

**ESTABLISHMENT**  
**OF**  
**FISH FARM**

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### **Introduction**

Over the years it has become more and more obvious that aqua culture technology of fish farming will become increasingly very important in the future for many people, most especially in Nigeria and also in the third World Countries.

Advantages:

- Cost effectiveness.
- Convenience.

- Safety.
- Non-dependence on cultural knowledge or heritage

Considering the inadequacy of the older techniques of procuring fish, the traditional mode of simply ‘catching fishes’ with nets in the river, this traditional artisan fishing is not only cost prohibitive, but generally unproductive due to pollution of inland waters.

### **Setting Up of Fish Farm:**

This entails:

- **Location:** The Fish Farm is generally located in a place with adequate source of good water. Enough space should be provided for the pond, and the accessories to be linked with it, i.e. the inlet and outlet valves. Also, it could be placed, existing side by side in the same premises with a poultry farm.
- **Season:** Fish farming is an all season farming, with a period of 6 months for each circle, ie, the time it takes to harvest each batch production.
- **Type of Pond:** The ponds to be used is a mobile Fish Tank. It is constructed to a standard size of m by 5.4m / 5.4 m / 1.2m, to comfortably accommodate the recommended quantity of 2000 ‘standard juveniles’.
- **Feed Raw Materials:** The Fish feed brand and the exact size of feed for each stage of the fishes **MUST** be seriously observed, with the timing and frequency of feeding. The brand of the fish feed to be used is the right feed for the fishes with balanced nutrients that will enable the fishes to attain weight and maturity at the expected time.
- **Utilities**  
 Water: There should be adequate source of good water.  
 Water pumping machine: The Water pumping machine will be in place for pumping of water in and out of the pond. Generator: The generator will be used to operate the pumping machine.
- **Manpower Requirement:**  
 Labour to manage the fish farm
- **Installation of Fish Tank:**  
 Installation of the fish tank involves, general fixing of the fish tank, linking the fish tank with all the accessories needed. These accessories are the Inlet and Outlet. Inlet: The inlet consists of the: Air valve and Elbow.  
 Outlet: The Outlet consists of the: Back nut, Adaptor, Air valve and Tee.  
 Tank Inspection: Filling up the tank with water and inspecting of the tank for leakages.

- **Stocking of Pond:** This entails the stocking of the ponds with the infant fishes. The stocking is done between 2 to 3 days after installation of the fish tank and filling the tank with water.

## OPERATION PROCESS

### 3.1: WATER ANALYSIS

For the operation of a Fish Farm, the analysis of the water available for use in running the Fish Farm to be established is very vital. To a great extent the quality of available **Water** plays a major role to the success of a Fish Farm.

The detailed analysis of the **Water** is expected to show the following levels:

- pH Level
- Ammonia Level
- Iron Level (Showing the Phosphoric and Phosphorous Level)
- Dissolved Oxygen
- Nitrate Level
- Total Hardness of Water( Showing: Level of Magnesium and Level of Calcium)
- **Procurement of Infant Fishes:** The Infant fishes should be procured from a known Hatchery, since, it needs to be healthy Infant Fishes with high growth rate, preferably, Juveniles' to be assured maximum of 5% mortality rate.
- **Fish Feed:** The brand and the exact size of feed for each stage of the fishes **MUST** be seriously observed. The brand of the fish feed to be used will be recommended by the Consultant. This is important since the fishes need a brand of fish feed with standard FCR (Feed Conversion Ratio), for healthy growth to assure bumper harvest.

### OPERATIONAL GUIDE

- **Fish Seed (Fingerlings) Production:** A process in which the breeders are used in producing 'fries' in the hatchery and nursed to fingerlings for stocking purposes.
- **Grow-Out Phase:** Involves the process of stocking the pond with the young infant fish known as fingerlings or 'standard juveniles.
- **Broad Stock Development:** Involves the process of rearing the young fish to adult size for breeding purposes.
- **Rearing of Fingerlings:** Entails buying of fingerlings from the hatcheries and rearing them to juvenile after four weeks and sell.
- **Fish Feed Nutrition:** Fish feed Raw Materials: Complete information on the ingredients needed for different stages and sizes of the production of fish feed.
- **Fish Feed Formulation:** Information on the process of compounding different sizes of fish feed, and why different fish feed is used at different stages of growing the fish.

- **Water Management:** Information on the quality of water and the volume needed, depending on the season the fish is being reared.
- **Pond Inspection and Management:** Information on how to carry out regular inspection and effective management of the pond.
- **Organic Matter:** Pond management to avoid pollution of ponds; since pollution of ponds could lead to either poor harvest or loss of the fishes.
- **Fish Diseases:** Knowledge of all the fish diseases and how to either prevent or manage the outbreak.
  
