

An Economic Appraisal of Freshwater Prawn Farming in Thanjavur District

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An economic appraisal of freshwater prawn farming was made by conducting a field survey from January to April 2000, among 25 randomly selected freshwater prawn farmers in Thanjavur district of Tamilnadu. Since the farm area of the selected respondents varied from 1.0 ha to 7.5 ha, the economic measures discussed in the results were computed for one-hectare farm area. The economic estimates indicated the economic feasibility of freshwater prawn farming. The net returns per ha per crop was found to be Rs.47,378 and the rate of return to investment was 45.34%.

Key words: Economic appraisal, rate of return, prawn farming, Thanjavur

Freshwater prawn farming is gaining importance in Tamilnadu in the wake of a legal ban on coastal shrimp farming because of obvious environmental and social implications. Availability of freshwater prawn seeds from natural resources combined with facilities for artificial seed production supports freshwater prawn farming to a large extent. The higher profitability of freshwater prawn farming vis-à-vis freshwater carp farming has been reported by Kumar *et al.* (2000) based on short term economic or statistical analysis. They estimated the production of freshwater prawn, *Macrobrachium rosenbergii* as 973 kg per ha per crop, compared to the average production of 3500 kg per ha per crop in the case of carp farming. The growing demand and the high export prices of prawns make freshwater prawn farming more profitable than carp farming. Information on the economics of freshwater prawn farming is limited and only a few studies have been conducted. Mahapatra *et al.* (1994) estimated the freshwater prawn production in polyculture systems along with carps at 1016 kg per ha per crop in the Sunderbans area of West Bengal State. Thus it becomes necessary to assess the economic feasibility of freshwater prawn farming for providing

information relating to enterprise budgeting and preparation of bankable projects for the entrepreneurs before they take up or expand this venture.

Materials and Methods

Thanjavur district (Tamil Nadu), where the farming of freshwater prawn is gaining popularity, was selected to assess the economic feasibility of freshwater prawn farming. The size of sample of freshwater prawn farmers was fixed as 25. Random sampling was followed for the selection of respondents for the field survey. Thus the estimates are based on a field survey among 25 freshwater prawn farmers, conducted from January to April 2000. The size of farm operated by the farmers varied from 1.0 ha to 7.5 ha. The recorded data were therefore, not comparable as such. Hence, the data collected on capital investment, production cost, yield of prawns and total returns were tabulated respondent-wise and analysed. The average values per hectare were calculated for comparison and preparing standard enterprise budget. The economic analysis was carried out for the situations given below. The economics was studied for the areas where there was continuous supply of water and rearing of two crops in a year was

possible. The stocking density was 20,000 per ha for prawns and 850 per ha for carps. The land area used for aquaculture was assumed as leased with the rent treated as an item of fixed cost. Commercial feeds were used that would give 30-40% protein, 7% fat and 3% crude fibre. The survival rate considered was 70% for prawns and 80% for carps.

Results and Discussion

The items of capital investment required per hectare area for freshwater prawn farming is presented in Table 1. The average capital investment was Rs.2,09,000. Capital investment included excavation of ponds, establishment of bore well with submersible pump, paddle wheel aerators (2 nos), construction of semi-permanent store room and others. The average fixed cost per annum for 1 ha area was Rs.53,315 which included rent value on land, depreciation, interest on capital investment and expenses towards repairs and maintenance. The percentage contributions of interest on capital investment, depreciation, rent on land and expenses towards repairs and maintenance to total fixed cost per annum were 62.72, 22.27, 9.38 and 5.63, respectively. The items of production cost incurred per hectare are presented in Table 2. The total variable cost per crop with a duration of 6 months was estimated as Rs.84,465 (Table 3). The variable cost comprised feeds and feeding, management, seeds and stocking, wages and

Table 1. Capital investment for freshwater prawn farming

Items	Rs./ha
Excavation of ponds and formation of bunds (3600m ³ @ Rs. 20 m ³)	72,000
Formation of borewell (250 ft)	10,000
Cost of 5 hp submersible pump (1 no.)	20,000
Sluice gates for 4 ponds	20,000
Cost of paddle wheel aerators (2 nos.)	40,000
Construction of semi-permanent store room (10x10 ft)	35,000
Fishing nets and accessories	12,000
TOTAL	2,09,000

