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Mudcrab Culture Can Earn Foreign Currency for Konkan Region

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Abstract

Commercial scale mud-crab culture is fast developing in the coastal ponds of Andhra Pradesh, Tamil Nadu and Kerala. Countries bordering the Bay of Bengal Regions have given much importance for the development of crab farming in order to increase the production for export market. The common mud -crabs are *Scylla serrata* and *Scylla tranquibarica*, the later is widely preferred as it grows to a maximum size of 3.5 kg and will not cause any damage to bunds or fencing arrangements in the culture system. A package of technology developed by DBSKKV for field culturing of mud-crab in coastal ponds envisage the scope for the large scale development of crab farming along the west coast of India particularly in Maharashtra. Therefore, technology transfer attempt was made to develop the mudcrab culture and fattening at on the farm of Shri. Vaibhav Bait. Doubling Farmers' Income (DFI) in Konkan region is possible through technological interventions of DBSKKV, Dapoli in mud-crab culture and fattening. The applications in management practices according to suggestions related to seed stocking density, water and feed management and methods of farming has lead to successful of mudcrab production (66%) and income.

Keywords: Crab fattening, Konkan, Maharashtra, *Scylla serrata, Scylla tranquibarica,* Doubling Farmers' Income, DFI.

Introduction

Extensive potential shallow coastal waters, lagoons, brackish-water lakes, estuaries and intertidal swampy areas are available along the east and west coast in the country. Besides this, the area already developed for shrimp farming in the coastal areas may become suitable for crab farming, as evidently seen in Tuticorin. It has been estimated that the potential resource of mud-crabs particularly from the estuaries and backwaters, having a total area of 7,770 km^2 as 13,209 tonnes in the total potential resource of 43,816 tonnes in Indian coastal waters and apparently the southern part of the coasts are potentially richer than the northern part (Rao *et al.* 1973). Mud-crabs support a year-round local fishery in coastal areas, estuaries, lagoons living both intertidally and subtidally. Babu 1995 has reported on the potential grounds, season and culture techniques employed in Andhra Pradesh. Indiscriminate fishing of juvenile crabs are going on in most of the commercial fishing grounds which can be trapped for further fattening in ponds. Moulted crabs of the commercial catches are preferred for fattening in cages ponds. In India, shrimp ponds of high saline water media have been converted in many places for mud crab farming and such sites offer ample scope for the production of gravid female and spawners. Wild seed are available round the year in backwater zones of Chilka Lake, Sunderbans area, Kakdip, Namkhana, Kakinada coast, Dowleswaram, Ra jamundry, Pulicat Lake, Killai backwaters, Muthupet saline swamps, Punnakayal estuarine complex, Colacbel, Vypeen/Neendakara and Kozhikode and other parts of countries for promoting the culture operations (Ali *et al.* 2004). A review of literature shows that there have been a few efforts to culture the young ones to marketable size involving a variety of techniques in Philippines, Thailand, India, Sri Lanka, Malaysia and Indonesia (Kathirvel *et al.* 1997). Mud crab culture depends to a large extent on wild seed supply in these countries. Culture and fattening are two distinct operations though it appears to be the same. Culture is a growout operation to raise the young seed to marketable size of 400 g whereas fattening refers to the holding of growers or water crabs for short duration to acquire maximum

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size of 800 g to realise better economic returns. Large scale culture of mud-crab is possible in fenced ponds, pen or floating cages. Techniques, employed in different types of methods have been developed by Dr.BSKKV during the year 2016-17. This system is highly suitable for mud-crab farming and fattening of the mudcrabs. Fattening is an advanced technology widely followed by Thailand, Taiwan, Malaysia and Indonesia (Raghavan *et al.* 2001). Good number of potential grounds adjacent to productive brackishwater areas exist for the expansion of this profitable venture. Because of the high market prices (₹ 1200-2000 Kg^{-1}), many farmers prefer this mud-crab culture and fattening. Advantageous to develop this fattening technique system in brackish-water area, wherein energy lost by frequent moulting are less and more gain in weight is realized (Le Vay 2001).

