

Livelihood Generation of Women by Mud Crab (*Scylla sp.*) fattening in Deltaic Sundarban of West Bengal

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Abstract: *Brackish water crab fattening in Sundarban is an old and traditional practice which is playing a significant role in livelihood of coastal people. The women's participation played an integral role in mud crab fattening. They are either directly involved in mud crab fattening or in many cases they are assisting their husband or other family members in feeding, stocking, and other pre and post-stocking management. The present study was conducted during 2011-2012 in different villages of Gosaba block of Sundarban. Most of them involved in feed application, while involvement in marketing was less. This is due to some social and religious norms and also for the pressure of other household works. They experienced lack of seed availability, exploitation by the middleman, non-existence of proper transport facility, proper market information, proper insurance and training facilities to avail a better return from the investment. Adequate fund and government support, incorporation of training and counseling etc. are required for the promotion of crab fattening. This in turn generates an alternative livelihood for sustainable development to a huge number of coastal rural women.*

Keywords: Crab fattening, women's participation, training, alternative livelihood, Sustainable development

1. Introduction

The mud crab, *Scylla serrata*, is one of the most tastiest and important coastal aquatic species in India, due to its high demand and price in the national and international markets. It occurs throughout the coastal waters of East Coast of India particularly in the estuaries and swamps of the Sundarban mangroves areas as natural habitat (Overton *et al.*, 1997). It is one of the biggest crustacean decapods under Portunidae family may attain 2 kg in weight (Piatek, 1981) and distributed in the Indo-West-Pacific region. It is one of the most popular and costly sea foods in the South-East Asian countries (Pripanapong and Tongdee, 1998). Crab fattening of *S. serrata* is essentially stocking soft shell crabs that are held in smaller impoundments for 15 to 25 days till the shells are hardened and they 'flesh out'. In this process both the male and female are involved in different stages, though women have better staying power with the capacity to endeavor long hours of work and also have the forbearance to conserve resources for future (FAO, 1987). Women are involved in several segments of economic activities in aquaculture & fisheries. From fish fry collection to grow-out production and management including on farm and on shore post-harvest management, marketing and processing of the fisheries products they are directly or indirectly involved (Kevane and Wydick, 1999; Shaleesha and Stanley, 2000; Sharma, 2003; Song, 1999). The gender affinity of this sector is slowly shifting towards not only sustainable production but also gender equality. The gender in mud crab fattening is also undergoing significant transformation. The situations is changing now, they are involved in various agricultural activities in poultry, livestock and vegetable production (Hamid and Alauddin, 1998). The socio-cultural changes also shift their involvement from household based farming activities to labour intensive farming system (Shelly, 2005). Women are involved in planning, decision making process and work hand in hand with men in managing and controlling the process. Availability of institutional finance

helps them to perform mud crab fattening which are operated mostly by group of women. The problems of lack of seed availability, exploitation by the middleman, non-existence of proper transport facility, proper market information, proper insurance and training facilities restrict them to avail a better return from the investment. Adequate fund and government support, incorporation of training and counseling etc. are required for the promotion of crab fattening. This in turn generate an alternative livelihood for sustainable development to a huge number of coastal rural women.

2. Materials and methods

Selection of Site

Crabs are generally cultured in three districts of West Bengal namely North 24 Parganas, South 24 Parganas and Purba Medinipur because of their brackish water resources. Brackish water is essential for culture of mud crab (*Scylla serrata*). Among these three districts, South 24 Parganas has the highest concentration of crab fatteners. Gosaba block was selected considering the maximum number of crab farmers inhabiting in this block. A random sampling of ten villages, (viz. Lahiripur, Jamespur, Pakhirlalay, Dayapur, Sathjalia Dwip, Bali, Bipradaspur, Pathankhali, Sambhunagar, Birajnagar) was done during 2011-12 for this purpose.

Data Collection

Data collection were made in two ways; collection of existing data (secondary data) such as published literature, books, research articles and maps etc. of institutions & by survey. The history of the industry, present status, current problems and related legislation was collected from the literature survey. The collection of new data by filling of questionnaires was carried out. The collected data are later analyzed statistically.

