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Study on socio-economic profile of shrimp farmers of Gujarat State, India

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Abstract

Shrimp aquaculture has been practiced in India for centuries in a traditional manner in a certain coastal state, but made its presence felt by contributing to the socio-economic development of the country only in recent years. Shrimp farming activities have developed fast in Gujarat since last decade. Numbers of shrimp farms have been constructed in the coastal districts of the state. The fishermen of coastal districts along with other entrepreneurs have also taken up this shrimp farming business. Shrimp farming activities have also generated employment along the coastline. As this sector is growing with good pace and state is earning valuable foreign exchange it is necessary to study socio-economic profile of shrimp farmers. Socio economic profile of the shrimp farmers of the state was studied by visiting the shrimp farmers of each farming district in person. A case study was also carried out on pond performance of shrimp farmers of the state to analyze the economy of their farming operation.

From the socio-economic study of the shrimp farmer it could be observed that majority of the shrimp farmers of the state are literate, experienced and interested in the shrimp farming business seriously. It could also be concluded that shrimp farming has contributed significantly in employment generation and infrastructure development of the coastal community and overall development of the coastal areas. It could be observed from the present study that pond performance of shrimp farmers was economically viable and they had very good income during this crop.

Keywords: Shrimp farmer, socio-economic, aquaculture, pond performance.

1. Introduction

Fisheries sector of India is immensely contributing to the economy of the country. It provides valuable foreign exchange and employment to millions of people. At the same time it is an instrument of livelihood for large sections of the economically backward population of the country. More than 7 million fishermen in the country depend on capture fisheries and aquaculture for their livelihood. Fishery sector occupies an important place in the socio-economic development of the country^[1]. Shrimp aquaculture has been practiced in India for centuries in a traditional manner in a certain coastal state, but made its presence felt by contributing to the socio-economic development of the country only in recent years^[3]. Shrimp farming provides direct employment to about 0.3 million people and ancillary units provide employment for 0.6 to 0.7 million people in our country^[4].

Kumaran *et al.* (2003)^[2] studied the shrimp farming practices and its socio-economic consequences in East Godavari district of Andhra Pradesh. They concluded that shrimp farming was successfully practiced in East Godavari district, although with some constraints. Shrimp aquaculture has contributed significantly in employment generation and infrastructure development of the coastal community and overall development of coastal areas.

Gujarat is having 1,600 km long coastline and a vast stretches of brackish water area (3.76 lakh hectare) throughout the coastline which is ideal for shrimp culture. Shrimp farming activities developed fast in the last decade. Numbers of shrimp farms have been constructed in the coastal districts of the state. Major activities have been carried out in South Gujarat coast than on Saurashtra coast. Along with the shrimp farming activities so many new ancillary industries have also come up. The fishermen of coastal districts along with other entrepreneurs have also taken up this shrimp farming business. Shrimp farming activities have also generated employment along the coastline.

As this sector is growing with good pace and state is earning valuable foreign exchange it is necessary to study socio-economic profile of shrimp farmers.

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2. Materials and methods

Socio economic profile of the shrimp farmers of the state was studied by visiting the shrimp farmers of each farming district in person. Under this study educational status, age, occupation, farm size, farming experience, credit as well as their technical assistance contacts was recorded.

A case study was carried out on pond performance of 10 selected shrimp farmers of the state to analyze the economy of farming operation during the year 2007. For pond performance study two shrimp ponds were selected of each shrimp farmer. These shrimp farmers were visited once a week throughout the culture period. Details of pond performance like pond area, stocking density, days of culture (DOC), size at harvest, feed conversion ratio (FCR), selling price, feed price, total feed cost, seed price, total seed cost, total income etc., were recorded from 10 selected shrimp farmers.

3. Results and discussion

3.1 Socio-economic profile of shrimp farmer

A brief profile of shrimp farmers of the state is presented in table 1. It is evident that around half of the shrimp farmers (48.1%) had studied up to SSLC. About 30.2% of the farmers had completed graduation or post graduation, 18.3% of farmers had primary school level education and 3.4% of the shrimp farmers were illiterate (Table 1).

About 65.7% of the farmers had other occupations in addition to shrimp farming. 34.3% of shrimp farmers had only aquaculture occupation. Most of the farmers had farm size in between 2-5 ha (43.4%). 33% of farmers had farm size >2 ha and 23.6% of shrimp farmers had above 5 ha of farm size.

56% of the farmers were of the age of 40 years of age and 44% were above 40 years of age. Most of the farmers surveyed had less than 5 years of experience (74%) and 26% of farmers had more than 5 years of experience. Around 69% of shrimp farmers obtained credit for farming operations and 31% had no credit for the same.

For technical knowledge majority of the farmers (94%) had regular contacts with feed company technicians. Only 6% of the shrimp farmers had contacts with Government officers.

