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Analyzing the Economic Viability, Challenges, And Profit Potential of Integrated Cattle Cum Fish Farming

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Introduction

Integrated fish - livestock culture is a traditional farming practice that has gained renewed attention due to its potential for maximizing output and sustainability. This system involves incorporating various livestock such as ducks, poultry, pigs, cattle, buffalos, sheep, goats, and even rabbits alongside fish farming activities. The key principle behind integrated fish culture is the utilization of by-products from one subsystem as inputs for another. For example, the excreta from livestock serve as a valuable nutrient source for fish culture. The excreta are efficiently utilized as feed for fish, contributing to the production of valuable animal protein.

This integrated approach is particularly beneficial in regions with high demand for both fish and animal products, such as West Bengal, Orissa, Bihar, Jharkhand, Andhra Pradesh, Assam, and the North Eastern states of India. By combining fish and livestock farming, smallholder farmers can significantly increase profitability from a limited land area. One of the main advantages of integrated livestock-fish culture is its ability to address the feed requirements of fish in a cost-effective manner. It can improve resource efficiency, maximize productivity, and contribute to food security.

Cattle cum fish culture is widespread in rural India, where farmers commonly utilize cow dung mixed with materials like paddy husk or wheat bhusa as a natural fish food source. In some cases, cow dung shed waste is directed into ponds, serving as excellent sources of fish food directly or indirectly by promoting plankton growth and it is useful for filter-feeder and omnivorous fishes. However, it's essential to exercise caution regarding the number of animals per unit of water bodies. Excessive manure in the water can lead to algal bloom which causes the depletion of dissolved oxygen and mortality may happen. As a general guideline, it's recommended to limit the number of cattle around 5 per hectare of water bodies to maintain a healthy balance and prevent potential harm to the fish population. Cattle cum fish farming, an integrated aquaculture practice, combines livestock rearing with fish farming to maximize output and sustainability. This paper provides an in-depth economic analysis of cattle cum fish farming approach, detailing its components, challenges, and profitability.

Advantages:

- ✓ It reduces the additional cost for supplementary feeding as well as fertilization by utilization of farm waste
- ✓ This practice helps to increase the production and socio-economic status of farmer

- ✓ It reduces the input cost so, economically more efficient
- ✓ It increases nutritional source for the farmer's family
- ✓ Maximum utilization of available resource

Disadvantages:

- ✓ High disease transmission risk
- ✓ Little complex to manage both culture at a time
- ✓ Not economical viable for carnivorous fishes

Economics of Fish-cattle Integrated farming: (Amount is flexible)

Assumption:

1	Water spread area	1 ha
2	Culture period	12 months
3	Stocking rate	5,000 fingerlings/ha
4	Survival rate 80%	4,000 fish
5	FCR	1:1.5
6	Average weight at harvest is 1 kg fish	4,000 kg
7	No. of cow	5
8	Cattle feed (sumul dana)	4 kg / cow /day for 300 days 2 kg / cow /day for 65 days
9	Fodder grass	15 kg / cow /day for 365 days
10	Milk production	10 lit per cow per day for 300 days

Capital Cost:

Sr. No.	Particular	Quantity	Rate	Amount (Rs.)
1	Pond construction	1.00 ha	Rs. 15/ m^3	1,50,000
2	Cost of cross-bred cows	5 No.	Rs. 35,000 /cow	1,75,000
3	Cost of construction of cow-shed.	250 sq. ft	Rs 300/sq. ft	75,000
4	Cost of equipment for cattle shelter	5 No.	Rs.1000/cow	5,000
5	Cost of pump set	01		20,000
6	Cost of inlet-outlet structures, Net etc.			25,000
			Total	**4,50,000/-**

Variable cost:

Sr. No.	Particular	Quantity	Rate (Rs)	Amount (Rs)
1	Bleaching powder	250 kg	15/kg	3750
2	Lime	500 kg	8/kg	4000
3	Urea	200 kg	6/kg	1200
4	SSP	300 kg	7/kg	2100
5	Fingerlings	5000 nos.	2/fingerling	10000
6	Supplementary feed for fish	6 tonnes	40/kg	240000
7	Cost of cattle feed	6650 kg	18/kg	119700
8	Cost of fodder grass	27375 kg	1.5/kg	41063
9	Veterinary expenses	1 year	300/cow	1,500
10	Electricity expenses	--	--	20,000
11	Wages for labour	1 no. for 12 months	5000 /month	60000
12	Wages for fish harvesting	--	--	8000
13	Miscellaneous expenditure			10,187
			Total	**5,21,500**

Fixed cost:

Sr. No.	Particular	Rate (Rs)	Amount (Rs)
1	Depreciation	10%	45,000
2	Interest on capital cost	12%	54,000
3	Interest on variable cost	12%	62,580
4	Insurance premium	6% on value of cow	10,500
		Total	**1,72,080**

Total cost = Fixed cost + Variable cost

= 1,72,080+ 5,21,500

= 6,93,580/-

Revenue:

Sr. No.	Particular	Quantity	Rate	Amount
1.	Fish	4000 kg	100 per kg	4,00,000
2.	Milk	15000 lit	50 per lit	7,50,000
			Total	**1,150,000**

Profit in rupees = Revenue – total cost

= 1,150,000 – 6, 93,580

= 4,56,420/-

Conclusion

In India, aquaculture holds significant promise for addressing key challenges such as increasing fish production, enhancing food security, and improving farmer income. With a growing population and rising demand for protein, it is necessary to balance between fisheries product demand and supply. Cattle cum fish Farming, with its diversified and intensive approach, emerges as a vital solution to utilize available resources efficiently and sustainably. It can create employment opportunities for rural communities with high profit low input. However, to realize the full potential of integrated fish farming, it is imperative to prioritize ecological considerations and effective management practices.

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