- **Animals and Predators:** Information on such dangers like the presence of predators and animals that could lead to the loss of the fingerlings or ‘standard juveniles’ in the pond or the loss of the matured fishes ready for the market.
- **Fish Processing:** Information on the process of preparing fish for preservation in order to target bigger markets.
- **Fish Marketing:** All the information involved in identifying the market and the marketing of the matured fishes for sale.
- **Gear and Craft Technology:** Information on instruments used for harvesting of the matured fishes for sale

#### **PICTURES OF COLLAPSIBLE FISH POND.**

The pictures on **Page 6:** shows the pictures of the Collapsible Fish Ponds that will be used for the Fish farming. It is referred to as Collapsible because it can be dismantled and relocated to another location if need be. It is movable.

## COLLAPSIBLE FISH POND



The Financial Analytical Framework captures:

- **Total Cost of feed for a rearing period of 6 months for 8000 Infant Fishes:**

The feed chart shows the quantity of feed required on weekly basis for the feeding of the infant fishes to maturity. Also note that the feed calculation in terms of the quantity needed to feed the infant fishes were calculated based on the Specie of our Juvenile Infant fishes and the Price of a particular Feed with a good Feed Conversion Ratio; FCR.

- **Re-Current Expenditure:**

These are revolving expenses, that frequently re occur every 6 months in the process of rearing the Infant Fishes; these expenses includes : Cost of the infant fishes; Cost of feed; Cost of labour; and Contingency Cost of NAIC ( Nigerian Agricultural Insurance Corporation) cover of insuring the infant fishes from Juvenile to 6 months maturity. The NAIC Insurance is calculated using: **2.5%** of the value of the infant fishes plus the value of the feed for 6 months. The **2.5%**, covers indemnity for: **Fire, Diseases**. Please note we used **2.5%** in this Financial Analytical Framework since we are dealing with Infant Fishes.

- **Current Expenditure:**

These are capital expenses, which involves the cost of Procurement of Equipment for the establishment of the fish farm and the cost of installation.

- **Return on Investment:**

The return on Investment is used to calculate the Gross and the Net Profit of the business. The parameters used in the calculation are done based on ‘Basic Assumptions’. They are referred to as ‘Basic Assumptions’ because it is the least targeted size and value the fishes are expected to have on maturity.

- **FEED COST ANALYSIS:**

The Feed chart below, shows the analysis of the cost of all the feed that will be used by the Fish farmer covering a rearing period of six months. This includes: Period of the usage of each type of feed: Size of feed to be used at a particular rearing period: Quantity of feed to be used at a particular rearing period: Cost of each type and size of feed.

**FEED SCHEDULE FOR: 8000 INFANT FISHES: FOR A PERIOD OF 6 MONTHS.**

		<b>CONSUMPTI ON</b>			
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WEEK	SIZE OF FEED	QUANTITY 15KG PER BAG	TOTAL	PRICE PER BAG (N)	COST (N)
1 <sup>st</sup> week	2MM				
2 <sup>nd</sup> week	2MM				
3 <sup>rd</sup> week	2MM				
4 <sup>th</sup> week	2MM				
<b>End of 1<sup>st</sup> Month</b>	<b>TOTAL</b>	<b>240 KG</b>	<b>32 Bags</b>	<b>6,500.00</b>	<b>208,000.00</b>
5 <sup>th</sup> week	3MM				
6 <sup>th</sup> week	3MM				
7 <sup>th</sup> week	3MM				
8 <sup>th</sup> week	3MM				
<b>End of 2<sup>ND</sup> Month</b>	<b>TOTAL</b>	<b>360 KG</b>	<b>48 Bags</b>	<b>5,800.00</b>	<b>278,400.00</b>
9 <sup>th</sup> week	4MM				
10 <sup>th</sup> week	4MM				
11 <sup>th</sup> week	4MM				
12 <sup>th</sup> week	4MM				
<b>End of 3<sup>rd</sup> Month</b>	<b>TOTAL</b>	<b>600 KG</b>	<b>80Bags</b>	<b>5,750.00</b>	<b>460,000.00</b>
13 <sup>th</sup> week	4MM				
14 <sup>th</sup> week	4MM				
15 <sup>th</sup> week	4MM				
16 <sup>th</sup> week	4MM				
<b>End of 4<sup>th</sup> Month</b>	<b>TOTAL</b>				