Table 1: Profile of shrimp farmer of Gujarat state

	Profile characteristics	Frequency and Percentage (Total- 318 farmers)
A.	Educational status	
	1. Illiterate	11 (3.4%)
	2. Primary school level	58 (18.3%)
	3. Up to SSLC	153 (48.1%)
	4. Graduate and above	96 (30.2%)
B.	Age	
	1. Up to 40 years	178 (56%)
	2. Above 40 years	140 (44%)
C.	Occupation	
	1. Aquaculture alone	109 (34.3%)
	2. Aquaculture +others	209 (65.7%)
D.	Farm size	
	1. Up to >2 ha.	105 (33%)
	2. 2-5 ha	138 (43.4%)
	3. Above 5 ha.	75 (23.6%)
E.	Farming experience	
	1. Up to 5 years	235 (74%)
	2. Above 5 years	83 (26%)
F.	Credit	
	1. Obtained	219 (69%)
	2. Not obtained	99 (31%)
F.	For technical knowledge contact	
	1. Feed technician	300 (94%)
	2. Government officers	18 (6%)

Table 2: Pond performance of shrimp farmers

Details	HN Indigos farm Navasari		Vaibhav aqua farm Navasari		Nilesh aqua farm Navasari		Keshav aqua farm Navasari		Dash marine farm Navasari	
	A5	A6	1	2	4	5	1	2	1	2
Pond Area (M2)	9,800	9,000	7,700	7,700	8,000	8,000	5,000	5,000	12,000	10,000
Stocking Date	1-02-07	1-02-07	13-02-07	13-02-07	21-5-07	21-5-07	3-4-07	3-4-07	24-3-07	24-3-07
Total Stock (Pcs)	174,000	81,000	135,000	135,000	49,000	49,000	38,200	38,200	162,000	115,000
Density (Pc/ M2)	18	9	17.5	17.5	6.1	6.1	7.6	7.6	13.5	11.5
Harvest Date	15-06-07	25-5-07	19-06-07	17-06-07	4-10-07	4-10-07	23-9-07	23-9-07	28-3-07	29-3-07
Doc	138	117	127	125	136	136	174	174	187	188
Size (Gm)	28.57	32.25	28.5	26.3	34.5	33.6	40	38.5	31.2	34.5
Biomass (Kgs)	4,600	2,560	2,925	2,400	1,272	1,160	920	1,020	4,358	3,099
Survival Rate (%)	92	97	75.8	67.5	75	70	60	69	88	83
Total Feed Used (Kgs)	7,150	3,770	3,800	4,080	1,590	1,624	1,288	1,326	8,062	5,640
FCR	1.55	1.47	1.3	1.7	1.25	1.40	1.4	1.3	1.85	1.82
Selling Price (Rs)	240	272	235	207	258	250	295	287	234	258
Income (Rs)	1,104,000	696,320	687,375	496,800	328,176	290,000	271,400	292,740	1,019,772	799,542
Cost Analysis (Rs)										
Seed Price	0.45	0.45	0.50	0.50	0.55	0.55	0.55	0.55	0.55	0.55
Total Seed Cost	78,300	36,450	67,500	67,500	26,950	26,950	21,010	21,010	89,100	63,250
Feed Price	48	48	50	50	50	50	50	50	50	50
Total Feed Cost	343,200	180,960	190,000	204,000	79,500	81,200	64,400	66,300	403,100	282,000
Profit Analysis (Rs)										
Income	1,104,000	696,320	687,375	496,800	328,176	290,000	271,400	292,740	1,019,772	799,542
Total Seed Cost	78,300	36,450	67,500	67,500	26,950	26,950	21,010	21,010	89,100	63,250
Total Feed Cost	343,200	180,960	190,000	204,000	79,500	81,200	64,400	66,300	403,100	282,000
Gross Profit (Rs)	682,500	478,910	429,875	225,300	221,726	181,850	185,990	205,430	527,572	454,292
Seed Cost 1 Kg Shrimp (Rs)	17.11	14.38	23	28.1	21.2	23.2	22.8	20.6	20.4	20.4

Feed Cost 1 Kg Shrimp (Rs)	74.6	70.5	65	85	62.5	70.0	70.0	65.0	92.5	91
Productivity (Kgs)	4,694	2,845	3,800	3,117	1,590	1,450	1,840	2,040	3,631	3,099
ADG (Gm/ Day)	0.20	0.27	0.22	0.21	0.25	0.24	0.23	0.22	0.17	0.18
Salinity Range (ppt)	16-22	15-21	30-20	30-20	38-5	38-5	15-50	15-50	45-15	45-15
Feeding Method	Boat Feeding	Boat Feeding	Boat Feeding	Boat Feeding	Dyke Feeding	Dyke Feeding	Dyke Feeding	Dyke Feeding	Boat Feeding	Boat Feeding