The Faculty of Fisheries of Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli has first time introduced mud-crab culture and fattening by imparting information to the farmers through training programmes organized in collaboration with organizations like National Fisheries Development Board (NFDB), Rajiv Gandhi Science and Technology (RGSTC), Konkan Bhumi Pratishthan, Mumbai and Department of Fisheries, Government of Maharashtra. Under this programme, farmers of the Konkan Coast of Maharashtra are made aware of importance of mud-crab culture and their importance through training programmes.

Technological intervention by DBSSKKV

Shri. Vaibhav Bait, aged 27, from Anjarle, in Dapoli taluka of Ratnagiri district was one of trainees participated in the training programme conducted during the year 2016-17. Initially he capturered the mud-crabs from estuary and kept in the small wooden boxes (Fig 1a). After completing training programme and further continuous discussion he update his knowledge within three months. Then he started mud-crab culture in pond on partnership basis at Adare village. During the year 2016-17, he constructed his farm in 1.0 ha area covering a water spread area of 0.5 ha. The mud-crab species stocked in the pond was *Scylla tranquibarica* (Green Crab). During initial crops, he had taken all the measuring cares of pond preparations. Then constructed fencing allover the periphery of pond dyke to avoid the mud-crab escape and entry of otters (Fig 1b). The seed of mud-crab were stocked at the density of 1 No m^{-2} (5,000 Nos.) and reared for duration of 180 days. At the size of 300-400 g of growth achieved in the fifth month period.The same mud-crab were transferred into perforated boxes for fattening. At the end, average mud-crab body weight was around 600 g with survival of 66%. The production obtained was 3960 kg ha^{-1}. That time, market price was ₹1000 per kg.

Before the project initiated, site selection survey was done as the suitable site is prime requirement for successful mud-crab farming. One of the

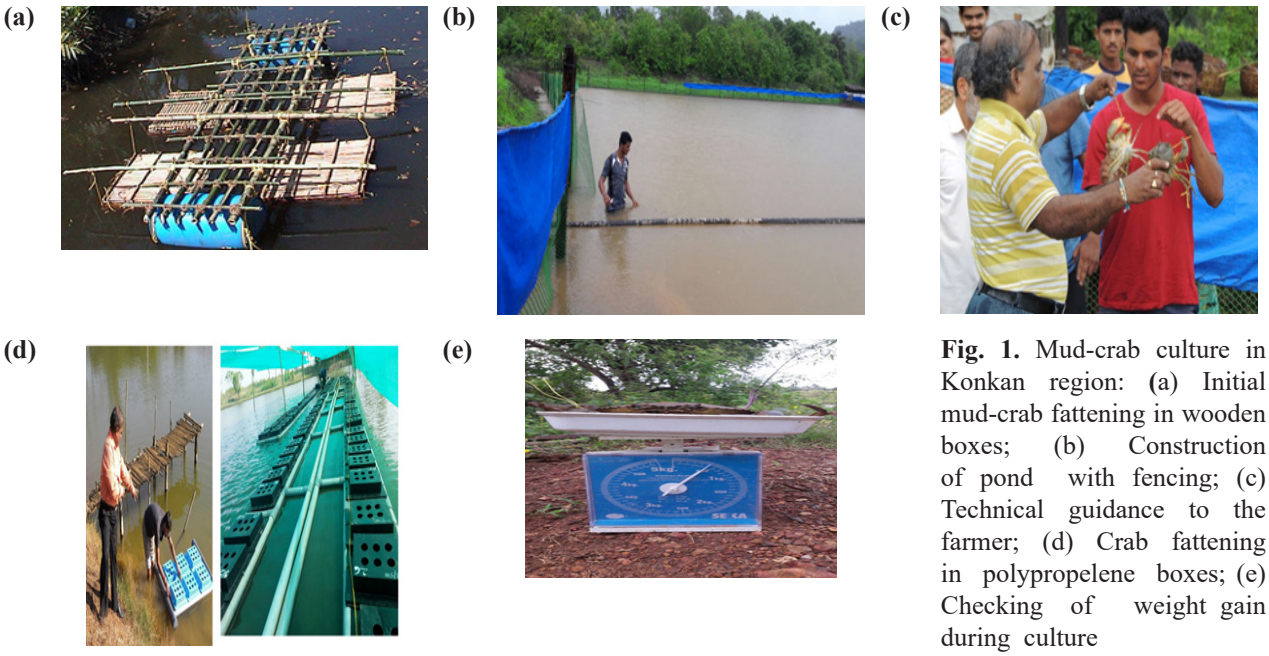

Fig. 1. Mud-crab culture in Konkan region: (a) Initial mud-crab fattening in wooden boxes; (b) Construction of pond with fencing; (c) Technical guidance to the farmer; (d) Crab fattening in polypropelene boxes; (e) Checking of weight gain during culture

