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**FEASIBILITY STUDY REPORT ON FISH FARM PRODUCT**

**EXECUTIVE SUMMARY**

Nigeria like most of the developing countries suffer from protein deficiency in the diet of the people. The problem is becoming more and more acute with the increase in population. Increase in fish production through aquaculture is an important source of protein. The successful implementation of an aquaculture project depends on a number of parameters, such as proper selection of site soil and water quantity, project management on scientific lines etc. the present report has been prepared keeping all parameters in view.

**PURPOSE**

the purpose of the study is to access the viability of the establishment of a fish farm at Umuaka in Njaba Local Government, Imo state, by attempting to provide data for the following.

* The entire concept of the product
* The most viable dimension of the product
* The production technology
* The cost and revenue estimates for a year period
* Expansion, development and implication schedule
* Cash flow and financial plan of the project

**PROJECT DESCRIPTION**

* The fish farm project is for the purpose of producing fish. The project would be located at Umuaka and would produce fish and fingerlings.
* The labor required would be available. Manual construction would be used for the production of fish ponds because of economic advantages. There is abundant unskilled manpower at the project environment.
* Required electric power would be supplied by a 5 KVA generator. The electric supply would be used in pumping water from the borehole.
* The project is financially viable and at the envisaged scope of operation [5 years]. A short term loan of N 13, 500, 000 is to be raised. From the second year the project would generate sufficient cash to sustain production. The loan will be defrayed in the third year of the project.
* The project would create employment and has no negative effect on the environment

**FISH MARKET**

The fish farm is expected to supply fish to Umuaka and neighboring communities the town is close to two of the largest cities in the state. Owerri and Orlu. The demand for fish in both towns is massive and some of the fish from the farm can be transported to these places for sale to increase market for the product.

**PROJECT LOCATION**

Prior to determination of site suitability, a careful consideration has been given to the easy accessibility of sufficient quantity of water, easy accessibility to the site, proper climate conditions, easy availability of production inputs, socio economic aspects, marketing channels etc. The project would be located at a 100 x 200m piece of land at Umuaka close to the Njaba river. The water table at this point would be higher and it would be easier to drill a borehole. Presently, there is no fish farm in the area and the main decision to locate the proposed fish from Umuaka was based on the fact that the market for the product is large and can be profitable. The cost of the land is considerably low because it is presently not used for any economic venture.

**PROJECT TECHNICAL FEASIBILITY**

The project would be in two separate compartments; Fish production unit and a hatching unit. The fish production section would be concerned with the production of table sized fish for consumption. The layout of production would start with two production ponds measuring 25m2 each. In the first year of operation, the ponds would be constructed and stocked. The two ponds would have a stocking density of 6,000 catfish fingerlings each, per culture period. The two initial production ponds would therefore have total fish density of 12,000 catfish fingerlings when fully stocked. It is expected that total yield would be increased per unit of production. In the second year, two additional ponds measuring 25m2 each would be constructed.

The bio-technical feasibility of the selected species is given as follows;

The catfish belongs to the family Clarinda. This family is divided into two genera; Claries and Heterobranchus. Claries have eight major species while the latter has three species in the southern zone of Nigeria. The former has a single rayed dorsal fin extending almost to the tail; The latter has a rayed dorsal and adipose fin. The Claries family would be used for the project because they feed on wide variety of food ranging from weeds and plankton to insect larvae, snails, crustaceans, worms and shellfish. The Claries specie can accept a wide variety of agricultural by-products, brewery and flourmill wastes which are available locally. When catfish are stocked at the stocking rates described, with proper feeding, they can grow to an average of 1000 g in a year.

The hatchery section starts in the second year of production. At this time, all the fingerlings required for the production ponds would be supplied from the hatchery. In the hatchery, catfish would be artificially induced to spawn by hormonal treatment using pituitary hormone within the hatching units. Catfish mature after 7-10 months at a weight of 200-500 g. However, spawning would not take placed since the final stimulation associated with the rise in water levels and the inundation of marginal areas would not occur. In the hatchery, four female brood fish each weighing 500 g can produce 10% body weight of eggs. The rate of hatchability is estimated at 50% and the survival rate of fry to fingerlings at 30%. This means that the hatchery 20,000 fingerlings from the 4 brood fishes, sufficient to meet the fingerling requirements of the production ponds after initial cropping.

**PROJECT EXECUTION PLAN**

When the project is fully implemented, a total of 1 brooder pond and 2 nursery transition ponds would constructed. The brooder ponds measure 4x4 m [ 16m2] and the nursery /transition ponds measure 3x4 m [ 12m2]. 4 production ponds would also be constructed and stocked for the production ponds, measure 5x5 m [ 25m2].

**RISKS/CHALLENGES**

Umuaka town is located in a rural area and the supply of power to the area is poor. For the project to be successful, it would rely largely on power supply from the generator which could increase operational cost.

During the dry season, the water table in the area drops to a low level. This would put a lot of stress on the pumping machine and could result in frequent break downs which would increase the operational cost of the project.

There are security challenges in the area which may result in, losses if not properly managed. However, this can be managed by using locals who are conversant with the environment as security personnel.