Table 3: Pond performance of shrimp farmers

Details	Ashish aqua farm Navasari		Apeksh prawns project Surat		Roahan aqua farm Surat		Lucky aqua farm Surat		King aqua farm Surat	
	1	2	1	2	1	2	4	5	1	2
Pond Area (M2)	5,000	5,000	9,600	9,600	10,000	10,000	10,000	10,000	7,000	7,000
Stocking Date	1-03-07	1-03-07	21-3-07	21-3-07	20-3-07	20-3-07	25-3-07	25-3-07	28-02-07	28-02-07
Total Stock (Pcs)	47,000	31,000	120,000	120,000	84,000	100,000	100,000	100,000	80,000	80,000
Density (Pc/ M2)	9.4	6.2	12.5	12.5	8.4	10	10	10	11.4	11.4
Harvest Date	22-07-07	23-07-07	18-9-07	19-9-07	6-9-07	18-8-07	21-9-07	18-9-07	15-07-07	27-07-07
Doc	144	145	182	183	169	151	178	176	138	150
Size (Gm)	34.5	35.7	37.0	34.5	38.5	36.1	41.7	34.5	31.2	34.5
Biomass (Kgs)	1,265	907	3,650	3,800	2,381	3,257	3,200	3,630	2,150	2,150
Survival Rate (%)	78	82	82	91	73	90	76	84	86	78
Total Feed Used (Kgs)	1,948	1,360	7,252	7,199	4,142	5,570	6,464	7,151	3,633	3,698
FCR	1.54	1.50	1.98	1.89	1.74	1.71	2.02	1.97	1.69	1.71
Selling Price (Rs)	288	296	282	266	282	299	298	258	259	288
Income (Rs)	364,320	268,472	1,029,300	1,010,800	671,442	973,843	953,600	936,540	556,850	619,200
Cost Analysis (Rs)										
Seed Price	050	0.50	0.375	0.375	0.375	0.375	0.55	0.55	0.55	0.55
Total Seed Cost	23,500	15,500	45,000	45,000	31,500	37,500	55,000	55,000	44,000	44,000
Feed Price	50	50	50	50	50	50	50	50	50	50
Total Feed Cost	97,400	68,000	362,620	359,965	207,100	278,500	323,200	357,550	181,650	184,900
Profit Analysis (Rs)										
Income	364,320	268,472	1,029,300	1,010,800	671,442	973,843	953,600	936,540	556,850	619,200
Total Seed Cost	23,500	15,500	45,000	45,000	31,500	37,500	55,000	55,000	44,000	44,000
Total Feed Cost	97,400	68,000	362,620	359,965	207,100	278,500	323,200	357,550	181,650	184,900
Gross Profit (Rs)	243,420	184,972	621,680	605,835	432,842	657,843	575,400	510,240	331,200	390,300
Seed Cost 1 Kg Shrimp (Rs)	18.5	17	12.3	11.8	13.2	11.5	17.4	19.0	20.4	20.4
Feed Cost 1 Kg Shrimp (Rs)	77	75	99.0	94.5	87.0	85.5	101	98.5	84.5	85.5
Productivity (Kgs)	2,530	1,814	3,802	3,958	2,381	3,257	3,200	3,630	3,071	3,071
ADG (Gm/ Day)	0.24	0.25	0.20	0.18	0.22	0.23	0.23	0.20	0.22	0.22
Salinity Range (ppt)	10-30	10-30	30-15	30-15	10-25	10-25	20-30	20-30	10-20	10-20
Feeding Method	Dyke Feeding	Boat Feeding	Dyke Feeding	Dyke Feeding	Dyke Feeding	Dyke Feeding	Dyke Feeding	Dyke Feeding	Dyke Feeding	Dyke Feeding

From the socio-economic study of the shrimp farmer it could be observed that majority of the shrimp farmers of the state are literate, experienced and interested in the shrimp farming business seriously.

It could also be concluded that shrimp farming has contributed significantly in employment generation and infrastructure development of the coastal community and overall development of the coastal areas.

3.2. Case study on pond performance

For a case study on pond performance of 10 shrimp farmers of the state were selected as 6 farmers from Navasari, 3 from Surat and 1 farmer from Bharuch. These shrimp farmers were visited once a week throughout the culture period. Per farmer 2 shrimp ponds were selected for the study. The pond performance reports of these 10 shrimp farmers are shown in Table 2 and 3.

It could be observed from the present study that pond performance of these shrimp farmers was good and they had very good income during this crop.

4. Conclusion

From the present study it could be concluded that shrimp farming has contributed significantly in employment generation and infrastructure development of the coastal community and overall development of the coastal areas of Gujarat state. Shrimp culture pond performance was also good and the success rate is also high. The socio-economic condition of the coastal population has also been improved in the state through shrimp farming.

5. Acknowledgements

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