Methods and Profitability of Fish Hatchery Enterprise in India

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Short Report

Keywords: Fisheries, Economics, Enterprise

Posted Date: October 11th, 2021

DOI: https://doi.org/10.21203/rs.3.rs-960813/v1

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Abstract

Enterprise is the key foundation for any start-up or business as it provides scopes to the economic growth of individuals as well as the countries. A fish hatchery is a reliable enterprise with a sustainable good economic return. To maintain the proper and timely supply of the spawns to the fisheries industries the hatcheries should perform their activities over the year. A study in the West Bengal state of India shows that a substantial economic return can be obtained from a fish hatchery. It was also seen that the benefit-cost ratio is also greater than one (1.73). Though further research scope and enhancement of technologies can strengthen the enterprise with more profitability.

Introduction

The word entrepreneur has originated from the French word entrepreneur meaning the person who undertakes the risk of new enterprise. Entrepreneurship is a critical component of the country's economic growth since it provides a key means of addressing issues like as poverty, unemployment, and low per capita income through capital mobilization and job creation. India is also a major producer of fish through aquaculture across the world. More than 10% of the world's fish variety is found in India. With an annual fish production of around 9.06 million metric tonnes, the country now ranks second in the world in overall fish production (FAO). India provides around 7.7% of global fish output and is the fourth largest exporter of fish products in the world (Ministry of Fisheries, Animal Husbandry & Dairying). In the era of declining productivity of the soil via agricultural means Fish hatchery could came out as an alternative economic farming system to sustain the production economy in profit line. Fish hatchery is the growing of fishes by artificial breeding and hatching in their early stage of life. Many often, the progress of farming have been slowed by a shortage of seed, but once that bottleneck was removed, the industry grew rapidly (Musa et al., 2012). Despite the fact that natural fish supplies in Lake Victoria are diminishing due to overfishing and other causes, demand for fish protein has been steadily rising as a result of fast human population expansion (FAO, 2006). Larval and juvenile fishes produced generally out of these hatcheries. The fish farmers need a sustainable amount of health fish seeds or fingerlings to grow them in proper amount and time to capture the market. This induces the farmers for preparing their own hatcheries to sustain the production of fish seeds and smooth run of the fish farming enterprises. Keeping this in view a study has been carried out in West Bengal, India in rural fish hatchery enterprises to find out minutes of the processes and the economic advantages acquired out of it.

Materials And Methods

The study was carried out in a fish hatchery farm in North 24 PGs districts of West Bengal State in India. Structured questionnaires were used to find out different wings and arena of the enterprises. The hatcheries were building up in 1987 taking loan from the bank with an inspiration from the ancestors.
Infrastructures

The farm had four numbers of Hatcheries, eight number of Pump (5 HP), four Motors of Horse Power, four numbers of water tank and six numbers of Nets for covering the hatcheries as its infrastructural assets. 6 labours needed as human resources for 6 month.

Key Activities by steps:

Step 1: Buying of brood fish (male & female) (Jan,Feb,March)

Step 2: Feeding of fish (Ground Nut Cake,Rice,Mahua Cake,Boiled Pea,Soyabean Dust, lentil,Cerelac)

Step 3: Application of lime for hardiness of fish and Methylene Blue against diseases.

Step 4: Catching of male and female fish by netting during April.

Step 5: Placing them in breeding hapa for 4 hours

After 4 hours inducing hormones are injected to male and female fish as per the doses in Table-1. Thereafter 5-7 hours female fish lay eggs. The fishes are then taken out from the breeding hapa. “Haritoki Cosh” has been added for hardening the egg sponge. Subsequently after 24 hours eggs are hatched. In about 72 hours of hatching seeds are ready for marketing.