		<b>720 KG</b>	<b>96 Bags</b>	<b>5,750.00</b>	<b>552,000.00</b>
17 <sup>th</sup> week	6MM				
18 <sup>th</sup> week	6MM				
19 <sup>th</sup> week	6MM				
20 <sup>th</sup> week	6MM				
<b>End of 5<sup>th</sup> Month</b>	<b>TOTAL</b>	<b>840 KG</b>	<b>112 Bags</b>	<b>5,350.00</b>	<b>599,200.00</b>
21 <sup>st</sup> week	8MM or 9MM				
22 <sup>nd</sup> week	8MM or 9MM				
23 <sup>th</sup> week	8MM or 9MM				
24 <sup>th</sup> week	8MM or 9MM				
<b>End of 6<sup>th</sup> Month</b>	<b>TOTAL</b>	<b>960 KG</b>	<b>128 Bags</b>	<b>5,350.00</b>	<b>684,800.00</b>
<b>AT THE END OF THE CYCLE</b>	<b>TOTAL</b>	<b>3,720 KG</b>	<b>496 BAGS</b>		<b>N 2,782,400.00</b>

**YEAR 1: 1<sup>ST</sup> CYCLE: (FIRST 6 MONTHS)**

**ANALYSIS OF EXPENDITURES:**

▪ **RECURRENT EXPENDITURE:**

Cost of 8,000 Juveniles @ N60 each	:	480,000.00
Cost of Feed (For a period of 6 months)	:	2,782,400.00
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		3,262,400.00



NAIC: 2.5% of N 3,262,400.00	:	81,560.00
Labour 2 Staff (25,000.00 Monthly)* 6 Months	:	300,000.00
Contingency	:	200,000.00

**TOTAL (Re Current Expenditure) = 3,843,960.00**

▪ **CURRENT EXPENDITURE:**

Collapsible Fish Tank: 4 Tanks @ (# 450,000 each):		1,800,000.00
4 Sets Fish Net (For Harvesting the Fishes) @(#15,000 each):		60,000.00
Installation Fee (10% of Cost of Fish Tanks)	:	180,000.00

**TOTAL Current Expenditure: = 2,040,000.00**

**SUMMARY:**

**TOTAL Re Current Expenditure = 3,843,960.00**

**TOTAL Current Expenditure: = 2,040,000.00**

▪ **TOTAL COST OF REARING: 8000 JUVENILES TO MATURITY.**

**YEAR 1: 1<sup>ST</sup> Cycle**

**Total Re-Current Expenditure + Current Expenditure:**

**3,843,960 .00 + 2,020,000.00 = 5,883,960.00**

(Five Million Eight Hundred and Eighty Three Thousand Nine Hundred and Sixty Naira only).

**RETURN ON INVESTMENT FOR YEAR 1: 1<sup>ST</sup> CYCLE: FIRST 6 MONTHS):**

▪ **Basic Assumptions:**

The following analysis is based on these basic assumptions:

Number of Fishes reared:	8000 Juveniles
Mortality rate (5%):	400 Fishes
At maturity: The quantity of fishes for Sale (95%):	7600 Fishes.
Average weight:	1.5 kg per Fish.
Average cost:	N850 per kg.
Cost of 1 Fish: 1.5kg*N850	N 1,275.00
Total value of Sales (7600 Matured Fishes * 1,275.00)	<b>N 9,960,000.00</b>
Total Cost: (Current + Re-Current Expenditure):	<b>N 5,883,960.00</b>

- **GROSS PROFIT:**  
 {Total Value of Sales minus Total Cost of Re- current Expenditure}  
 {N 9,960,000 - N 5,883,960.00} = **N 4,076,040.00**  
 (Four Million, Seventy Six Thousand Fourty Naira Only)

**FINANCIAL ANALYTICAL FRAMEWORK: YEAR: 1: 2<sup>ND</sup> CYCLE: (SECOND 6 MONTHS)**  
**ANALYSIS OF EXPENDITURES:**

- **RECURRENT EXPENDITURE:**

Cost of 8,000 Juveniles @ N60 each	:	480,000. 00
Cost of Feed (For a period of 6 months)	:	2,782,400. 00
		-----
	=	3,262,400.00
NAIC: 2.5% of N 3,262,400.00	:	81,560.00
Labour 4 Staff (25,000.00 Monthly)* 6 Months	:	300,000.00
Contingency	:	200,000.00
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<b>TOTAL (Re Current Expenditure)</b>	=	<b>3,843,960.00</b>

**Note: For second Cycle; No Capital Expenditure since the Cost has been paid off in the 1<sup>ST</sup> Cycle.**

**RETURN ON INVESTMENT: YEAR 1: 2<sup>ND</sup> CYCLE. (SECOND 6 MONTHS):**

- **Basic Assumptions:**

The following analysis is based on these basic assumptions:

Number of Fishes reared:	:	8000 Juveniles
Mortality rate (5%):	:	400 Fishes
At maturity: The quantity of fishes for Sale (95%)	:	7600 Fishes.
Average weight:	:	1.5 kg per Fish.
Average cost:	:	N850 per kg.
Cost of 1 Fish: 1.5kg*N850	:	N 1,275.00

