

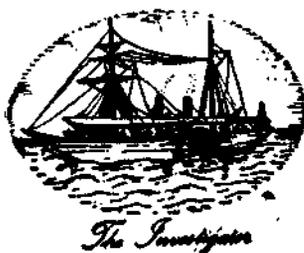
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A CASE STUDY OF THE ECONOMICS OF A TRADITIONAL PRAWN CULTURE FARM IN THE NORTH KANARA DISTRICT, KARNATAKA, INDIA

M. V. PAI, V. S. SOMVANSHI AND K. Y. TELANG

Central Marine Fisheries Research Institute, Cochin-682 018, India

ABSTRACT

Economics of a traditional prawn culture farm situated on the northern bank of Badagani River near Haldipur in the North Kanara District, Karnataka, India is studied. The farm extends over 0.78 hectare and has a single wooden sluice gate. Culture of *Penaeus indicus*, *P. monodon*, *Metapenaeus monoceros* and *M. dobsoni* was initiated in January and continued up to May 1979. The traditional practice of trapping and holding was followed in stocking the farm. In all, 375 kg of prawns valued at Rs. 10,470.00 were harvested of which 52% comprised *P. indicus* and *P. monodon*. A profit of Rs. 7,770.00 was earned by the entrepreneur after meeting expenditure on the farm. An overall review of the economics of prawn culture in the area is given.

INTRODUCTION

THE ROLE of coastal aquaculture in integrated rural development has been recognised and development of rural communities dependant on aquaculture as main economic activity has received active consideration in the recent past.

The present study is a beginning in the direction of meeting the long-felt need of fish farmers of the area to have vital information on the economics of traditional culture practices. Though the study is confined to a small farm and limited to the first half of 1979, all the same, the information presented on vital statistics of inputs and returns if supplemented by additional data from other farms of the area will be of prime importance in planning development schemes on the aquaculture front in future.

Location

The farm (Lat. 14°22'N; Long. 74°25'E) is situated near Haldipur adjoining the National Highway No. 17 on the northern bank of Badagani River (Fig. 1). The Badagani River is a tributary of Sharavati River. It originates

at Chandaver, skirts Haldipur and meets Sharavati at Honaver near its confluence with the Arabian Sea. The Badagani River is the source of brackish water for the culture farm.

Description

The farm of area 0.78 hectare has clay bunds of 3 m height and 2.5 m width. The bottom of the farm is an admixture of clay and sand, the former predominating. In December 1978, the farm was laid and kept ready by the entrepreneur for traditional prawn culture, i.e., trapping-cum-holding. Fertilization of the pond was not done. The water level in the pond was maintained at 0.6-0.9 m throughout the period of culture.

The water supply to the farm from the Badagani River was maintained through a diversion—the feeder channel. The intake of brackish water was controlled through a sluice fixed on the western side of the farm. The rectangular wooden sluice box of size 1.2 × 1.0 m had sliding shutters placed in grooves for regulating the intake and outflow of water. The sluice box was removed from the farm after the harvest in May.

STOCKING AND HARVESTING

Stocking

In January 1979, brackish water (with prawn seed) was let in the farm for 14 days, particularly 3 days before and 3 days after full and new moon.

nylon screen was fixed at the sluice gate to prevent the escape of juvenile prawns and seed from the farm at neap tides. The seed were allowed to grow in the farm for over a month. Artificial feeding was not resorted to.

