A STUDY ON ECONOMIC PROFITABILITY OF MUD CRAB FARMING IN TUTICORIN DISTRICT

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ABSTRACT

The aim of this study is to find out general background and socio-economic status of mud crab farmers, as evidently seen in coastal villages of Tuticorin district. Keeping in view the facts, the present study was designed with the following specific objectives, *i.e.*, to study the socioeconomic profile of the crab farmers, to study the satisfaction of work among the crab farmers and to study the marketable channels and constraints encountered in crab farming. The study was conducted in three coastal villages from Tuticorin district. Crab farmers who live in Veppalodai, Pazhayakayal and Punnakayalcoastal villages from Tuticorin district were interviewed to collect primary data covered only two months period (2017). The descriptive statistics such as percentage, mean, standard deviation, Garret ranking method, chi-square test and t test were used to analyse the data. The study shows that a sizeable portion i.e. 43.81 percent of the crab farmers family earn the income ranging from 6000-7000, 26.66 percent of the crab farmers earn income between 4000-5000. Only 16.19 percent of the crab farmers earn the income ranging from 3000-4000. The Monthly average family income of the crab farmers in coastal villages of Tuticorin district is calculated and found out as Rs. 5,347.619. The study demonstrates that 52.38% of the sample respondents work for increasing income, 19.05% of the sample respondents' work for self-interest and 28.57% of the sample respondents' work for family job. Majority of the crab farmers (59.04%) sold crabs to middlemen, followed by 23.08% sold their product to the consumer directly at Tuticorin fish market, whereas, only 17.14% respondents sold crabs to the exporters. It may be due to the fact that the majority of crab farmers belong to low socio-economic status, so, they can't sell crabs directly to the exporters. Considering the economic profitability of mud crab fattening in a short time, recent year the mud crab fattening become popular in coastal villages of Tuticorin district. In conclusion, it could be said sufficient supports from the government and nongovernmental organization in needed for the sustainable development of this farming practice in coastal villages of Tuticorin district.

Keywords: mud crab, fattening, coastal ponds, biodiversity, lagoon, cannibalism, fishery extension.

Introduction

Crab is being associated with mankind from the ancient time. It is believed that a group of stars which forms a figure of crab called 'cancer' effects man's fortune. According to Greek mythology, the crab crushed by Hercules when it pinched his toes in during a contest with Hydra. He became angry and threw the crab on the sky. That makes the star sign of 'cancer'. Aquaculture of the mud crab has been practiced for the past l00 years in China (Yalin and Qingsheng, 1994) and for the past 30 years throughout Asia. In Japan, sea ranching of hatchery-reared mud crabs seed has been employed, but seed production has not been proved reliable (Shokita*et al.,* 1991).Crabs belong to the family Portunidae of the class Crustacea play a vital role in the ecological balance. It offers excellent food for estuarine crocodiles, sharks, estuarine groupers turtles and grey-headed fishing Eagles (Lee, 1992). Millions of poor fishers, traders and transporters are directly or indirectly dependent on crab fishery in Bangladesh (Zafar, 2004; Patterson and Sainuel, 2005).

There are various types of livelihoods in the coastal region of Tuticorin such as finfish fishing, shrimp culture, agriculture, wood collection; shrimp fry collection and crab collection and fattening. The crab harvest and culture is new alternative livelihoods and have a great prospect in Tamilnadu. Continued increase in export of live mud crab plays an important role to the foreign exchange earnings of Bangladesh (Azam*et al.,* 1998).Rahman (2003) stated in his report that the major constraints of carp farming were lack of money and production cost. Khan *et al.* (1998) also identified that the lack of knowledge about fish culture was one of the most important problems.

