ADOPTION OF SHRIMP CULTURE PRACTICES BY FARMERS

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Introduction

Development of shrimp farming in India has experienced remarkable growth and advancement in the last few years. From traditional filtration of mixed varieties of prawns and fishes in seasonal and perennial fields in rural areas, the shrimp culture practice has evolved into semi-intensive/ intensive culture of single species in man made environment. Much of the progress is attributed to the advances in seed production and nutrition and efforts in technology transfer by R&D agencies. At the corporate level the efforts have been for intensifying production for direct export. At the small scale level it is a source of primary income and the farmers' decisions pertain to minimising the production cost and the risk element. In order to understand the extent of use of different practices recommended under scientific shrimp farming a study was conducted among the shrimp farmers in Ernakulam district and the findings are reported here.

Methodology

A survey was conducted among a sample of 80 prawn farmers located in Kannamali-Chellanam and Vypin regions in Ernakualm District farming in 2 acres and below using an interview schedule incorporating a frequency rating scale for each of the recommended practice in scientific shrimp farming. The extent of adoption of each practice and the constraints involved were assessed. The survey was conducted in 1994-95 with reference to previous five years.

Findings

The feed back on the technology transfer on prawn farming reveals that the improved farming technique could create positive impact on the socio-economic conditions of the farmers through gain in knowledge, increased production and favourable attitudes (Srinath, 1986, Srinath, 1987 and Krishivigyan Kendra, 1994).

The technology adoption in the small scale rural sector is found to be low and beset with several constraints. Rogers (1982) classified adopters of technologies based on the time frame within which an innovation is put into practice from the time of its release. Only two per cent of farmers adopt the technology as soon as they realise its benefits. Similar trend is quite evident in the case of shrimp farming as indicated in the above studies of CMFRI. This is brought about by the complexity of farming system characterised by different production activities and factors influencing farming decisions. In the case of shrimp farming the level of adoption of recommended practices is found to be very low particularly in areas where the traditional filtration is practiced from ancient times as in the case of Vypeenkara compared to the Kandakkadavu-Chellanam region in Cochin. The traditional filtration is perceived to be environment and socio-culture friendly with low investment and periodical income. The element of risk is considered to be high in selective stocking because of the investment in seed and feed. Wild seed is preferred by small scale farmers due to the low cost, sturdiness and facility of on-farm delivery. Preference for hatchery seed is limited by its higher cost, transport, difficulties in acclimatisation, system of advance booking, difficulty in getting the required quantity at desired time and presently the fear of disease. Hence the practice of supplementary stocking scores over selective stocking among small farmers. In the meantime the tendency of over as well as lower stocking was also found among them. Lack of ability to identify the P. monodon and P. indicus seed, difficulty in counting them and giving allowance for mortality affected the stocking rates. Field preparation prior to farming is paid very little attention.

Eradication is another recommended practice about which

farmers do not have much conviction. Ammonia application has its own practical difficulties due to its cost, lack of infrastructure and fear of use of chemicals. The farmers, in certain areas, view eradication as a superfluous practice as they would not like to loose other varieties of fish which may naturally occur in the field. Moreover they feel that it is often not possible to completely eradicate the fields due to burrowing nature of certain predators.

The practice of supplementary feeding as followed at present by small farmers is not based on any rationale in the quantity and method of feeding. The tendency to mimic intensive farming resulted in stress and premature harvest. Only about 20-30% survival is generally reported through the culture period in the fields following supplementary stocking and feeding practices. In the absence of facilities for soil and water quality testing and monitoring disease farmers very rarely get technical advice in this regard. The stock is often harvested by farmer in small quantities, when they require the money, even before the completion of the culture period, in small quantities when they urgently need money. As the major supply of credit is from non formal sources such as traders the farmers are forced to sell the commodity to them at a low price. Prerequisites such as lease agreement, collateral security and no-encumberance certificate posed constraints in availing institution credit and subsidy. The system of paying the labour in kind for harvesting is unfavourable to the farmers. Table 1 gives an idea about the extent of adoption of recommended practices and Table 2 gives the major constraints therein.

Table 1. **Shrimp farming practices followed by farmers**

Recommended practice	Frequency of use (% farmers)				
	Regular	Frequent	Occasional	Tried and given up	Never
I Preparation of field					
1. Strengthening the bund	10	20	70	-	-
2. Deepening the pond	10	20	70	-	-
3. Draining the field	10	26	30	2	-
4. Ploughing	2	-	-	-	-
5. Drying	2	-	-	-	-
6. Removal of stubble and weed	50	20	-	-	-
7. Soil treatment	20	12	2	-	-
8. Use of velon screen	70	16	4	-	-
II Eradication					
1. Use of Mahua	12	6	4	-	-
2. Use of Ammonia	-	-	-	4	-
3. Other method	5	-	-	-	-
III Manuring					
1. Organic	2	6	-	-	-
2. Chemical	8	-	4	-	-
IV Stocking					
1. Selective	20	-	-	-	-
2. Supplementary	80	-	-	-	-
3. Hatchery seed	4	-	-	-	-
4. Wild seed	86	-	-	-	-
5. Hatchery and wild	10	-	-	-	-
6. Recommended stocking rate	4	-	-	-	-
7. Acclimatization	6	-	-	-	-
8. Use of happa	3	-	-	-	-
9. Nursery raring	2	-	-	-	-
V Supplimentary feeding					
1. Formulated feed	2	-	-	1	-
2. Local feed	92	-	-	-	-
3. Formulated and local feed	6	-	-	-	-
4. Recommended feeding rate	-	-	-	-	-
VI Water quality monitoring					
VII Harvest after prescribed period	25	6	25	-	-

In spite of the modern advances the main cause of concern has been the implementation of faulty practices leading to material and environmental resource degradation. Over use of practices

Table 2. Constraints related to adoption

Constraint	Very major	Major	Minor	Rank
1. Cost of farming	80	20	-	I
2. Lack of technical knowledge	80	20	-	I
3. Finance	80	15	-	II
4. Risk due to mortality	60	36	4	III
5. Others	60	-	-	IV

in the intensive systems and low level of adoption and trial and error approach in the extensive systems are the major problems which are to be solved by adaptation of the technology to the specific needs. In an effort to translate to the low-input extensive farming systems the capital based semi-intensive/intensive methods farmers end up in increased production costs and mismatching yields resulting from information gap and lack of participation. Agricultural production according to Johnson and Kellog (1984) takes place within a complex farming system that has evolved over a number of years based on experience and reasoning of the traditional farmers within their physical, economical, social and cultural environment. The technology development and transfer activities must deal with these differences to be effective.

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