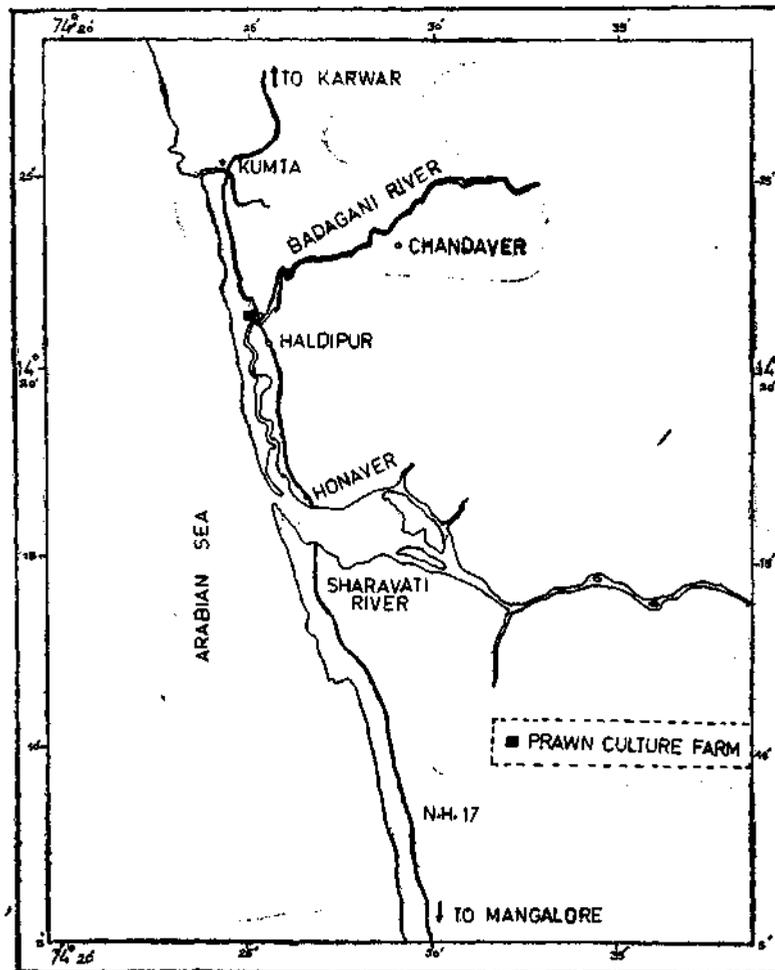


Fig. 1. Location of prawn culture farm

A petromax lamp was kept near the sluice gate to attract more prawn seed into the farm. The stocking was thus done by trapping the juvenile prawns which were allowed to enter the farm at high tide. In addition to the shutters, a

A collection of seed made in January from the feeding channel comprised *Penaeus indicus* of size 7-26 mm, *P. monodon* of size 10-30 mm, *Metapenaeus monoceros* of size 12-30 mm, and *M. dobsoni* of size 12-27 mm.

Harvesting

The harvesting operations were started from 23rd February. Like stocking, harvesting was also done for 7 days every fortnight.

Gear and mode of operation

A conical bag net of length 10 m and diameter 2 m at the mouth, and fabricated from nylon monofilament was used for harvesting. The mesh varied from 0.8 cm at the cod end to 2.5 cm at the mouth of the net.

Catch

The particulars of prawns harvested during the first half of 1979 are given in Table 1. As seen from the table, of the total yield of 375 kg of prawns harvested during the entire period, *P. indicus* aggregated as much as 150 kg. This was followed by *M. monoceros* (120 kg), *M. dobsoni* (60 kg) and *P. monodon* (45 kg). Quality prawns, viz., *P. indicus* and *P. monodon* together constituted 52% of the total catch. The catches of *P. indicus* were better

TABLE 1. Prawn harvest from the culture farm situated near Haldipur from February to May 1979

	Prawns (kg)				Total
	<i>P. indicus</i>	<i>P. monodon</i>	<i>M. monoceros</i>	<i>M. dobsoni</i>	
February	15	—	35	15	65
March	35	15	26	15	91
April	55	16	33	10	114
May	45	14	26	20	105
Total	150	45	120	60	375

As soon as the tide starts ebbing, the mouth of the bag net is fixed to the sluice gate, and the nylon screen and shutters are removed. The water gushes out from the farm through the sluice and thus gets filtered. Prawns escaping through the sluice gate get caught in the cod end of the net. The operation is continued for about 3 hours at a stretch and the catch accumulating in the cod end is taken out. Harvesting is generally done during night. As in stocking operations, in harvesting too, petromax lamps are used to attract prawns towards the sluice.

Hand picking

This practice is followed to collect prawns from the farm bed when the entire farm is almost completely drained at the end of the season.

in April and May (55 kg and 45 kg respectively); the yield of *P. monodon* showed only marginal variations between months. The catches of *M. monoceros* were better in February and April (35 kg and 33 kg respectively). The yield of *M. dobsoni* was maximum in May (20 kg).

As is only to be expected because of the growth factor involved, the catches were on the increase with the advancement of the period of culture. The highest yield aggregating 114 kg was registered in April.

The range in size of different species of prawns harvested during the culture period were 75-145 mm for *P. indicus*, 70-135 mm for *P. monodon*, 57-70 mm for *M. monoceros* and 39-49 mm for *M. dobsoni*.

ECONOMICS OF PRAWN CULTURE

The economics of prawn culture can be studied from four angles, namely, capital investment; recurring expenditure; sale proceeds from harvest; and profit/loss.

