



Journal of
**Fisheries and
Aquatic Science**

ISSN 1816-4927



Academic
Journals Inc.

www.academicjournals.com

Survey of Functional and Non Functional Fish Hatcheries in Jigawa State, Nigeria

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ABSTRACT

Fish hatcheries are the bedrock upon which true and sustainable fish farming can be built. Hatcheries can be owned and operated either by government or private interest. This study was conducted in the five emirate zones of Jigawa State, the study investigated the number of the functional and non functional fish hatcheries in the state. The result showed that there were 35 fish hatcheries in the state and private ownership (57.14%) dominate the government ownership (42.16%), all with less than 100,000 fingerlings production annually. The study also indicate that out of the 35 fish hatcheries 15 (13.4%) were found to be functional in operation and 20 (17.85%) are found existing but not functional in operation. Based on the field survey, all the respondent are of the opinion that the level of production and number of functional hatcheries in the state are low. Recommendations were made on how to improve hatchery operation that could help to boost aquaculture development in the state.

Key words: Jigawa state, fish hatcheries, functional, non functional

INTRODUCTION

Fish is a rich source of animal protein and its culture is an efficient protein food production system from aquatic environment (Olanrewaju *et al.*, 2009). There is no doubt that fish production through aquaculture in Jigawa state is as in its infant stage. Much attention have been directed towards increasing fish production through aquaculture in Nigeria, because of the economic and nutritional importance of fish to the populace. However, it is often negligible in Jigawa state because of certain constraints which fish seed scarcity is inclusive (Hollis *et al.*, 1993).

Fish seed is the most important component of fish culture and for this to be available in abundance there is need for well functioning fish hatcheries. A dependable source of quality fish seeds (Fingerlings) is a fundamental prerequisite for large scale development of fish culture. Although, fish seeds could also be collected from the wild the system is seasonal. Unreliable, laborious and above all the viability of such seeds cannot be assured (Olanrewaju *et al.*, 2010). One of the major factor that affect all attempts to culture fish at suitable level in Nigeria is scarcity of fish seed, therefore, the best way of getting fish seed is through hatcheries. Fish hatcheries according to Madu (2004) are the bedrock upon which true and sustainable fish farming can be built. Hatcheries can be owned and operated either by government or private interest.

Omitoyin (2007) acknowledged that fingerlings are the major input for successful aquaculture and many farms are engaged in fingerling production in Nigeria, however, the supply of fingerlings is yet to meet the demands.

The need to boost fish production and for the state to maintain its leading role prompted this study.

MATERIALS AND METHODS

Study area: Jigawa State is one of thirty six states that constitute the federal republic of Nigeria. It is situated in the north-west part of the country between latitudes 11.00-13.00°N and longitudes 8.00-10.15°E. Kano state and Katsina state border Jigawa to the west, Bauchi state to the east and Yobe state to the north-east.

Jigawa is a rural and agrarian state where majority of its peoples earn their living through farming that relies heavily on rainfall using traditional implement, the state is blessed with large expanse of Agriculture land rivers and floods plain suitable for crops livestock's and fish production out of the 2.24 million hectares total land area about 1.6 m ha are estimated to be cultivable during the rainfall season while about 30,8000 ha of the landmass is cultivable during the dry season through irrigation (MANR., 2010). Jigawa state has 27 LGAs namely: Auyo, Babura, Birniwa, Buji, Dutse, Garki, Gagarawa, Gumel, Guri, Gwaram, Gwiwa, Hadejia, Jahun, Kiyawa, Kafin Hausa, Kaugama, Kazaure, Kirikasamma, Maigatari, MalamMadori, Miga, Ringim, Roni, SuleTankarkar, Taura and Yankwashi. Which are traditionally grouped into five emirate council (Fig. 1).