| Dose  | Fish                          | Female(mg/Kg) | Male(mg/Kg) |
|-------|-------------------------------|---------------|-------------|
| Dose 1| Punti (*Puntius sanctus*)     | 1 mg/Kg       | 1-1.5 mg/Kg |
|       | Rohu (*Labio rohita*), Katla (*Katla katla*), Mrigel (*Cirrhinus mrigala*) | 1.5-2 mg/Kg   | 1-1.5 mg/Kg |
| Dose 2| Punti (*Puntius sanctus*)     | 1 mg/Kg       | 1-1.5 mg/Kg |
|       | Rohu (*Labio rohita*), Katla (*Katla katla*), Mrigel (*Cirrhinus mrigala*) | 8.5 mg/Kg     | 1-1.5 mg/Kg |

Marketing Channel

Marketing channels has also been studied for proper understanding of economics and the after process. It has been identified by several questionnaires that the enterprise can directly sell the seeds to the fish cultivar or can sell in local market for onward selling to the fish farms. Generally the dealers come to
them and according to their need they supply the spawns. A numbers of marketing channels involves in these types of hatcheries (Chaudharya et al., 2021)

**Result And Discussions**

After through research and discussion the cost involved has been structured out and simultaneously gross return per year from the enterprises has been analyzed. The following table shows the findings of the survey.

| Table 2 | Cost analysis of the enterprise |
|---------|--------------------------------|
| **Fixed Cost** | **Variable Cost** |
| Component | Cost(in Rs) | Component | Cost( In Rs) |
| Hatchery and water tank | 2,50,000 | Labour | 2,00,000 |
| Pumps | 1,60,000 | Inducing hormone | 1,00,000 |
| Motors | 24,000 | Fish feed | 1,10,000 |
| | | Medicine | 40,000 |
| | | Electricity | 50,000 |
| | | Breeder fish | 1,00,000 |
| Total Fixed Cost | 4,34,000 | Fuel | 85,000 |
| | | Nets |
| | | Total variable cost | 6,99,425 |
| *Depreciation was calculated@ Rs 4425 |

| Table 3 | Return from the enterprise per season |
|---------|-------------------------------------|
| **Item** | **Amount produced (bati)** | **Price/Bati(Rs.)** | **Price (Rs.)** |
| Punti (Puntius sanctus) | 750 | 400 | 3,00,000 |
| Rohu (Labio rohita) | 350 | 1100 | 3,85,000 |
| Katla (Katla katla) | 350 | 1500 | 5,25,000 |
| Gross return in the season | | | **12,10,000** |
Table 4
Economic Analysis

| Total Variable Cost | Gross Return | Net Return | Benefit Cost Ratio (B:C) |
|---------------------|--------------|------------|--------------------------|
| 6,99,425            | 12,10,000    | 5,10,575   | (Gross Return/Total Variable Cost) |
|                     |              |            | =12,10,000/6,99,425       |
|                     |              |            | =1.73                    |

As the Benefit Cost ratio (B: C Ratio) is greater than 1 the enterprise may be termed as viable economically. It was observed by the research of Ashley-Dejo et al., in 2020 that BCR was greater than 1 and a positive net return by the fish enterprises. Quality seed is essential for aquaculture's long-term success. Aquaculture's expansion and development are largely dependent on seed obtained from hatcheries (Chaudharya et al., 2021). Fish farming is the prime need to meet animal protein as it can be done in the agriculturally barren land. It has been found that mostly mens are involved in susch enterprises like the findings of Oladimeji et al., (2017); Olaoye et al., (2017) fish farming enterprise is dominated by men. Though improvement needed in fisheries management for a sustainable production (Pauly et al.2002). Folayan and Folayan (2017) also found fish hatcheries to be an innovative enterprise to uplift rural economy.

**Conclusion**

It can be concluded that by the several findings around the globe, fish hatcheries is an reliable enterprise which most of the time gains a good profit and very much important to keep the fish production viable all the way.

**Declarations**

**Acknowledgement:**

The researchers are very much thankful to Rahaman enterprise of West Bengal for their full support and cooperation during the survey and collection of databases.

The author declares no competing interest.

**Abbreviations**

**FAO**
Food and Agriculture Organization

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Figures
Figure 1

Breeding Hapa

Figure 2

Spawns of Puntius sanctius after hatching
Figure 3

Legend not included with this version