The economics of prawn culture is presented in Table 2. Capital investment on the farm involving construction of bunds and levelling,

amounted to Rs. 2,700. The prevailing market rates for different species of medium-sized prawns were Rs. 60/kg for *P. monodon*, Rs. 45/kg for *P. indicus*, Rs. 6/kg for *M. monoceros* and Rs. 5/kg for *M. dobsoni*. The sale proceeds of 375 kg of prawns aggregated Rs. 10,470. If recurring expenditure on the farm is deducted from the sale proceeds, a gross profit of Rs. 7,770 was earned by the entrepreneur.

TABLE 2. Economics of prawn culture

	Rs.
A. Capital Investment	
1. Construction of bunds and levelling	2,000.00
2. Construction of sluice gate	400.00
3. Fabrication of bag net and nylon screen	300.00
Total	2,700.00
B. Recurring Expenditure	
1. Strengthening of bunds	1,200.00
2. Depreciation on sluice gate	100.00
3. Depreciation on bag net and nylon screen	50.00
4. Labour charges for harvesting the crop and watch and ward	1,050.00
5. Miscellaneous contingencies, viz., ice, marketing, etc.	300.00
Total	2,700.00
C. Financial Returns	
Sale proceeds of 375 kg of prawns	10,470.00
Less recurring expenditure	2,700.00
Profit ¹	7,770.00

¹ Exclusive of rental of farm area and interest on capital investment and recurring expenditure.

and fabrication of sluice gate, bag net and nylon screen was of the order of Rs. 2,700. Of this, a major part aggregating Rs. 2,000 was spent on construction of bunds and levelling the farm. The recurring expenditure towards strengthening of bunds, depreciation on sluice gate, bag net and nylon screen, labour charges for harvesting the crop and watch and ward, and miscellaneous contingencies

The present study, covering as it does, the economics of prawn culture in a small area with proprietary rights gives a somewhat enhanced picture of the profitability of a culture scheme. The profit would have been much less, had the land been taken on rental and institutional finance raised by the culturist. If the rental of the farm and interest at 15% on the capital investment and recurring expenditure are run

down on the gross profit, a profit of Rs. 4,960 would reach the hands of the entrepreneur. After further allowing recoupment of capital investment, the net profit on the operations would be Rs. 2,260 which is a return of 80% on the capital and is quite attractive. The particulars of location, financial returns, etc., of two prawn culture farms of North Kanara District are given in Table 3.

1980). The possibility of traditional culture practices giving small returns in future years cannot be ruled out unless modern technological innovations are incorporated into the system.

CONCLUSION

The vast 'gazani' areas of North Kanara have been under traditional prawn culture for

TABLE 3. Particulars of location, season, area, returns and profit/ha of two prawn culture farms in the North Kanara District

Location	Season (October-May)	Area (ha)	Returns (Rs.)	Profit (Rs.)	Profit (Rs./ha)
Keppekurve (Kumta)	1965-66		76,130	73,230	6,032
	1966-67	12.14	24,498	21,297	1,734
	1967-68		72,406	69,006	5,684
Asnoti (Karwar)	1976-77		539,500	346,650	6,660
	1977-78	81.00	374,250	230,975	2,852
	1978-79		372,750	229,925	2,839

In the present study, prawn production per hectare worked out to 480 kg. A comparison of yield of prawns from such operations from other parts of the country reveals that better results have been obtained elsewhere. The yield of prawns from the low-lying, 'bheries' of West Bengal ranged between 158 kg/ha and 672 kg/ha (Verghese, 1980). Menon (1954) has arrived at an average annual yield of 1079 kg/ha and George *et al.* (1968) have given a return of 514 kg/ha in Kerala. A traditionally operated field at Vypeen Island in Kerala yielded 637 kg/ha (Gopalan *et al.*, 1980). In general, production from traditional culture farms in Kerala has shown a decreasing trend through the last few years (Gopalan, *et al.*,

the past few decades. In general, the traditional practice of trapping-cum-holding has the severe limitation of low production, poor quality and growth, uneconomic varieties, and above all, the menace of predators. With the support of managerial skills, institutional finance, improvements in quantum and quality of inputs, and selective stocking of fast growing species such as *P. indicus* and *P. monodon* either separately or together or in combination with compatible fishes instead of following the traditional practice in these areas, the small-scale culturist can look forward to a bright future. But saddled as he is with the limitation of small holding yielding small returns, it

is imperative that large co-operatives be better returns can be had from extensive farms. organised by involvement of fish farmers with This will give a further boost to the export- rich experience of traditional farming so that oriented prawn farming industry.

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