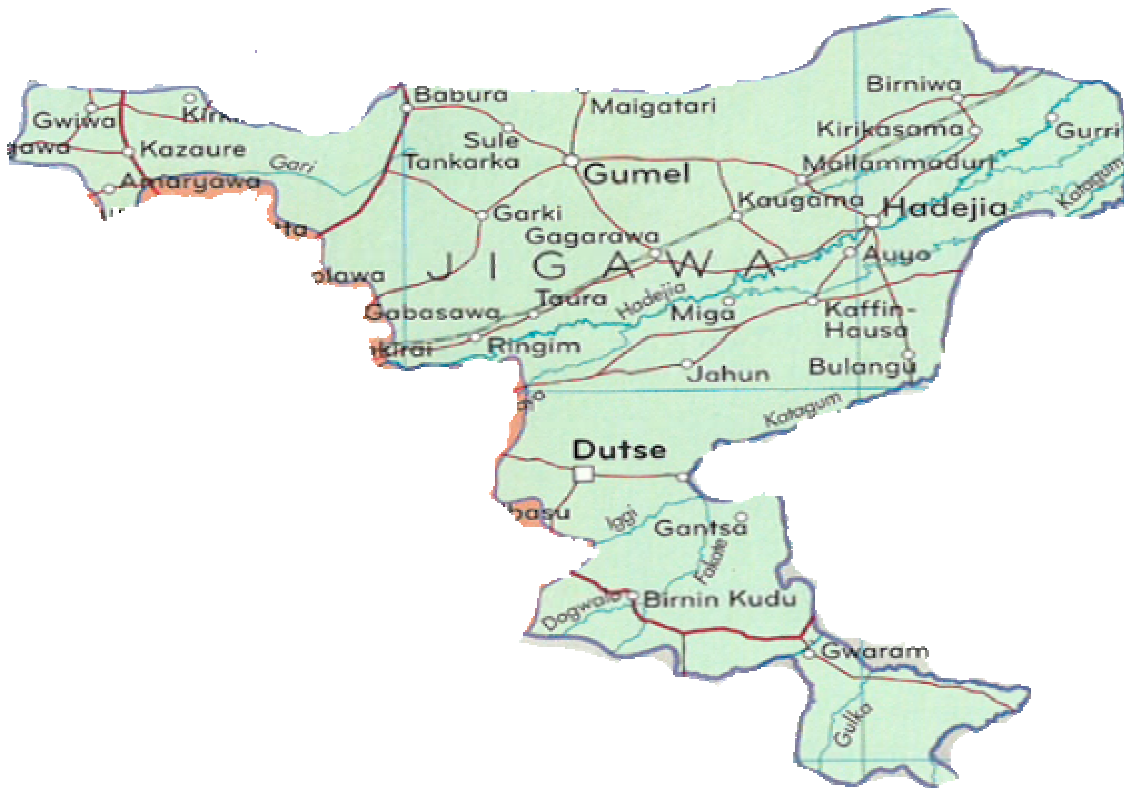


Fig. 1: Map of Jigawa State showing local government areas

Sampling site and procedure: Field survey was conducted in the 5 emirate zones of the Jigawa state. The five emirate areas are Dutse, Ringim, Gumel, Kausare and Hadejia the survey was carried out with the aid of structured questionnaires, visual observation and oral interview with both the fisheries personnels and fish farmers in all the local government areas in each zone.

Total 270 questionnaires were produced with a target of 10 questionnaires for each local government in the five emirates. They were only administered to existing fish farmers and 112 questionnaires were retrieved to reveal the required information. Secondary data was obtained through literature review based on published research works. Information was also retrieved from Ministry of agriculture and natural resources, Jigawa state.

Statistical analysis: Data was subjected to simple descriptive statistical tool in the form of frequencies and percentages.

RESULTS AND DISCUSSION

In Table 1 the study indicates that most of the respondents were males (97.32%). Majority (31.25%) were within the range of 40-49 years. About 30-35% were within the range of 30-39 years. While 23.22% were within the range at 50-59 years and (15.18%) were within the range of 20-30 years. According to Usman (2009), the economically active age group is between 31-50 years. Therefore, 84.82% of the respondent were in the economically active age group.

Among the respondent 88.4% were married while 11.6% were single. The 100% of the respondent were Muslims and this could be attributed to the major religion of the region.

Table 1: Personal characteristics of the respondents

Parameters	Frequency	Percentage
Age		
20-30	17	15.18
30-39	34	30.35
40-49	35	31.25
50-59	26	23.22
Gender		
Male	109	97.32
Female	3	2.68
Marital status		
Single	13	11.60
Married	99	88.40
Divorce	0	0.00
Religion		
Muslim	112	100.00
Christian	0	0.00
Educational background		
Higher education	69	61.60
Primary education	18	16.07
No formal education	13	11.60
Fish hatchery		
Functional	15	13.40
Non functional	20	17.85
Nil	77	68.70

Olanrewaju *et al.* (2010) reported that in Borno state 85% of the respondent were Muslim with only 15% as Christians. About 61.6% of the respondent had higher education certificate and 16.07% had primary certificate while 10.73% had SSCE and 11.6% had no formal education majority of the respondent 45. 55% were civil servant and 17.85% were fish farmers and 36.6% were full time fish farmers. The study also showed that there were 35 fish hatcheries in Jigawa state. And majority of them had no operational names, however, few very organized with operational name. This indicates that the number of fish hatcheries in Jigawa state is higher than that of Borno state, with twenty three number of hatcheries and majority are located in Maiduguri town as reported by Olanrewaju *et al.* (2010).

