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Performance assessment of selected technologies in marine fisheries

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Introduction

Extension is primarily a technology transfer system from researchers to farmers. It is also a communication network among farmers, researchers, credit institutions, market organizers, consumers and government policy makers. Technologies generated are transferred to the farmers through various methods from individual contact to mass media. The performance of any technology at research centre will be obviously different from its field level performance because of the variations in the environmental and socio-economic factors. So assessment of technologies at farmers' level is very significant and it helps to bring about refinement and standardization of the technology and to harvest optimum economic benefits. The assessment of the performance of technology at field level requires quantification of benefits obtained due to the technology and methods for their measurement, qualitative, descriptive, and subjective data on the technology adoption process. This would also include discussions with stake holders which will help to find out the performance of technology at their contour.

With this theme in focus, this present study was taken up to assess the effectiveness of performance of selected fisheries technologies and to analyze the

constraints confronting the farmers in adopting the innovations.

Research methodology

The study was conducted in the states of Tamil Nadu, Kerala and Andhra Pradesh. The technologies identified for assessment were crab fattening, establishment of artificial reef and value addition in Tamil Nadu, prawn peeling in Kerala, introduction of FRP boats, ice boxes, blow fly control and improved fish smoking methods in Andhra Pradesh. Data were collected using interview schedules.

Results and discussion

Tamil Nadu: Artificial reef in Tuticorin region

Fishermen who are fishing in the reef area were selected as respondents. Regarding catch, an increase of 40 % was reported by all the fishermen who are fishing in this region and they also reported that they get big sized commercially valuable fishes. There is no marked change in their employment pattern.

The average monthly income of fishermen increased by nearly 42 to 50 % but this increase is

fluctuating and not stable. Among 56 % of fishermen, the level of savings increased by 20 to 30 %.

Conflicts increased as reported by 76 % because the fish aggregation in the particular area was more and there was some conflict among the fishermen regarding the area of operation. Since the fishermen had more catch it would have increased their income and hence their expenditure towards recreational and social and religious functions was reported to be increased among 57 % of the respondents.

More than 50 % of the fishermen reported that conflict (76 %), lack of efficient marketing system (56 %) and non-availability of extension programmes (34 %) and insufficient training (52 %) are the major problems. After the initial demonstration, they were not given any technological and extension system support. Since they used to fish in the FAD installed areas it caused damage to their nets and frequent repair.

Table 1. Constraints faced by the fishermen

Constraints	Percentage
Damage to nets	78
Conflict among fishermen	76
Lack of suitable technology	34
Lack of efficient marketing facilities	56
Unawareness of supply of services offered by centres	34
Non-availability of extension programmes	34
Insufficient training	52

Crab fattening

Crab fattening was undertaken by a women self-help group in the Therespuram area in the Tuticorin region. Most of the fisherwomen involved in this activity were also involved in post-harvest fisheries activities.

Crab fattening was done in cement tanks. The crabs were purchased from the fishermen at the landing centre, and stocked in the tanks and fed with trash fish. The size of the crab at the time of stocking varied between 20 to 40 g and they harvested crabs weighing 400 to 850 g. Crab fattening had become the main employment for 20 % of women and subsidiary occupation for 80 %. More than 80 % reported to get an income of Rs. 1500 to Rs. 2000/-

per month during peak season. All of them reported that there is no change in litigation and political participation. The participation in panchayat and local bodies was increased for 75 %. Since they were involved in this programme they had more contact with Panchayats and NGOs. Since their earning was increased, the amount they spent for recreation was also reported to be increased as reported by 50 % of the respondents.

From Table 2, it could be observed that the crabs they get for fattening is of very small size requiring more duration for fattening and hence is a major constraint by 100 %. Since the crabs are sold to the local fishermen, the price fixation is done by the purchaser and hence the price realized is low as reported by 64 %. The technology was reported to be complicated because the crab fattening is done in big tanks and hence cleaning and feeding the crabs is difficult. Crabs are not regularly available for fattening and thereby it was received as a problem by 68 %.

Table 2. Farming consequences

Farming constraints	Percentage
Lack of quality crabs	100
Lack of efficient marketing facilities	34
Economic profitability	64
Complexity	22
Physical compatibility	56
Input availability	68

Pickle making unit

Twelve women and two men are working in the pickle making unit which is located in the Vellapatti village of the Tuticorin district. All the women working in the unit were interviewed. The working time of the women is from 8 am to 5 pm. The wages they get is Rs. 2000/- per month. This has become the main occupation of the women. Before working in this unit, their income was less than Rs. 1000/- and 20% of them had no occupation. The employment period had increased from 6 months to 12 months. They also reported that their annual income and savings had increased and their debt level had come down and expenditure increased by 10%.

The social system consequences like litigation and political participation had remained unchanged. Participation in panchayat has increased as reported

by 40 %. The expenditure towards recreational activities remained unchanged. Participation in social and religious functions had increased for 57 %. Cooperation between the fisherwomen had increased since it is a group activity. No change was reported in their housing pattern.

