

**IMPACT OF FADAMA II PROJECT ON AQUACULTURE DEVELOPMENT IN
OGUN STATE, NIGERIA.**

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ABSTRACT

FADAMA farming has contributed largely to sufficient food production over the years thus FADAMA II project, to reduce the level of poverty through empowerment and supported improved management and increase food production. This study was carried out to assess the impact of FADAMA II project on aquaculture development in Ogun State, Nigeria. 120 fish farmers (30/zone) were selected using Multi-stage sampling techniques and structured interview guides to elicit information from the farmers. Data collected were analyzed using descriptive and inferential statistics. The study revealed that majority of the respondents was males (60.8%) and in their active age of 41–50 (39.2%) and 31-40 (35%) while 84.2% were married. 44.2% had secondary education and 40% tertiary education. 63.3% had household size of between 6-10 persons, majority (65.8%) of the respondents generated an annual income of between ₦100,000.00 and ₦500,000.00 and 22.5%, between ₦500,000.00 and ₦1,000,000.00 from FADAMA farming. Majority (62.5%) cultured *Clarias spp* only. It was also revealed that 49.2% of the respondents considered both lack of finance and high cost/lack of construction equipment as serious factors affecting fish farmers. 84.2% were supported with pilot assets, 66.7% received information “Always” on fish farming via telephone (GSM) and 75.8% were “occasionally” through extension guides/bulletin. The results of the Chi square (X^2) revealed that there was significant relationship between FADAMA II project and aquaculture development ($P < 0.05$); provision of Pilot Asset Acquisition Support ($X^2 = 52050$, $P = 0.002$) and provision of drag nets ($X^2 = 20355$, $P = 0.000$) while, there was no significant difference between the provision of input support ($X^2 = 0.899$, $P = 0.638$) in relation to aquaculture development. Based on the research, more extension workers (FADAMA Facilitators) should be employed to give the technical knowledge to the fish farmers on how to use some equipment and dissemination of innovations on how to improve their fish farming system and productivity.

KEYWORDS: FADAMA, Impact, Aquaculture, Development.

INTRODUCTION

Aquaculture/fish farming is the rearing or farming of aquatic organisms (Plants and animals) in enclosed water bodies such as ponds, dams, cages, pens, concrete tanks, raceways, aquaria, reservoirs, etc. It can be done in fresh water, brackish water or marine water (Omotayo, Akegbejo-Samsons and Olaoye, 2006). Fish farming was introduced to Nigeria in the early 1950s and fish production through fish farming which has risen steadily which was prior to 1990s, was driven by socio-economic objectives including nutrition, improvement of rural communities; generation of additional family income, creation of employment and diversification of income generating activities. It was promoted by international organizations, agencies and the government at various levels. Today, fish farming is the fastest growing animal production sector in Nigeria, with a growth of about 29% in 2006 alone and with prospects of continued growth. This is because demand for fish is on the increase in line with population growth, while catches from fisheries are on the decline, even globally (Delgado, Wada, Rosegrant, Meijer and Ahmed, 2003).

Fish as a source of protein is not in any way inferior to meat. It is a good source of protein in human diets in developing countries. The lack of access at all times to sufficient quantity and quality of safe and nutritious food for an active and healthy life can cause under-nutrition and micronutrient deficiencies, which affect every age group throughout the developing world (Ayorinde, 2012). Most of the fish consumed by Nigerian citizens, which account for 55% of the total protein intake sources, is from fishing in our national water bodies (Marine, estuarine, lacustrine and riverine biotype) which is far being over fished as Total Allowable Catch (TAC) has always exceeded the Maximum Sustainable Yield (MSY) of 415,000 Metric tonnes. Fish farming is therefore, the only feasible and sustainable fish production alternative which can ensure the satisfaction of our fish self-sufficiency quests. Thus

profitable investment opportunity exists in this sector (Gbolade. and Adekoya, 2007; Hansen and Allen, 2006). Training people to become better fish farmers is not only an empowerment strategy, it is also the only way by which some of our natural resources can be creatively tapped for the good of all (Omotayo *et. al.*, 2006).