The mortality of the crab is also caused by their cannibalism behaviour. The higher stocking density and mix sex culture can enhance cannibalism (Baliao*et al.* 1981 and Cholik and Hanafi 1992). Different crab shelters like providing seaweeds or other materials in the pond can minimize cannibalism as well as improve crab survival and yield (Fielder *et al.* 1988; Chen 1990). According to Marichamy*et al*(1986), high salinity has never been a hindrance for the survival and growth of mud crabs in the coastal ponds developed at Tuticorin. Commercial scale mud crab culture is fast developing in the coastal ponds of Andhra Pradesh, Tamil Nadu and Kerala. The aim of this study is to find out general background and socio-economic status of mud crab farmers, as evidently seen in coastal villages of Tuticorin district.

OBJECTIVES OF THE STUDY

- To study the socioeconomic profile of the crab farmers
- To study the satisfaction of work among the crab farmers and
- To study the marketable channels and constraints encountered in crab farming.

METHODOLOGY

The study was conducted in three villages from Tuticorin district. Crab farmers who live in Veppalodai, Pazhayakayal and Punnakayal coastal villages from Tuticorin district were interviewed to collect primary data covered only two months period (2017). Each village 35 crab farmers were selected as sample. The total of 105 crab farmers was selected from these three villages for the present study. Primary data was collected by observations and personal interview with the help of an interview schedule. Additional information was collected through systematic field observation. In addition, past research articles were used to obtain secondary information. The descriptive statistics such as percentage, mean, standard deviation, Garret ranking method, chi-square test and t-test were used to analyze the data.

ANALYSIS OF DATA AND INTERPRETATION

Table-1 Age Wise Classification of Sample Respondents

Age (In Years)	No. of Respondents	Percentage
40-45	10	9.52
45-50	20	19.04
50-55	45	42.85
55-60	26	24.76

| 60-65 | 04 | 3.80 |
| Total | 105 | 100 |

Source: Primary data

The above table shows that 42.85 percent of the respondents are the age group of 50-55 years, 24.76 percent of the respondents are the age group of 55-60 years, and 19.04 percent of the respondents are the age group of 45-50 years, 3.80 percent of the respondents are the age group of 60-65 years.

Table-2 Sex wise Classification of Sample Respondents

Gender	No. of Respondents	Percentage
Male	70	66.6
Female	35	33.3
Total	105	100

Source: Primary data

It is inferred from the table personal information that out of the 105 total respondents taken for the study, 66.6 % of the respondents are male and 33.3 % of the respondents are female.

Table-3 Family Type of Sample Respondents

Family Type	No. of Respondents	Percentage
Joint	40	38.09
Nuclear	65	61.09
Total	105	100

Source: Primary data

Results on family type revealed that 61.09 percent of the respondents belonging to the nuclear family followed by 38.09 percent from joint family.

Table-4 Educational level of the Sample Respondents

Education	No. of Respondents	Percentage
Illiterate	90	85.71
primary	15	14.28
Total	105	100

Source: Primary data

It is inferred from Table that the maximum (85.71percent) crab farmers are Uneducated, 14.28 percent of crab farmers who have completed primary level of education. Education was very lag in and around the tuticorin region due to poverty.

Table-5 Religion of the Sample Respondents

Religion	No. of Respondents	Percentage
Hindus	25	23.8
Christians	60	57.14
Muslims	20	19.04
Total	105	100

Source: Primary data

The above table reveals that the maximum of 57.14 percent of the crab farmers are Christians, 23.8 percent of them are Hindus, and 19.04 percent are Muslims. Christians are dominated in the Tuticorin region due to high number of families occupied in that area.

Table-6 Household Type of Sample Respondents

House	No. of Respondents	Percentage
Tiled	10	9.5
Thatched	15	14.28

Concrete	55	52.38
Asbestos	25	23.8
Total	105	100

Source: Primary data

The above table reveals that 52.38 percent of the sample respondents have Concrete houses and 14.28 percent of the sample respondents have Thatched houses, and 9.5 percent sample respondents have Tiled houses and 23.8 percent of the sample respondents have Asbestos house. Most of them are Concrete house. Around fifty percentages of people are financially poor background.