The major constraint reported by all of them was marketing.

Kerala: Prawn peeling in community peeling sheds

For assessing the performance of prawn peeling, 30 women who were involved in prawn peeling in the community peeling shed at Neendakara in Kollam district were selected as respondents.

Nearly 71% reported that their family members also have employment. Since the community peeling shed is exclusively meant for women, even middle and young aged women can sit there and do the peeling. They feel social security in the work place. Due to the training, their efficiency and the quality of peeling was improved in the case of 50% of the respondents and this has indirectly increased their income by 20 to 30%.

Majority (83%) reported that others are consulting them for knowing the prawn peeling technique. Majority (73%) of them gained social recognition. Since the shed had good drainage system, there was no water pollution. Forty five percent reported that they are involved in value addition. More than 50% stated that their expenditure towards recreation and social functions was increased by 10 to 20% because of their increased earnings. Since the registered prawn peeling women are doing the peeling activity under a single roof, their level of cooperation has increased and they gained mutual support and help from each other.

Table 3. Constraints faced by women peelers

Constraints	Percentage
Lack of quality prawns	70
Lack of efficient marketing facilities	24
Unawareness of supply of services offered by centres	34
Insufficient training programmes	56
Prawn availability	76

Seventy percent reported that they were not getting quality, commercially-valued prawns as before. The peeled prawns were given to the merchants and hence the price are low. Insufficient training programme was given as a problem by 56 % because all the persons involved in prawn peeling were not given training and hence they have reported this as a problem. As before, they were not able to get the required quantity of prawns for peeling.

Andhra Pradesh: Introduction of fibre reinforced plastic (FRP) boats

The FRP boats were given to the fishermen by the South Indian Federation of Fishermen Societies. The sample selected included 50 fishermen. As reported by the respondents there was reduced physical strain in fishing, which made them to venture further into the sea. It also gave scope for subsidiary employment by making them to learn about engine repairs and servicing as given by 20%. They were able to get better catch and from the increased income they were able to improve their asset position and quality of life. However one negative aspect experienced is that a substantial portion of the income had to be spent on oils and engine repairs.

It is reported that the employment, income and savings have increased respectively by 24%, 66% and 53%. The expenses on household assets also have increased by 7% due to the technology adoption. The indebtedness has shown an increase due to the purchase of the craft on loan advance by the government with subsidy. The subsidy component was excluded. They will be able to repay the balance in the coming two years to make the boat their own.

Introduction of ice boxes

Introduction of ice box is a boon to the fisherwomen. Data were collected from 60 women. As reported by them the quality and freshness of the fish was maintained and the fish fetched a higher price. Storage of excess fish was done unlike earlier times when they had to go for drying.

It was observed that the annual employment was increased by 42% after the use of ice boxes with an increase of annual income by 67% due to the use of ice boxes. The savings also increased by 80% and that of the expenses on household assets by 71%. It is important to note that indebtedness was reduced by 68%.

Blowfly control strategies

The data were collected from 20 women who are involved in fish drying. The blow fly is a serious menace in fish drying and it causes lot of damage to the fish and practically reduces the income received by the fisherwomen. After adopting this strategy, the quality improvement was observed. The product was free from dust contamination. Good colour and odour of the product were obtained due to rack drying. These factors improved the price and shelf life of the products. Reduced loss and spoilage also made them to get more income.

The blow fly control strategies could increase the annual employment by 27% and income by 51%. Besides, the adopters could also increase their savings by 36% and reduce their indebtedness by 83% compared to their status before adoption. The Uppada village is now free from the menace of blow fly in most of their drying yards.

Smoking of fish

This technology mainly aimed at improving the quality of the smoked fish especially the colour, smell and shelf life. Detailed data were collected from 20 women. It was found that there is a good improvement in the colour and smell of the smoked fish after adopting this method. The shelf life of the smoked fish was increased by about 3 - 4 months. As a result of these improvements, the fisherwomen get increased price for their dried/smoked fish.

It could be seen that this method has provided 60 days additional employment than before (30% increase) and also gave an additional increase of 68% income. Besides, the new method has helped them to neutralize, their indebtedness and also helped to purchase comparatively higher quantum of household assets. The government supported the scheme financially, by providing Rs.1000/- for investment. The operational expenses worked out to be Rs. 55/- per day. The fisherwomen got much benefit out of this technology.

Conclusion

The technological assessment had given a vivid picture about the field level performance of the technologies and the perception of the stakeholders. Women in rural areas got additional employment opportunities due to the adoption of technologies and they have become economically empowered. Most of the technologies adopted are feasible at field level and the beneficiaries reported to earn regular income. The percolation of improved technology has brought about a change in their socio-economic status to a certain level. If the technology transfer efforts are made to spread out to most of the downtrodden coastal villages, it could serve as livelihood opportunities for fisher-folk community and help them to derive supplementary income. The villagers could also witness technological revolution and the lives of the fishermen could be improved.