Small holder agriculture is the dominant occupation of rural Nigerian which is mainly rain fed and characterized by low-land and labour productivity. This is because the country is endowed in underground and surface water reserves, rich pasture and favourable agro-ecological conditions in the country's low-lying plains with alluvial deposit called FADAMA (<http://www.fadama.org>, .2007). FADAMA is a Hausa terminology that refers to wet seasonally mandated area of the flood plains of rivers and streams and topographical/depression. It is a borrowed word from the Hausa language called "Akuro" or "Abata" in Yoruba language, which means a bottomland very close to river which is commonly used for early cultivation. However, it is often used in synonymous to "wet-land" or low-land". This includes flat plains of alluvial deposit bordering stern channels,, shallow flat land valleys, drainage digressional area and coastal plains. The most important feature of the FADAMA is the presence of shallow underline acquiver that is subject to periodic recharge from the adjoining rivers or run-off or sub-terrain. According to Idowu (2001), Kumar, (1992), FADAMA is a land, subject to excessive water to the extent that the wet conditions influence the possible land use that the distinguishing feature of FADAMA among others is that it has free water at or on the surface for major part of the growing season.

NATIONAL FADAMA DEVELOPMENT PROJECT

The FADAMA I Project: One of the priority areas of the Federal Government of Nigeria initiative is the establishment of small scale irrigations schemes in the FADAMA areas and putting necessary infrastructures in place in order to harness the vast potentials of these lowland areas. The Federal Government of Nigeria (FGN) in 1991 therefore, took a World Bank loan of USD 67.5 millions equivalents to finance the first phase of National FADAMA Development Project (NFDP). The Programme was planned to be run in the Northern part of the country mainly for vegetables production. The loan took effect in 1993 and terminated in 1998. There were competition and conflict between the cattle rearers especially the Nomadic farmers and the hunters and FADAMA Farmers during the first phase of the program because of its limitation to vegetables production alone (NFDP II, 2003)

The FADAMA II Project: The National FADAMA Development Programme is a World Bank, Africa Development Bank, Federal Government, State and the Local Government's funded Programme in Nigeria. Due to the competition and conflict in the Phase I, Africa Development Bank joined with Federal Government and the World Bank in an attempt to include other aspect of farming into the Fadama such as Livestock, Farming, Fisheries, Hunting, Crop Farming, Pastoral Farming, and Agro Processing (NFDP II, 2003)

Presently, FADAMA II is on-going in Ogun State as one of the twelve (12) beneficiary states in Nigeria. The other states include Abia, Adamawa,, Bauchi Gombe, Imo, Kaduna, Kebbi, Lagos, Niger, Oyo and Taraba. This programme is presently taken effect in Ogun State. Ogun State Agricultural Development Programme (OGADEP) which is aiming at boosting agricultural production through the use of small scale irrigation technology known to be cost

effective thereby increasing the income and standard of living of the beneficiaries (OGSFDO, 2005).

In spite of all the benefits associated with agriculture, the level of adoption of aquaculture among household appears to be very low and then fish production in Nigeria has not reached the expected level to meet the consumers demand and for income generation so as to reduce poverty among fish farmers in the country especially in Ogun State. FADAMA farming has contributed largely to sufficient food production over the years, since its major objectives (FADAMA II project) are to reduce the level of poverty through empowerment and to support improved management and increase food production. The coming together of the Federal Government, World Bank and Africa Development is to improve agriculture development by assisting in funding FADAMA project for optimum land use to enhance the productivity and welfare of limited resource farmers in low income countries (Sall, *et al.* 2000). Therefore, it becomes imperative to assess the impact of FADAMA II on aquaculture development so as to channel the World Bank/Federal Government to the right hand for sufficient food production and income generation. This research work therefore aimed at examining the contributions impacts of FADAMA II project to fish farming in Ogun State, Nigeria. The study will boost government in assisting fish farmers in FADAMA production, identify the problems faced by these fish farmers and provide solutions to them, to people involved and those that may be interested in fish farming production.

