HATCHERY CONSTRUCTION AND ITS FEASIBILITY IN THE NIGERIAN ECONOMY

BY

REV. SAMUEL OGHENEORO EMIASO JP.

Fish Farm Manager,
The Shell Petroleum Development Company Of Nigeria Limited

And

Professional Member,
Fisheries Society Of Nigeria

INTRODUCTION

All over the world, the trend to move from capture to culture fisheries is gaining more ground. Today aquaculture is on the threshold of entering the individual phase as most big fish farms have become well integrated and highly productive.

As a consequence, rising demand and slow growing production, the real prices of most fresh and frozen fish have risen since World War II in contrast to prices of most animal-origin foods, which have declined steeply over the past several decades.

In most parts of Nigeria, especially areas with high water table and or where the traditional occupation of the people is predominantly artisan fishing, the inception of aquaculture have projected a new insight to the production of fish. This aquaculture drive has therefore necessitated the spring up of various forms of hatcheries in Nigeria.

In the Niger-Delta for instance, where the people love fishing as a major occupation and do eat fresh fish in their normal staple nutrition and as away of life, the hatchery level is high as most fish farmers now want to produce their own fingerlings for the stocking of their production ponds for culture to market (table) size. There is a lot of market in the Niger-Delta for fresh fish and so demand a lot of production which therefore boost the need for more hatcheries, the cry of the numerous interested fish farmers. Majority of the numerous fisheries specialists are nor well empowered to breed and produce fishy seeds and fingerlings especially species of most loved and eaten fish in their area in the large quantities needed for distribution to the very large number of fish farmers in the region (Emiaso, 2000).

The rising cost of materials in the Nigerian economy have become a bottleneck in the construction of more fish hatcheries for fingerling production. However, the assistance of multinationals has become very necessary to enhance its feasibility to encourage better involvement in the fish hatchery works One remarkable area where assistance is being felt by the communities in the Niger-Delta is in fish farming and more so in the supply of fish fingerling top fish farmers by The Shell Petroleum Development Company of Nigeria Limited (SPDC), a multinational oil company in the area (Abowho, 1998). Chief William Abowho and Mrs. Victoria Akpobome are a few beneficiaries among many others in this area of assistance.

Donald Agu (1998) stated that there is abundant market for fish and fish by-products locally. Fish wastes such as offal; heads, trimmings, etc which could be sold for extra income while the fish proper is eaten. These however will only be feasible when there is production of fish in their various species and from reputable hatcheries. Home backyard ponds, the 0 74 million hectares of brackish water, 1.01 million hectares of perennial swamps, and other marginal land available for aquaculture in fish production if more hatcheries are available to

service and provide the needed fingerlings to stock these water bodies. Farms he said when properly managed yield between 2.5 and 10 metric tonnes of fish depending on the species stocked and bred.

PROSPECTS OF HATCHERY CONSTRUCTION IN NIGERIA

With the rising cost of materials, it has become necessary to brainstorm and arrive at useful suggestions to effect better hatchery construction for fish fingerling production. Credits from commercial banks supported by the central bank of Nigeria is a major source of fund to cater for the harsh economic cost level to purchase material, pay for supervision and workers that will construct such hatcheries. One of such credit facilities is that piloted by SPDC in her Micro Credit Scheme for agricultural development, which is implemented through co-operative societies, and the monies utilized for agricultural projects including the construction of hatcheries for fish fingerlings production (Okotete & Ibe, 2001). Madu et al (2001) on behalf of the Fisheries society of Nigeria strongly held that the fisheries sub-sector and most especially small scale operators be given special consideration and financial support by the Nigerian Agricultural Cooperative And Rural Development Bank (NACRDB) to boost fish hatcheries construction and fish production in every local Government Area (LGA) in line with the national policy on poverty alleviation for the Nigerian populace by the Federal Government of Nigeria (FGN). It is also the responsibility of the FGN through the presidency to adequately fund fisheries research to develop simple and feasible hatchery units affordable by the average Nigerian for fish fingerling production.

TYPES OF HATCHERIES

IN DOOR HATCHERY: This is usually the complete unit of fish breeding system constructed in a housed area for fish breeding. It consists of concrete tanks with a network of water distribution system usually perforated to allow splashing for oxygen aeration purposed when in use. Other components may include the rooms for storage of work Materials or tools, table usually for the spawning activity. Dissecting of male fish, stripping of female fish and bowls, syringes, beakers, spoons, etc that are usually used during breeding sessions.