Table-7 Nature of House

Type of House	No. of Respondents	Percentage
Owned House	45	42.8
Rented House	60	57.14
Total	105	100

Source: Primary data

According to the above table, 57.14 percent of the respondents lived in rented house, and 42.8 percent of the respondents lived in owned houses. Due to poverty majority of the people did not have their own house.

Table-8 Marital Status of Sample Respondents

Marital Status	No. of Respondents	Percentage
Married	95	90.4
Unmarried	10	9.52
Total	105	100

Source: Primary data

The above table shows that a considerable number of the crab farmers are married. They constitute 90.4 percent of the sample while 9.52 percent are unmarried.

Table-9 Family Size of the Sample Respondents

Family size	No. of Respondents	Percentage
3-6	46	43.8
6-9	45	42.8
9 and above	14	13.3
Total	105	100

Source: Primary data

From the above Table it is seen that the number of family members of 43.8 percent crab farmers in Tuticorin district ranges from 3-6, 42.8 percent have 6-9 member.13.33 percent of the respondents have more than 9 members. It explicit that more number of families has more dependents. It creates more poverty among them.

Table -10 Income of the sample respondent's family

Family Income (Rs)	No. of Respondents	Percentage
3000– 4000	17	16.19
4000-5000	28	26.66
5000-6000	14	13.33
6000-7000	46	43.81
Total	105	100

Source: primary data

Table shows that a sizeable portion i.e. 43.81 percent of the crab farmers family earn the income ranging from 6000-7000, 26.66 percent of the crab farmers earn income between 4000-5000.Only 16.19 percent of the crab farmers earn the income ranging from 3000-4000.

The Monthly average family income of the crab farmers in coastal villages of Tuticorin district is calculated and found out as Rs.5,347.619. It shows their poor economic status of them.

Table-11 Family Expenditure of the Sample Respondents

Expenditure (Rs)	No. of Respondents	Percentage
Rs.1000-2000	8	7.61
Rs.2000-3000	24	22.8
Rs. 3000-4000	48	45.7
Rs 4000-5000	25	23.8
Total	105	100

Source: primary data

The table reveals that the majority of the sample respondents 45.7 percent spend between Rs 3000-4000, 23.8 percent of the sample respondents spend between Rs 4000-5000, 7.61 percent of the sample respondents spend between Rs 1000-2000.

The Monthly average expenditure of the crab farmers in coastal villages of Tuticorin district is calculated and found out as Rs.3,357.14. It is not afford to fulfill their basic necessities itself.

MONTHLY INCOME DETAILS OF THE RESPONDENTS

Null hypothesis:

> ➢ There is no significant difference between the income of the sample respondents and their level of satisfaction.

TABLE-12: RELATIONSHIP BETWEEN MONTHLY INCOME OF THE RESPONDENTS AND LEVEL OF SATISFACTION

Monthly Income (Rs.)	No. of Respondents					
	Satisfied	Percentage	Not Satisfied	Percentage	Total	Percentage
1000– 2000	6	7.41	4	16.67	10	9.52
2001-3000	18	22.22	8	33.33	26	24.76
3001-4000	12	14.81	3	12.50	15	14.29
4001-5000	45	55.56	9	37.5	54	51.43
Total	81	100	24	100	105	100

Source: Computed from Primary Data.

From the above table reveals that 7.41% of the respondents satisfied monthly income between Rs.1000-2000, 22.22% of the respondents satisfied income between Rs.2000-3000, 14.81% of the respondents' satisfied income Rs.3000-4000 and 55.56% of the respondents satisfied income Rs.4000-5000 respectively.

In order to find out whether there is any correlation between the income of the respondents and their level of satisfaction, chi-square test has been applied. The results of the Chi-square test are furnished below.

Calculated value of Chi-square	= 11.4
Table value at 5 per cent level	= 7.815
Degrees of freedom	= 3

As the calculated value of Chi-square is greater than the table value at 5 per cent level of significance, there is a relationship between income of the respondents and their level of satisfaction in the study area.