MATERIALS AND METHOD

The study area is Ogun state. It is situated within the tropics and located in the rain forest belt, 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 (Figure 1). The study area is divided into four zones (Ilaro, Ikenne, Abeokuta and Ijebu-Ode) according to Ogun State Agricultural Development Programme (OGADEP) zoning where ten Local

Government Areas (Abeokuta North, Ifo, Ijebu North, Ijebu North- East, Ipokia, Obafemi Owode, Odogbolu, Yewa North, Ijebu Ode and Ogun Waterside) involved in the FADAMA Programme are spread. Four Local Government Areas (one from each zone) were selected based on the Advisory Services Activities (ASA). The target population of this study included all male and female involved in fish farming under the FADAMA II Project in each of the selected zones of Ogun State. Simple random sampling was used to select thirty (30) respondents (fish farmers) from each of the selected four Local Government Areas making a sample size of One Hundred and Twenty (120) respondents. Data were collected through the use of structure interview guide designed to achieve the objective of the study.

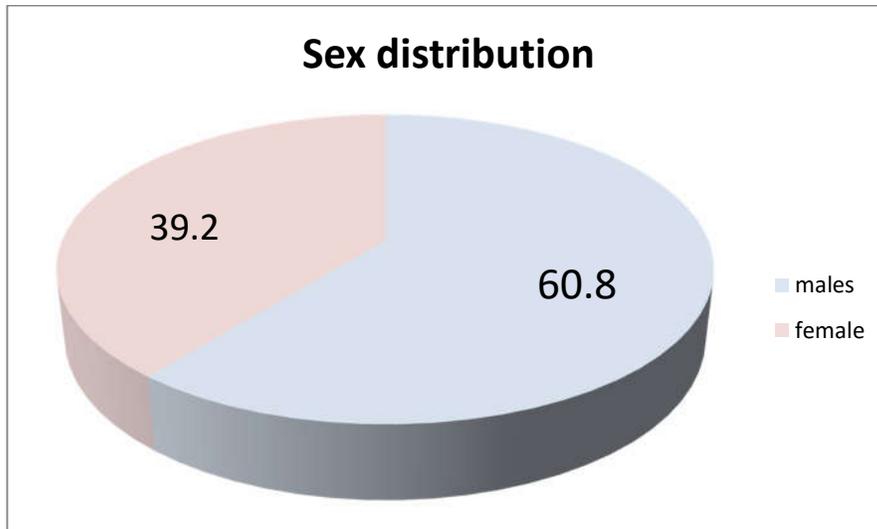


Figure 2: Pie chart representation of sex distribution of the respondents.

Out of 120 respondents that were interviewed, 39.2% were within the age range of 41-50 years, 35% in the range of 31-40 years, and 22.5% above 50 years while 3.3% were within 21-30 years (Figure 3). This indicates that the majority of the respondents were within economically active age distribution {FAO, 1997}.