OUT DOOR HATCHERY: This is mostly characterized by the sample materials as in the indoor hatchery but only differs in the no-house cover for the facilities.

SIMPLE HATCHERIES: This could be in the form of the normal water bath, aluminium troughs (as used by some local farmers, SPDC etc.) for the production of fingerlings. There may be the use of electric aerators where affordable but not as a mandatory facility.

COMPLEX HATCHERY: This is usually the more organised, flow through water systems and more equipped laboratory facility utilized hatchery. Water quality parameters equipment and tools are usually in use here with very high and technical instruments installed to monitor hatching of eggs, feeding and sanitation of the hatchery chambers of tanks.

FEASIBILE HACTHERIES AND THE NIGERIAN ECONOMY

With the low value of the Nigerian Naira as at 2004 in the international market, the cost of building and constructing a standard hatchery have become enormous and almost out of reach to the average Nigerian. It would take an estimated N 2 Million on the low side to construct a sizeable hatchery in recent time (See item 8 0. for costing).

It has become necessary to note that with the growing interest in fish farming, only the provision of such simple hatcheries that can be affordable yet delivering the needed or near

expected outputs of fish fingerlings to meet the rising demand of fish farmers would be appreciated.

In SPDC for instance, after the destruction of the multimillion Naira fish farm project located at Ogbe-Ijoh with sophisticated laboratory, equipment, electronic microscope and facilities, a simple but effective hatchery unit is now being used for fish fingerling production. The hatchery consist of about six aluminium troughs of 8ft x 1ft x 1ft. plastic baskets with neatly cut mosquito nettings that serve as kakaban (adhesives for the fish eggs), electric aerators, plastic basins, bowls, buckets, water hoses, drums etc., in addition to syringes and needles and a biological dissecting set for use in administering hormone and handling of male milt from the sperm bags. This hatchery which basically is indoors have proven its success through the test of time as over 500,000 fish fingerlings have been produced during the annual spawning season of April to November based in Warri in the Niger-Delta area of Nigeria.

PROBLEMS OF HATCHERY CONSTRUCTION IN NIGERIA

Some of the major problems associated with the construction of hatcheries in Nigeria include:

- Incompetent and poorly informed engineers that construct hatchery concrete tanks and other facilities.
- Use of substandard materials for construction.
- Improper location of hatchery in areas of poor fish fingerlings patronage and culture.
- Inadequate credit facilities for funding of projects.
- Abandonment of hatcheries due to discontinuity of fish fingerlings production over the years.
- Use of incompetent fisheries personnel to manage fisheries hatcheries.
- Inadequate logistics to empower processes of fish fingerling production and distribution.
- Poor documentation and awareness of location, production capacity and ownership hatcheries in Nigeria for updates of records.
- Poor standards and quality control in these hatcheries as Government supervisory bodies are not very active or forceful to coordinate or monitor fisheries projects.
- The Federal department of Fisheries (FDF) and Fisheries Society of Nigeria (FISON) must sit up here and rise up to expectation in the fisheries sector.

FISH HATCHERIES: SUSTAINABLE AND PROFITABLE VENTURE.

Immick (2003) stressed that targeted research effort towards improvement in hatchery technology and broodstock management will enhance the development of fry/fingerling producers from subsistence to commercial and sustainable levels. Use of groups and networks of fish farmers would certainly help stabilize fingerling production as it is with producers in other developing countries such as Bangladesh. Credits, technical advice and improved transport where provided would enhance better production levels and impart.

Adequate supervision by the various Fisheries Units in State Ministries of Agriculture and Natural Resources (MANR), FDF, FISON will standardize hatchery constructions and managements in Nigeria and would turn the project into profit yielding venture with sustainable developments. Adequate policies and processes from Government, better evaluation of economic values and improved governance will generate significant contribution to effective management of fishery hatchery. The only way to really produce the correct equipment (and in this case to construct sustainable hatcheries) is to get to know what the farmer (customer) need in order for their business to be successful. Taking time to

visit farms to see what is being done, and how it is being done will help design better units and offer worth while on-farm hatchery improvements.