Table No:13 Work experience of Sample Respondents

Years	No. of Respondents	Percentage
7 - 9	1	0.95
9 – 11	14	13.33
11 – 13	26	24.76
13 & Above	59	56.19
Total	105	100

Source: Primary data

Table 13shows that 56.19% of the sample respondents work in 13 and above years, 24.76% of the sample respondents working 11 – 13 years, 13.33% of the sample respondents working 9 – 11 years and 0.95% of the sample respondents are working between 7 – 9 years. Thus, 56.19% of the sample respondents work in 13 and above years. Above fifty percentages of their people are having livelihood with the crab farming.

Table No: 14 Type of Livestock of the Sample Respondents

Livestock	No. of Respondents	Percentage
Goat	22	88
Cow	6	24
Hen	18	72

Source: Primary data

Table 14 shows that 88% of them are breeding Goats, 72 % of them are Hens and 24% of them breeding Cows. It shows the way of to earn additional income.

Table No: 15 Reasons for Work of the Sample Respondents

Reasons	No .of Respondents	Percentage
Increase income	55	52.38
Family Job	30	28.57
Self Interest	20	19.05
Total	105	100

Source: Primary data

Table 15 shows that 52.38% of the sample respondents work for increasing income, 19.05% of the sample respondents' work for self-interest and 28.57% of the sample respondents' work for family job**.**

Thus, majority of the sample respondents are working for increasing their income to fulfill their basic needs. To avoid the neglect of tradition job 28.57 percentages of people doing this job as family job. It shows their attachment of nativity and traditional systematic work.

Table No: 16 Significant differences in satisfaction of work among the crab farmers based on education

Educational level	N	Mean	S.D	't'Value	Interpretation
Illiterate	90	32.53	18.05	0.6422	Not Significant
Primary	15	21.14	6.21		

Source: Computed from Primary Data

In order to find out the significant difference in satisfaction of work among the crab farmers based on education, the 't' value was calculated and the calculated 't' value was found to be 0.6422 which is lower than the table value 1.97 which is significant at 0.05 level. Therefore, the null hypothesis is accepted and concluded that there is no significant difference in satisfaction of work among the crab farmers between different educational levels of the respondents.

Table 17: Marketing channels

Marketing channels	No .of Respondents	Percentage
Selling to the middleman	62	59.04
Selling to the exporter	18	17.14
Directly selling to the consumer	25	23.08
Total	105	100

Source: Primary data

Table 17 shows that majority of the crab farmers (59.04%) sold crabs to middlemen, followed by 23.08% sold their product to the consumer directly at Tuticorin fish market, whereas, only 17.14%

respondents sold crabs to the exporters. It may be due to the fact that the majority of crab farmers belong to low socio-economic status, so, they can't sell crabs directly to the exporters.

Table 18: Barriers faced by farmers

Barriers	Mean Score	Rank
High feed cost	58.16	II
Prevalence of disease	53.09	III
Water quality deterioration	43.97	I
Cannibalism	39.62	V
Low salinity problem	31.83	IV
Lack of knowledge about crab farming	24.61	VI

Source: Compiled from Primary Data

It is found from Table 18 that water quality deterioration problem was ranked first followed by high feed cost. Prevalence of disease was ranked third and low salinity problem ranked fourth. Cannibalism and lack of knowledge about crab farming was ranked fifth and sixth respectively.

CONCLUSION

Considering the economic profitability of mud crab fattening in a short time, recent year the mud crab fattening become popular in coastal villages of Tuticorin district. But still this farming has some potential barriers that are working behind the production and development of this culture practice. Without identifying and eliminating those barriers, it is difficult to attain the satisfactory growth of this potential farming. In conclusion, it could be said sufficient supports from the government and non-governmental organization is needed for the sustainable development of this farming practice in coastal villages of Tuticorin district. In addition adequate and proper market information can also encourage the farmers to expand their farming more sustainable level. The study will also help in planning, development and fishery extension activities carried out by the different Government and Non-Government agencies in a more meaningful and scientific way.

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