3. Result and Discussion

Among the surveyed crab fatteners majority i.e. 55% possessed medium area of water bodies (4-8 Katha) followed by 36 % who possessed small area of water bodies (below 4 Katha). Only 9% crab farmers possessed large water areas of above 8 Katha's. Crab fattening is carried out in small tidal ponds ranging from 95-100 m² in size with a water depth of 0.5-1.0 m. Bundhs have a minimum width of 7-8 m & length of 10-12 m for the top to prevent crabs from escaping by burrowing through the bundhs. The result revealed that 94% crab farmers cultured during the time of July to March, depending upon the availability of wild seeds from the crab collectors. The rest 6 % did culture throughout the year. The pond bottom is prepared by draining out the water and allowing it to dry before liming is done. The water is let in during the high tide or sea/ canal water is pumped into the pond to maintain a maximum height of 1.5 m. Soft-shelled mud crabs of size 5-7 cm carapace width and above or crabs of 100-150 gm are stocked with a stocking density of 90-100 Kg /100 m². or 6-7 no. of crab / m² within a pond. The stocking was made through consecutive 4 to 5 steps for a culture cycle. The total period of culture extends from 9 to 10 months (July to March) having one fattening cycle is of 15-25 days duration. Crabs of similar size are preferred to reduce cannibalism. Ponds are divided into compartments in some cases and crabs of the same size are stocked together to avoid cannibalism. Male and female crabs are stocked separately or simultaneously. Crabs are fed with bivalve meat/ trash fish with a daily ration at about 5-10% of body weight (10% during the first week). The duration of fattening is normally 15-25 days. For male @ 3-5 kg and female 2-3 kg feeds are given per 100m² per day. The expected survival rate is 80 to 90%. The crabs are harvested after the shell hardens and before the next molting. The harvesting mainly done in tide-fed ponds by letting in water through the sluice or pumps into the pond during high tide. As the water starts flushing in, the mud crabs tend to swim against the incoming water and congregate near the sluice gate. The crabs were caught with the help of a scoop nets and also by hand picking at the lowest low tide levels. The findings showed that all crab fatteners used supplementary feed for crab fattening. The crab fatteners generally used trash fish like *Puntius sp.* as supplementary feed. The export as well as domestic market of crab is met through crab landings from the natural collection / harvest from the sea as also from the brackish water areas. Frozen crab meat and live crabs are exported from India to south East Asian countries. *Scylla serrata* is much in demand in the domestic market and fetches a good price, compared to other species of crab. Medium and large crabs of more than 14 cm carapace width and weighing about 600 g. are collected exclusively for export purposes from West Bengal. All the local crabs are routed through market at Canning.

Regarding the Socio-economic profile, 80% of the respondent's belongs to Joint family pattern indicating that they still follow their traditional practices of living together as a joint family sharing the income and having a common hearth. The modern trend of adopting to the nuclear families among 20 % of the respondents family shows that it is slowly gaining attention due to education and mobility for employment. Moreover, their contacts with outside world

would have helped them to change their attitudes towards adoption of nuclear families for better standard of life. 77 % of the respondents' families had 6-9 members and the rest 23 % were of small family with the present concept of having just 3 members in the family. Primary school level education was rampant among the respondents (75 %). Only 25% of the respondents on an average had Secondary school education. With the primary school level education among the women fattener, it was surprising to note that they were able to handle all the mud crab fattening with this level of education effectively without any difficulty. Majority of the respondents were unmarried (70%) and very few were married (30%). 75 % engaged in mud crab fattening for 4-5 yrs, followed by 20 % with 1-2 yrs of experience and 5 % with 6 and above years of experience. In general, 30 % of the respondents were motivated by the factors such as 'Economic necessity', followed by the factor 'Economic Independence' (25%) and 'Occupy the time usefully' and 'Raise the standard of living' (35%). It was astonishing to note that for a minority of 10% 'Dislike the household work' was also a reason for taking up jobs. This also pinpoints the need for giving proper work environment to lessen drudgery in household work for the homemakers. The decision making activities to which 'Women alone'(10%), 'Men alone'(20%) and 'Both'(70%) are depicted. The women manager expressed that the factors such as 'Plan of work for the day' and 'Managing the Technicians' were planned exclusively by the women and the activities like 'Purchase of materials required for crab farming', 'Keeping accounts', and 'Buying new equipments' was decided by the 'Men alone'. The remaining activities like 'Expenditure of income' and 'Maintaining accounts' were jointly decided by men and women. It was observed that the women played a major role in the decision making related to both fattening and household activities. Crab fatteners in most of the cases did not get actual price of their products due to intervention of brokers and loan burden. The crab fatteners were bound to sell the crabs at a low price to the specified brokers or wholesalers who provided them loan in their lean period. Likewise, wholesalers were to sell their products to certain distributors who gave them loan in their business.

4. Conclusion

Crab fattening can improve the women's empowerment within household and can provide a better opportunity to them that ultimately could bring change in their decision making empowerment. The present study suggested different training and extension services or working in a groups would be enhanced the skill and knowledge of the women who involved in aquaculture like crab fattening in Deltaic Sundarban area. The women's participation played an integral role in mud crab fattening. They are either directly involved in mud crab fattening or in many cases they are assisting their husband or other family members in feeding, stocking, and other pre and post-stocking management. Women participation in aquaculture in all its segments is more of its reality in the current day context than a decade back. They experienced lack of seed availability, exploitation by the middleman, non-existence of proper transport facility, proper market information, proper insurance and training facilities to avail a better return from the investment. Adequate fund and government support, incorporation of

training and counseling etc. are required for the promotion of crab fattening. This in turn generate an alternative livelihood for sustainable development to a huge number of coastal rural women and bears a direct and positive relationship with women participant in this enterprise.

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Author Profile



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