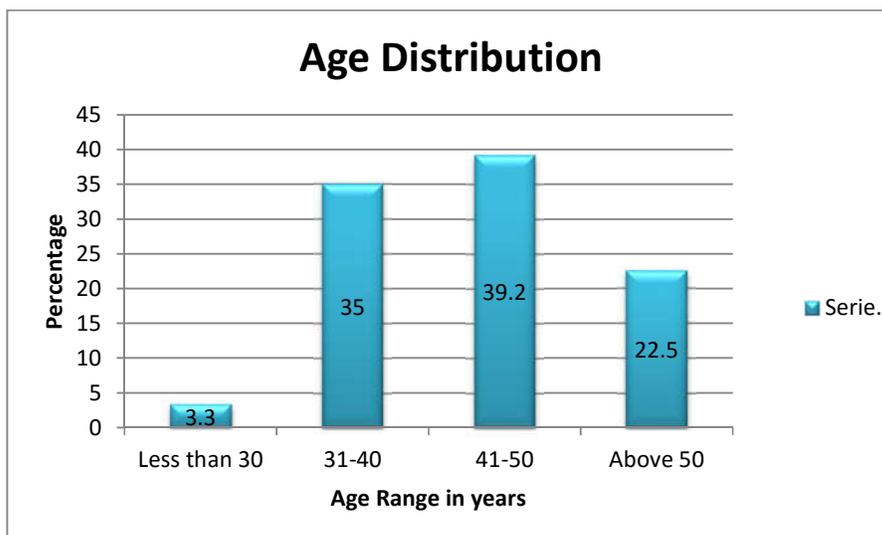


Figure 3: Bar chart representation of Age distribution of the respondents

84.2% of the fish farmers were married, 8.3% divorced, 5.8% widow and 1.7% single (Figure 4). This shows that fish farming serves as means of livelihood.

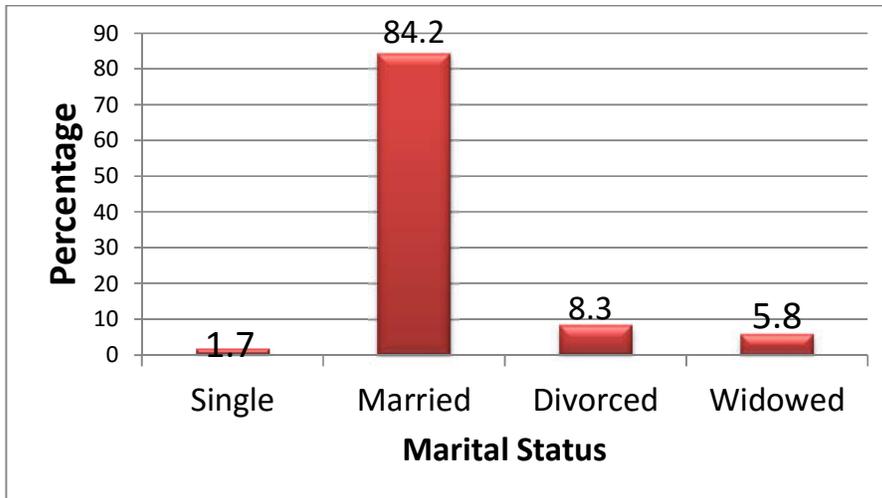


Figure 4: Bar chart representation of Marital Status of the respondents.

44.2% had secondary education (Figure 5), 40% had tertiary education, 10% had primary education while 5.8% had adult literacy. It showed that fish farming required technical know-how and skills thus, people who are illiterate cannot cope with fish farming.

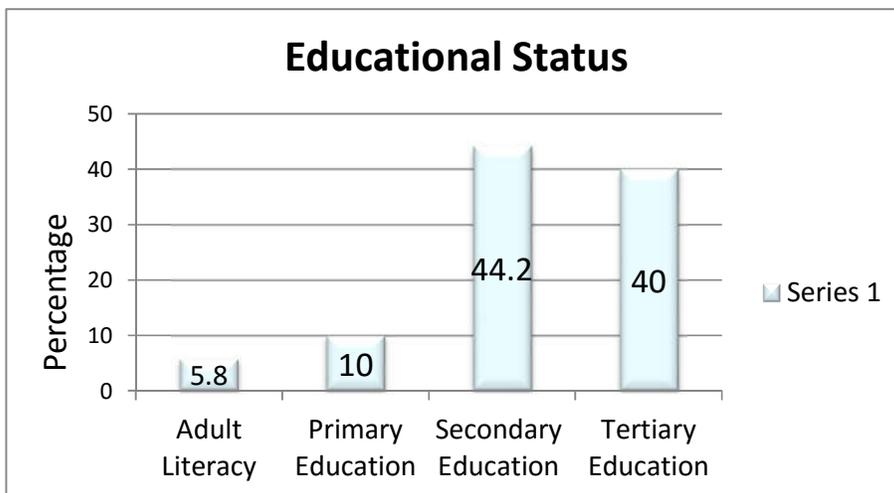


Figure 5: Bar chart representation of Educational Status distribution of the respondents.

