Full Length Research Paper

Problems' and prospects of small-scale fish farming in Minna Agricultural Zone of Niger State, Nigeria, and its implications on increased Fish Food Security.

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This paper examines problems and prospects of small-scale fish farming in Minna Agricultural Zone of Niger state, Nigeria, and its implications on increased fish food security. Both primary and secondary data were used to collect data. The main instrument used for collecting primary data was structured questionnaire. Multi-stage sampling technique was employed in selecting 65 fish farmers drawn from the sampling frame obtained from Agricultural Development Project (ADP) contact farmers in two local government areas, namely Bosso and Chanchaga LGAs' respectively. It utilized descriptive statistics in data analysis. Results obtained revealed a High literacy level (95.4%) which is adequately enough to support information on technology use. Results further revealed that the major constraints encountered by the farmers are scarcity of quality brooding stocks (26%); paucity of capital (19%) and high costs of feeds (17%). Lesser perceived problems are high labour costs; poor storage facilities and mortality rate due to diseases. Prospects of fish food security could be enhanced by tailoring policies towards the setting up of commercial pelleted and floating catfish feed mill and modern hatcheries in the State, the provision of adequate infrastructure, cheap and available credit facilities and expansion of extension services. These would go a long way to solving the most serious constraints to small-scale fish production in the study area. Therefore, it recommended government participation in fish farming to boost the quantity of fish available for consumption.

Keywords: Fish farming; problems; prospects; fish food security; Niger State.

INTRODUCTION

Aquaculture, the farming of aquatic organisms, including fish, molluscs, crustaceans and aquatic plants, is often cited as one of the means of efficiently increasing food production in food-deficit countries. The major animal protein sources in the country include cattle, goats, sheep, poultry and fish. Out of these sources fish and fish products provide more than 60% of the total protein intakes in adults especially in the rural areas (Adekoya and Miller, 2004). Inoni (2007) cited that Nigerian fishing industry comprises of three major sub sectors namely the artisanal, industrial and aquaculture. The aquaculture sub sector contributes between 0.5% and 1% to Nigeria's domestic fish production. Fish culture is done in enclosures such as tanks as explained by

Adewuyi *et al*. (2010); although fishing started over 40 years ago, aquaculture contribution to domestic fish production is minimal/ not significant. Regrettably, the supply has been on the decline (Ugumba and Chukwuji, 2010). The industry now contributes only2.0% of the GDP and accounts for 0.2% of the total global fish production.

Nigeria is one of the largest importers of fish with a per capita consumption of 7.52kg and a total consumption of 1.2million metric tonnes with imports making up about 2/3 of the total consumption. The shortfall is said to be bridged by the importation of 680,000 metric tonnes annually consuming about N 50 billion in foreign exchange (Odukwe, 2007).This indicates the large deficit

in fish supply in Nigeria Olopade and Olaokun (2005). Equally estimated was the possible creation of 30000 jobs and generation of revenue of US$160 million per annum by the aquaculture industry (Ugumba and Chukwuji, 2010). These prompted the Federal Government of Nigeria to package the Presidential Initiative on fisheries and aquaculture development in 2003 to provide financial and technical assistance to government programmes and projects encouraging fish production. Despites these efforts by Government, fish production have remained low in the country as well as in Niger State. Ugumba and Chukwuji (2010) reported that awareness on the potential of aquaculture to contribute to domestic fish production has continued to increase in the country. This stems from the need to meet the much needed fish for domestic production and export. Therefore, the importance of the fishing industry to the sustainability of animal protein supply in the country cannot be over-emphasized. The development of the fish industry will increase local production of fish and save much of the foreign exchange being used for fish importation. Specifically, it has a special role of ensuring food security, alleviating poverty and provision of animal protein.

RESEARCH METHODOLOGY

The study area is Niger State of Nigeria. The State is located in North-central Nigeria between Latitudes 8°20´N and 11°30´ N and Longitudes 3°30´ E and 7°20´E with a total land area of 76,363 square kilometres and a population of 4,082,558 people (Wikipedia, 2008). Annual rainfall is between 1100mm and 1600mm with average monthly temperature hovering around 23°C to 37°C (NSADP, 1994). The range of local climatic and soil conditions, resource availability, and markets allows favourable fish farming practices. This study was conducted in Minna Agricultural zone of Niger state, Nigeria and made use of both primary and secondary data. The main instrument for eliciting the primary data was structured questionnaire. Information were collected on input and output in fish farming and socio-economic characteristics of fish farmers through personal interview. Primary data were supplemented with secondary data from journals, books and publications from National Institute for Freshwater Fishery Research (NIFFR), New-Bussa. A multi-stage sampling technique was used to select a total sample size of 65 fish farmers from the sampling frame obtained from Niger state Agricultural Development Project (NSADP). Data analysis was done using descriptive statistics.