problem mentioned was identification of crab species, identification of moulted crab and checking of crab growth (Fig. 1c). Technical guidance were given regarding the water quality management. Feed application timing and feeding rate was suggested at intervals of one month. As feed source used like fish pieces and chicken waste led to detroit the water quality, proper care was suggested during work. As a post-stocking management, it was suggested to observe and record important parameters like pH and salinity. Partial harvesting of mud-crab of 400 g mud-crabs from day 150 onwards. Instead of earlier wooden boxes for fattening suggested to keep mudcrab in developed perforated polypropelene boxes. This boxes can be arranged on the surface water in the rows of 100 nos (Fig. 1d).

Success Story

Over a period of one year, with his own experience and by gaining knowledge from College of Fisheries, Ratnagiri technical staff, Shri. Vaibhav Bait generated enough confidence to manage and harvested good crop yield. In the year 2015-2016, he manage his business in the estuary where he kept 10-12 wooden boxes for keeping collected bigger molted crab for fattening. During the year 2016-17, he had started his mud-crab culture and fattening project in constructed brackish water pond. In order to increase his income, he stocked mud-crab in the pond 1 nos m^{-2}. Earlier years he brought the soft mud-crab (10-12 nos). for fattening. The fattening period was kept 20-30 days. Now in mud-crab culture and fattening duration is 150-180 days in order to achieve a higher size and higher weight mud-crabs (Fig. 1e). The comparison in the management aspects and yield of mud-crab crops of the year 2015-16 and 2016-17 is given in the below Table 1.

Conclusion

The gross income of Mr. Vaibhav Bait has been found to increase effectively with adoption of techniques in mud-crab culture and fattening in constructed pond instead of only wooden box fattening of mud-crabs in estuary.

Way Forward

As mud-crab culture and fattening technique proved the potential in mud-crab production in capativity, most of the enterprenuers, farmers and fishermen have shown their interest in this field. Most of the trainers are now coming forward to do mud-crab culture and fattening in their own land. The major limitations

Table 1. Mud-crab practices in the years 2015-16 and 2016-17.

Particulars	Year	
	2015-16 (Fattening)	2016-17 (Culture & fattening)
Total number of ponds	1 happa (in estuary)	1 (Constructed pond)
Water spread area (ha)	0.5	0.5
Stocking density (Nos m^{-2})	1 no. box^{-1}	1 nos m^{-2} & 1 no. box^{-1}
Use of advanced management practices	• Only fencing • No control • Only molted crab used. • Wooden box	• Pond constructed with wire mesh fencing • Seed stocking in pond • Use polypropelene box for fattening • Removal of sludge • Feed management
Culture duration (days)	20-30 (8 month)	150-180 (8 month)
Survival (%)	90	66
Average body weight (g)	400	600
Yield (t per 0.5 ha)	60 kg	Culture 930 kg (1550 nos) Fattening 80 kg (100 nos) Total 1650 nos.
Market price realized (₹ kg)	400 kg^{-1}	600 kg^{-1}
Income (₹ Per 0.5 ha)	24,000	9,90,000

for adoption of such systems are the requirement of continuous power supply, availability of suitable lands and availability of mudcrab seed. However, College of Fisheries had already developed pilot scale mud-crab culture and fattening project in mangrove ecosystem at Kasari, Jaigad, Ratnagiri. Recently Government of Maharashtra has also declared scheme (2017-18 to 2019-20) regarding mangrove conservation and development of livelihood for local communities. In the above, it is mentioned that for starting mudcrab culture etc. there is provision for technical guidance and financial support.

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