Household size (Table 1) involved in FADAMA farming ranged from 6-10 persons (63.3%), above 10 persons (19.2%) while 17.5% had household size ranged from 1-5 persons. These

results showed that FADAMA farming embraced large family that was used as farming labour in order to reduce the cost of hiring of labour.

Table 1: Distribution of the respondents by Household Size

	FREQUENCY	PERCENTAGE
1-5	21	17.5
6-10	76	63.3
Above 10	23	19.2
Total	120	100

Source: Field Survey, 2014.

The study revealed that the annual income generated from FADAMA farming was ₦100,000.00 – ₦500,000.00 (65.8%), 22.5% generated between ₦500,000.00 and ₦1,000,000, while 3.3% earned less than ₦100,000.00 and 3.3% above ₦1,000,000.00 (Table 2). This showed that FADAMA farming was highly profitable and levels of income generated enhanced the economy of the fish farmers.

Table 2: Distribution of the respondents by fishery income level

FISHERY INCOME RANGE IN NAIRA (₦)	FREQUENCY	PERCENTAGE
Less than 100,000	4	3.3
100,000 – 500,000	79	65.8
500,000 – 1,000,000	27	22.5
Above 1,000,000	4	3.3
Total	120	100

Source: Field Survey, 2014

62.5% cultured *Clarias spp.*, 0.8% cultured *Heterotis spp.*, 18.3% cultured *Tilapia/ Clarias spp.*, 2.5 % cultured both *Tilapia spp/ Clarias* and *Tilapia spp/ Heterobranchus spp.*, 5% cultured *Clarias spp/ Heterotis spp*, 3.3% cultured *Clarias spp./ Heterobranchus spp.* while 1.7% cultured *Tilapia spp.* only, *Tilapia spp/ Clarias spp/ Heterotis spp* (1.7%) and *Tilapia*

spp/ Heterobranchus spp.(1.7%). 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 reason being that the species has a high market value and it can attain market size under few months of culture.

Most of the fish farmers (60.8%) claimed that access to appropriate land is not a problem, while 39.2% claimed that it is a serious and indeed very serious problem. Old age is not considered a problem by majority (92.5%). 49.2% of the respondents considered both lack of finance (capital and credit) and high cost /lack of construction equipment as serious factors affecting fish farming. However, most of the fish farmers (74.2%) claimed that high inflation rate in the economy and high cost of fish feed (53.3%) were very serious problems facing aquaculture development. Poaching (92%) and high cost of feed were considered very serious problems. There is an indication here that the situations were made more difficult by the unwillingness of financial institutions to grant loans to the farmers, even when loans are given it is usually at very high interest rates.

0.8% of the respondents had received training on fish farming management, 19.2% on feed production, 23.3% on fish production and management, while 37.5% had received two or more trainings (Table 3). This implied that fish farmers were trained on how to use some equipment, dissemination of new ideas on how to improve the fish farming systems and productivity.

Majority (54.2%) of the respondents was not granted input support while 45.8% were granted. 25% of the respondents were supported with improved fish feed above 500kg, 13.3% ranged between 250 and 400kg, 10.8% , 150-200kg, 5.8%, 400-500kg, while 45% were not given improved fish feed. The results also revealed that 15.8% of the respondents were supplied with improved fish seeds ranging from 1000- 2000 fingerlings, 10%, above 3,000

Table 3: Distribution of Respondents by Area of Training

FISH FARMING TRAINING	FREQUENCY	PERCENTAGE
Fish breeding	11	9.2
Fish feed production	23	19.2
Fish handling and preservation	01	0.8
Fish production and management	28	23.3
Fish farm management	12	10
Two or more of the above	45	37.5
Total	120	100

Source: field survey, 2014.

fingerlings, 5.8%, 2000-3000 fingerlings while 68.3% were not supported with improved feed seeds. Majority (84.2%) of the respondents were given pilot assets while 15.8% were not. Most (47.5%) and 41.7% of the respondents benefited from pilot assets ranging from the purchase of pumping machines and procurement of cutlasses respectively, 39.2% benefited from others, 30.8% benefited from feed mill machines, while 28.3% benefited from both the purchase of weighing machines and knapsack sprayers. Majority of the respondents did not benefit from the purchase of pelleting machines, only 4.2% of the fish farmers benefited from both the purchase of generators and hatchery ponds, 8.3% benefited from both the procurement of wheelbarrows and shovels, 9.2% benefited from the purchase of overhead tanks while 10.8% benefited from the construction of the earthen fish ponds.