RESULT AND DISCUSSION

Socio-economic characteristics of the respondents in the study area (Table 1) show that male fish farmers constituted about 61.5% as compared to their female counterparts (38.5%). Even though men dominate fish production in the study area, the female percentage is a fair representation given the religious background, oppressive land tenure system and lack of interest in the study area. This to certain extent showed a positive change in the trend of women involvement when compared with the assertion of Nigerian Institute of Social and Economic Research (NISER)(2003), who reported exclusion of women in socio-economic activity and agricultural constraints.81% of the respondents were within the age bracket (19-49) defined by FAO as economically productive in a population. 63.1% youth participation in the enterprise is relatively high, indicating attractiveness of the enterprise; hence population succession in present fish food supply is encouraging .This is contrary to the findings of Ifejika *et al.*(2007) who reported low youth participation in fish farming enterprise in Borgu LGA of Niger state. Marital status shows that majority 81.3% of the respondents were married, with 16.2% either single or divorced. It implies that majority of the respondents shoulder lots' of family labour and also have advantage of cheap labour supply. The educational attainment status indicates literate fish farming population with all the respondents having one form of formal education. Frequencies on educational attainment shows secondary-tertiary (95.4%) compared to primary (4.6%). High literacy level of 95.4% is enough to support information on technology use. Experience in fish farming indicates that 52.3% had six years and above in terms of experience, while 47.7% had less than five years. Krause (1995) asserted that experience reduces management risks, while Sevillage (2000);Edwards (2000) and Dey *et al.* (2002) agrees that experience is crucial and contribute significantly to the success of Asian aquaculture. These results compares favourably to certain extent with Ifejika *et. al* (2007) .

  Results in Table 2 reveal the problems encountered by the respondents. Problems are challenges /difficulties that need attention and consideration. They reflect the factors affecting the level of production. Small-scale fish producers encountered many problems in the course of production process. These problems ranges from inadequate supply of quality brooding stocks, high cost of feeds; high labour costs; inadequate water supply; paucity of capital; poor storage facilities; inadequate electricity supply; mortality rate due to diseases and water pollution. High cost of brooding stocks was highlighted to be the major constraint to small-scale fish farming (26%). This was due to inadequate local supplies of brooding stocks attributed to abandoned government hatcheries and few private agro-input fish supplies in the study area. Producers have no choice than to import most of their fingerlings from neighbouring States. Similar constraint was reported by Ugwumba and Chukwuji (2010) to have affected fish farming in

Table 1: Socio-economic characteristics of the respondents

Variables	Frequency	Percentage (%)
Gender		
Female	25	38.5
Male	40	61.5
Total	**65**	**100**
Age		
21-30	20	30.8
31-40	21	32.3
41-50	12	18.5
51-60	9	13.8
≥61	3	4.6
Total	**65**	**100**
Education level		
Primary	3	4.6
Secondary	26	40
Tertiary	36	55.4
Total	**65**	**100**
Marital status		
Married	41	83.1
Single	12	13.1
Divorced	2	3.1
Total	**65**	**100**
Experience		
≤ 1-5	30	46.1
6-10	23	35.4
11-15	11	16.9
Total	**65**	**100**

Source: Field survey, 2012

Table2: Problems of small-scale fish farming

Problems	Frequency	Percentage (%)
Scarcity of brooding stocks	50	26
Paucity of capital	37	19
High costs of feeds	32	17
Inadequate water supply	25	13
Epileptic power supply	19	10
High labour costs	15	8
Poor storage facilities	10	5
Mortality rate	3	2
Total	**191**	**100**

Source: Field survey, 2012

Anambra State. The second constraint was paucity of capital (19%). Fish farming is capital intensive and requires huge capital investment for appreciable profit to be realized. This is the reason why virtually most of the firms in the study area operate small-scale farmers. This reason was highlighted by Kudi *et al.* (2006) to be the constraints faced by fish farmers in Kaduna State, Nigeria. High cost of feeds (17%) is the third problem faced by the respondents. Importation of most commercial feeds into the country; stiff government fiscal policies importation and distribution could be the cause for the hike in feed prices. These commercial feeds possess floating and high protein qualities and are therefore preferred by fish farmers. This result agrees with Ugwumba and Nnabuife (2008) who identified high cost of feed as very serious drawback to profits realized from catfish farming. Inadequate water supply (13%) was highlighted to be another problem faced by the producers' and fish production is impossible without water supply. This problem is not only peculiar to fish farming in the study area; Epileptic power supply (10%) is another challenges faced by fish farmers. High labour costs (8%); poor storage facilities (5%) and mortality rate due to diseases and water pollution (2%) were perceived as lesser problems.

CONCLUSION AND RECOMMENDATIONS

Constraints to Small-scale fish production in the study area arranged in descending order of its gravity were high cost of feeds, paucity of fund, inadequate supply of brooding stocks', lack of modern technologies, epileptic power supply, high labour costs, lack of land, poaching, inadequate water supply, lastly mortality of fish and lastly poor storage facilities. It is recommended that policies be directed to establish of commercial pelleted and floating feed mills; modern hatcheries; provision of credit facilities; provision of adequate infrastructural facilities and intensification of extension services.

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