Methods and Profitability of Fish Hatchery Enterprise in India

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Short Report

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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 come 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.

Table 1
Doses of hormones

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

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 men are involved in such 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

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The author declares no competing interest.

Abbreviations

FAO

Food and Agriculture Organization

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Figures

Figure-Breeding hapa with net.

Figure 1

Breeding Hapa

Figure 2

Spawns of *Puntius sanctius* after hatching

Figure 3

Legend not included with this version