CONCLUSION

Continuous production of fish fingerlings will be feasible where good and standard fish hatcheries are constructed in Nigeria. Use of the right materials, professional and adequate funding are key factors to construction of active, long lasting, profit yielding and sustainable fish hatcheries. It is hoped that with support from Local, State and Federal Government in Nigeria, there would be enough fish hatcheries constructed in the nation to provide sufficient fish fingerlings for fish farmers who would hereafter provide abundance of fish to meet the protein demand of the fish loving Nigerians. Simple fish hatchery construction is therefore to be adopted in this present economic situation in Nigeria to be able to cope with the demand for fingerling production for fish farming. It is hoped that various fish farmers would take advantage of this easy go hatchery setting to produce fish fingerlings to boost fish production in Nigeria.

CONSTRUCTION ESTIMATE FOR A HECTARE HACTHERY COMPLEX (1st Yr)

1.	**Excavation of Land 100ft x 50ft for 2 Nursery ponds**			**N100, 000.00**
2.	**Hatchery Block Plus Concrete Tanks**			**N500, 000.00**
3.	**Hatchery Material**			**450, 000.00**
	Broodstock fish 50 Males @ N3, 000 = N150, 000 100 Females @ N750 = N 75,000		225, 000	
	Hormone (10 bottles @ N10, 000)		100, 000	
	Accessories (Plastic drums, bowls, basins, baskets, wheel barrows, machetes and fittings)		125, 000	
4.	**Nursery Pond Input / Materials**			**430, 000.00**
	Water Pump	N200, 000.00		
	Nettings	40. 000.00		
	Feeds	60. 000.00		
	Lime	20, 000.00		
	Poultry Manure	60, 000.00		
	Fingerlings Net	50, 000.00		
5.	**Running Expenses** Salaries for 5 Staff @ 5,000 x 12 mths. = N300, 000 Fuel, maintenance. electric bills. ect. 150, 000			**450, 000.00**
6.	**Bore hole / Over Head Water Storage Tank**			**150, 000.00**

7.	**Transportation**	**170, 000.00**
8.	**Miscellaneous / Contingencies**	**250, 000.00**
GRAND TOTAL		**N2, 500, 000.00**

REFERENCES

ABOHWO, W.S (1998) Netting The Millions From Fish Farms. FEATURES. VANGUARD Newspapers. March 23, 1998. Pp.26.

AGU, D.C.O. (1998) Setting Up Fish Farms. INVESTMENT, BUSINESS TIMES. Monday, January 26, 1998. Pp. 22.

BENE, C. & NEILAND, A. E. (2003) Valuing Africa's Inland Fisheries: Overview of Current Methodologies With An Emphasis On Livelihood Analysis. NAGA World Food Centre Quarterly magazine. Vol. 26, No. 3. July-September 2003. Pp. 20.

DELGADO, C. et al. (2003) The Future Of Fish. Issues And Trends to 2020. International Food Policy Research Institute And World Fish Centre. FISH FOR ALL. Pp. 3.

EMIASO, S O. (2003). Fingerlings Production In The Niger-Delta: A Paper Presented At The Economic Empowerment Conference Held At Word of Life Bible Church, Warri. July, 2003

EMIASO, S. O. (2003) A Review of Fisheries And Aquaculture In The Niger- Delta. A Paper Presented At The 18th Annual Conference Of The Fisheries Society Of Nigeria, Owerri, Imo State. December, 2003.

IMMICK, A. (2003) Department For International Development (DFID) Research Supports Aquaculture Producers In Asia. FISH FARMER Magazine. International File, Vol. 26. No. 5. September/October 2003. Pp. 16.

LEY, C. (2003) Close Client Contact Fuels Continuing Success Danish Focus. FISH FARMER Magazine. International File. Vol. 26. No. 3. May/June 2003. Pp 5.

MADU, C.T. et al (2001) COMMUNIQUE AT THE 16TH ANNUAL CONFERENCE AND SILVER JUBILEE OF THE FISHERIES SOCIETY OF NIGERIA. Maiduguri, November, 2001.

OKOTETE, F. I. & IBE, H.E. (2001)The Operation Of Projects. Agricultural Extensions Field Experiences. Technical Paper for SHELL IN AGRIC. The SPDC Agricultural Extension Services In House News Bulletin. 2001.