cost of marketing fish produce	2.31	Disagreed
Low level of local consumption demand	2.63	Agreed
High level of tax	2.61	Agreed
Poor access to credit facilities	2.33	Disagreed

CONCLUSSION

The research carried out was to determine the impact of African Regional Aquaculture Centre on livelihoods of the fish farmers in Obio/Akpor LGA, Rivers state. It shows that ARAC has contributed greatly in improving the level of fish farming practices, the diet of the people in Obio/Akpor through its activities and extension services. It has also created awareness on the use of improved technology in fish farming, aided in poverty alleviation and creation of employment thereby limiting crime and street restiveness among youths in Obio/Akpor.

RECOMMENDATIONS

1. Government should enact policies that will enable local fish farmers access and obtain loan from the government.
2. Government, Nongovernmental organizations, cooperative organizations, farmers association and farmers clubs should organize training workshop for fish farmers in other to improve their level of knowledge in fish and recommend relevant machines that will be useful in carrying out operation in the farm.
3. Oil pollution and spillage should be controlled.
4. Tax imposed on fish farmers should be reduced to a minimum and affordable amount.
5. Extension services should be provided for farmers in areas where most people engage in fish farming.
6. There should be a flexible access to credit facilities.
7. Finally, the presence of the government intervention on fish farmers in the area should not be neglected.

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