 **ECONOMIC/FINANCIAL PLAN**

|  |  |
| --- | --- |
| **ACTIVITY** | **AMOUNT[=N=]** |
| 1. **COST OF LAND AND DEVELOPMENT**
 |  |
| Land acquisition | 2,000,000 |
| Survey of land  | 100,000 |
| Pond construction | 1,000,000 |
| **TOTAL** | **3,000,000** |
| 1. **FISH FARM INFRASRTUCTURE DEVELOPMENT**
 |  |
| Cost of farm house/office | 2,000,000 |
| Fencing of the farm  | 1,500,000 |
| Fish shade building  | 500,000 |
| Generation of power [5 KVA] | 100,000 |
| Water pump  | 60,000 |
| Borehole | 1,000,000 |
| 2,800 Litre tanks | 500,000 |
| **TOTAL** | **5,660,000** |
| 1. **FISH PRODUCTION AND HATCHERY MATERIALS**
 |  |
| Equipment[nets, water analysis kit etc.] | 1,000,000 |
| **TOTAL** | **1,000,000** |
| 1. **SALARIES OF STAFF**
 |  |
| Farm supervisor | 600,000 |
| 2 farm assistants | 480,000 |
| Security | 240,000 |
| **TOTAL** | **1,320,000** |
| 1. **VARIABLE OUTPUTS**
 |  |
| 12,000 fingerlings | 360,000 |
| Feed | 400,000 |
| Organic fertilizer | 20,000 |
| Other chemicals  | 20,000 |
| Transportation  | 500,000 |
| **TOTAL** | **1,300,000** |
| 1. **OTHER OPERATIONAL COSTS**
 |  |
| Fuel  |  |
| Maintenance on pond  | 100,000 |
| Maintenance on equipment | 200,000 |
| Stationery | 50,000 |
|  **TOTAL** | **350,000** |
| **GRAND TOTAL** | **12,730,000** |

The land required for the project was acquired from the community for a cost of N 2,000,000 and the perimeter and topographic survey have been carried out. The design of the farm has also been completed. The construction of the ponds is estimated at N 2,000,000. The construction would be undertaken manually because it would be more expensive to transport earth moving equipment to the site. The method of construction would also provide opportunity for greater participation by the unskilled unemployed labor force in the project area. With close supervision of the construction work, it is expected that the time schedule for the implementation of the project would be easily met. A farm house would be required in the site to secure the project. It would provide areas where farm equipment would be assembled and maintained. A small office and a store would be constructed as part of the building to enable adequate control of the staff activities on the project site. It is estimated that it would cost N 2,000,000. All other equipment such as generator, tanks and other equipment would be procured from established companies. The total cost of all infrastructure for the fish farm would cost N 5,660,000.

**OPERATIONAL COSTS**

 The operational costs for the fish farm include the cost of the day-to-day management of the hatching, the wages and salaries of staff and procurement of other operational inputs. The purchases for all the materials making up the hatchery equipment will be made from Owerri and transported to the project site.

**SALARIES AND WAGES**

The estimated total annual expenditure on wages and salaries is N 1,320,000.

**VARIABLE COSTS**

The total variable costs of the project amounts to N 1,300,000 for procurement of fish fingerlings, feed ingredients, organic fertilizers, inorganic fertilizer and other chemicals.

**ESTIMATED REVENUE**

For the purpose of this feasibility report, the revenue expected is restricted to the operation of the production ponds. It is however necessary to mention that the hatchery ponds would produce the fingerlings required for the production ponds after the 1st year of operation. The production ponds when fully stocked would have a total fish density of 12,000 fingerlings, making provision for mortality at 50% mature fishes. The fish harvested would be 6,000 kg. It is expected that catfish would sell for N 900 per kg. sales and total estimated revenue for the 1st year of production would therefore, is N 5,400,000. With a modest estimated annual increase in the prices of fish of 10%, the estimated revenue accruing from the project for the first 5 years would be as shown in the table below.

Estimated revenue accruing for the first five years;

|  |  |
| --- | --- |
| Year  | Income [=N=] |
| 1 | 5,400,000 |
| 2 | 5,940,000 |
| 3 | 6,534,000 |
| 4 | 7,187,400 |
| 5 | 7,906,140 |

 The farm/project supervisor would be trained in fisheries and have acquired skills to provide technical and specialized leadership needed for the management of te fish fish ponds. He would be personally responsible for gthe day-to-day running of the fish farm. The positions of the farm assistants would be occupied by men/women who have acquired some form of formal or informal experience in fish farm management.

Income/expenditure of fish farm project

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Activity  | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| Sales  | 5,400,000 | 5,940,000 | 6,534,000 | 7,187,400 | 7,906,140 |
| Costs of sales | 9,760,000 |  - |  -  |  -  |  - |
| Gross profit | 4,360,000 | 5,940,000 | 6,534,000 | 7,187,400 | 7,906,140 |
| Operating cost  | 2,970,000 | 2,780,000 | 2,400,000 | 2,560,000 | 2,700,000 |
| N.P.B.T. | 2,403,000 | 3,160,000 | 4,134,000 | 4,627,400 | 5,206,140 |
| Tax 45% |  - | 1,422,000 | 1,860,300 | 2,082,330 | 2,342,763 |
| Proposed loan repayment | 780,000 | 880,000 | 1,000,000 | 1,150,000 | 90,000 |

The table shows the principal N 13,000,000 + interest 30% = N 3,900,000

**CONCLUSION**

The fish farm, when in full operation would have tremendous economic and socio-economic well-being of the people in Njaba local government area and the entire Orlu zone. Fish has become a very scarce commodity because of the ecological changes due to changes in climate. The scarcity has also made fish very expensive and unaffordable to majority of the population in the area. This has resulted in serious deficiency in the intake of protein by the people in the area. The prices of fish produced ion the farm would be cheap relative to the present supply. This can aid the increased intake of protein by majority of the people as it would be affordable and accessible. The project would direct employment for people for this operation. This is a significant contribution to the economic wellbeing of the people and social improvement of the project environment. The fish farm would be a highly profitable project which would generate sufficient cash to sustain production from the second year. The profits from the project would be able to repay the loan and interest within the first 5 years.