Majority 93.4% of the respondents claimed that the benefits from FADAMA projects increased their profit/ revenue, 85.8%, increase in overall yield, while 84.2%, expansion of business, 76.7%, improvement in livelihood, and 65.9%, reduction of culture period. Majority (75.8%) of the respondents: “occasionally” obtained information on fish farming through

Extension Guides, 64.2% through FADAMA facilitators, 58.3% through Television, while few (28.3%) through friends and relations as their sources of information in fish farming.

The result showed that majority (66.7%) of the respondents received information “always” on fish farming via telephone (GSM), 54.2% via friends and relations, 35.8% via FADAMA facilitators, 27.5% via newspaper, while few (0.8%) via village criers as their source of information on fish farming, 37.5% were not through newspaper, while few (1.7%) were not through telephones (GSM) as sources of information. This implied that modern technology has positive effect on the farmers and that rural communities have been provided with research extension network as they are responsible for research information and delivery to fish farmers in an effective and easy way to understand and provide feedback mechanisms to researchers on problems faced by farmers. The study revealed that all the 120 respondents that were interviewed made use of FADAMA facilitators as source of information in fish farming either “Always” or “occasionally”.

Results of the Chi Square (Table 4), indicated that there was a significant relationship between FADAMA II Project and Aquaculture Development and provision of Pilot Asset Acquisition Support (PAAS) ($X^2 = 52.050$, $P = 0.002$), provision of dragnets ($X^2 = 20.355$, $P = 0.000$) while provision of inputs support $X^2 = 0.899$, $P = 0.638$), improved fish seeds ($X^2 = 11.958$, $P = 0.063$) showed that there’s no significant relationship between FADAMA II project and Aquaculture development.

Table 4: Chi-Square analysis of the contributions of FADAMA II projects to Aquaculture development.

VARIABLES	X ² CALCULATED	DF	P VALUE	DECISION
Provision of PAAS	52.050	26	0.002**	Reject H ₀ (S)
Provision of Input Support	0.899	2	0.638	Accept H ₀ (Ns)
Improved Fish Seeds	11.958	6	0.063	Accept H ₀ (Ns)
Provision of Dragnets	20.355	4	0.000**	Reject H ₀ (S)

Source: Field survey, 2013

X² = Chi- Square value, DF= Degree of freedom

P= Probability- level of significance (shows the strength of the relationship)

**= significant (s) at $P \leq 0.05$ NS= Not Significant

CONCLUSION.

This study revealed that majority of the fish farmers involved in FADAMA farming were males and most of the fish farmers’ age range was equally within the economically active range, which favours aquaculture development. The study also revealed the undermining role played by finance {capital and credit} and high cost/lack of construction equipment which constitute serious threats to aquaculture development. It was shown in the study that most of fish farmers obtained information “Always” on fish farming via telephones {GSM} and “Occasionally” via extension guides/bulletins. The study showed that FADAMA II project

rapidly increased productivity and promoted development in the rural community where FADAMA farming was being practiced.

RECOMMENDATIONS

It is recommended therefore that:

- Government should concentrate most of its assistance to fish farmers on the supply of inputs like cutlasses, fertilizers, sprayers, limes, anti-biotic, improved fish seeds, improved fish feed, chemical etc at subsidized rate.
- Government should, as a matter of policy, standardize the price of the outputs of FADAMA farmers.
- More extension workers (FADAMA facilitators) should be employed in order to give to the fish farmers the technical know-how, on the use of some equipments and dissemination of new innovations, on how to improve their fish farming system and productivity.
- Women should be encouraged to participate more in FADAMA farming.
- Government and agencies like, the World Bank, Africa Development Bank and so on, should ensure the continuity of FADAMA farming.

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