Figure 2 shows that 15 of the hatcheries were found to be functional but not to a commercial standard and 20 are found to be existing but not in functional operation. And 77 farms do not have any fish hatchery.

In this study, Fig. 3 shows that private ownership (57.14%) dominate the government ownership (42.16%) with all of them with less than 100,000 fingerling annually, this is actually contrary to the study of Olanrewaju *et al.* (2010) who reported from his findings that some of the fish hatcheries in Borno state had annual production around 100,000 fingerlings especially the government owned hatcheries. Majority of the hatcheries (55.35%) use open market to source for brood stock while 35.72% use existing farms and 8.93% uses wild fishes as their source of brood

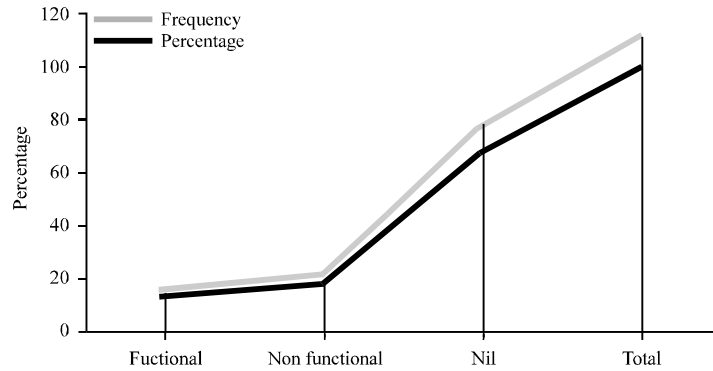


Fig. 2: Function and non functional fish hatchery

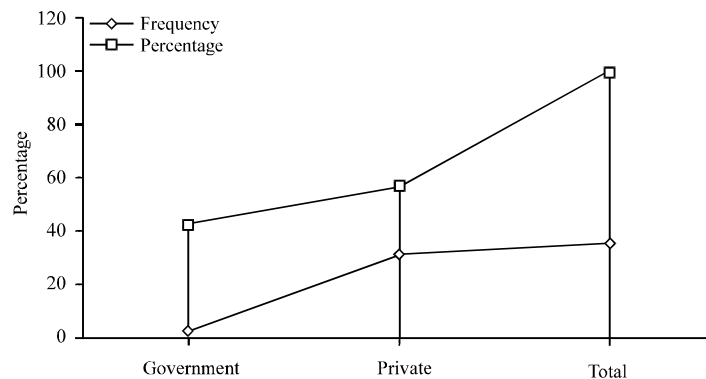


Fig. 3: Type of ownership

stock but this is slightly different from the study of Olanrewaju *et al.* (2009), who reported that in Borno state, 71% of the hatcheries make use open market as source of brood stock and 29% of the hatcheries uses existing farms as far as reaching reputable farms in Ibadan Ijebu Ode and Ilorin. In jigawa state in contrast some hatcheries even obtain their brood stock from the wild. Most hatcheries on several occasions experience failure in production and stunted growth of fingerlings and however these may be as a result of wrong source of resulting to total closure entail of aquaculture in jigawa state respondents were of the opinion that hatcheries are the bedrock to which sustainable fish farming can be built and attests to the fact that the demand for fingerling in the state is still more than the supply, this also indicate a great ready market for fingerlings, as aquaculture is becoming an alternative and important component of rural livelihoods, due to increasing population pressures, environmental degradation and loss of access that limits catches from the wild.

CONCLUSION

Fish hatchery has a notable role to play by supplying adequate quantity and quality of fish seed for pond stocking in order to achieve full potential of aquaculture in jigawa state. The number of the fish hatcheries also need to be increased and as well the level of operation. Some of the problems faced in hatchery operation include the poor source matured brood stock and retardation in growth and low survival caused by high mortality brought about by sudden fluctuation of weather and infections.

Based on the mentioned problems, the State, federal government and other stakeholders should collaborate and establish functional hatcheries where farmers can obtain viable fish fingerlings. Hatchery operations should embark on training to acquire the knowledge of fish induced breeding and hatchery management.

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