Table 2. Production costs in freshwater prawn farming

Items	Rs./ha
I. Fixed cost	
Rent on land per annum	5,000
Interest on capital investment of Rs. 2, 09,000 @ 15% per annum	33,440
Depreciation on farm equipments per annum	11,875
Expenses towards repairs and maintenance	3,000
Sub Total	53,315
II. Variable Cost	
Pond preparation	
Lime application 300 kg @ Rs.2/Kg	600
Application of urea 10 kg and super phosphate @ 25 kg	700
Provision of hideouts using palmyrah leaves	350
Cost of freshwater prawn seeds of 16,000 nos @ Rs.0.60 per seed	9,600
Cost of carp seeds of 650 nos. @ Rs. 1.00	650
Nursery feed for 370 kg @ Rs. 29 per kg	10,730
Shrimp feed (grower + fisher) for 960 kg @ Rs.25 per kg	24,000
Application of growth promoters mixed with feed	5,435
Electricity cost for water exchange	10,000
Wages for hired labour	4,000
Salary towards permanent watch and ward	6,000
Cost of lime applied at the time of water exchange	11,600
Total variable cost per crop	84,465
Total variable cost per annum (2 crops)	1,68,930
Total cost of production (for 2 crops)	2,22,245

Table 3. Components of total variable cost in freshwater prawn farming

Items of cost	Rs./ha %
Feeds and feeding	40.165 (47.55)
Management	21,600 (25.57)
Seeds and stocking	10,250 (12.14)
Wages and salaries	10,000 (11.84)
Pond preparation	2,450 (2.90)
TOTAL	84,465 (100.00)

salaries and pond preparation and the corresponding percentage to total variable cost were 47.55, 25.57, 12.14, 11.84 and 2.90. The total variable cost per annum came to Rs.1,68,930. The total cost for 2 crops per annum was calculated to be Rs.2,22,245. The

Table 4. Returns from freshwater prawn farming

Items	Rs./ha
Sale of male freshwater prawns of 560 kg (legless) @ Rs. 225	1,26,000
Sale of female freshwater prawns of 196 kg @ Rs. 125	24,500
Sale of soft prawns for 15 kg @ Rs. 100	1,500
Gross returns per crop	1,52,000
Gross returns per annum (for 2 crops)	3,04,000
Returns through sale of fish of 520 kg @ Rs. 25 per kg	13,000
Total gross returns per annum	3,17,000

percentage shares of fixed cost and variable cost to total cost came to 23.99 and 76.01, respectively.

The average gross returns realized from 1 ha area is presented in Table 4. The average gross returns per crop was Rs.1,52,000 and Rs.3,04,000 for 2 crops per annum and the returns realized through the sale of fishes was Rs. 13,000. Thus the gross returns per annum for 2 crops of prawn farming was worked out as Rs.3,17,000. The corresponding total cost of production per annum was Rs.2,22,245. Thus the average net returns per annum worked out to Rs.94,755 with Rs.47,378 for one crop of prawn culture.

The economic measures estimated are presented in Table 5. The rate of return on capital investment was 45.34% per annum, an impressive and realistic rate. The input - output ratio i.e., the ratio between total

Table 5. Economic measures of freshwater prawn farming

Items	Rs./ha
Total annual gross returns (for 2 crops)	3,17,000
Total production cost per annum	2,22,245
Net returns per annum on total cost basis	94,755
Net returns per annum on total variable cost basis	1,48,070
Rate of returns on capital investment	45.34%
Input-output ratio	1:1.70
Cost of production per kg of prawns	144
Mean gross returns realized from sale of 1 kg of prawns (excluding fin fish)	197
Revenue realized per unit of sale of prawns	53

costs and total returns was found to be 1:1.70 which means that for every rupee of total cost incurred, about 70 paise of net profit could be earned. The cost of production per kg of prawns was estimated as Rs.144 whereas the mean gross returns realized per kg of sale was Rs.197 indicating a margin of Rs.53 per kg of prawns.

The investigation shows that the freshwater prawn farming in Thanjavur District, Tamil Nadu is an economically feasible project.

References

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