Social impact and women empowerment through mussel farming

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Background

In India, traditionally, brackish water fishes and shrimps are farmed in coastal tide-fed ponds by simple extensive system of farming like the *Pokkali* farms of Kerala, the *Ghazani* and *Khar* of Karnataka and fish farms (*Bheries*) of West Bengal. Though these simple farming practices are still in vogue, modern methods of aquaculture have been adopted in almost all maritime states. Semi-intensive farming of shrimps, farming of green mussels and oysters, fattening of lobsters and crabs, finfish farming, seaweed farming, semi-culture of clams have increased the production through aquaculture in coastal ecosystems. Among these technologies, the farming of bivalves especially that of mussel and oysters are very different from finfish and shrimp farming.

Mussel farming in India can be considered as ' rural aquaculture' since it meets all the requirements to be qualified as " rural " according to the definition of Edwards and Demaine (1997). It is done by small-scale farming households or communities; it uses extensive or semi-intensive low cost production technology; it avoids the use of formulated feeds and it produces a commodity which has a low-market value affordable to poor consumers.

In India mussel farming is considered a new or unconventional technology and convincing the worthiness of the technology to the villagers as well as the planners and developer was really hard. Since 1996 popularization of mussel farming has been an identified as a technical program of the Central Marine Fisheries Research Institute (CMFRI) and accordingly extensive training programs have been conducted for nearly a decade by the staff of CMFRI. The outcome of these attempts is that farming of the green mussel *Perna viridis* became a popular avocation in the villages of Kerala (Appukuttan *et al.*, 2000).

Kerala is a state where there poverty still remains. Even though Kerala is an agricultural state, more than half of rural households do not own land (63%), compared to only 36%of landless

households in India (Dreze and Sen, 2002). There is little industry (both large scale and small to medium size enterprises) and material production, which contributes to a persistent unemployment crisis (Ramachandran, 1996).

It is well known that women represent about 70% of the poor (Mohindra,2003) and there are persistent gender inequalities. Farming of marine mussels has been found to be a women- friendly technology in Kerala (Kripa and Mohamed, 2008). The technology was chosen by the women self help groups, a form of micro-credit as their major activity mainly in Kasargod, a coastal district in north Kerala. The 1990's saw a proliferation of women SHG's across India, particularly in the South (Mohindra, 2003). These groups were designed not only as a strategy for poverty alleviation, but also to increase women's access to resources and their power in household decision-making (Sundram, 2001). The success of the adoption of mussel farming by the SHG's in Kasargod and the impact that it was able to make in other realms within the same villages and in other distant regions is presented.

Technology dissemination and initial impacts: During the initial stages of technology dissemination CMFRI was the sole institute providing training on mussel farming. CMFRI trained villagers, state officials and bankers and convinced by the worthiness of the technology, five major technology promoters *viz* State Fisheries Department, Brackishwater Fish Farmers Development Agency (BFFDA), Aquaculture Development Agency for Kerala (ADAK), Krishi Vigyan Kendra (KVK) and local governing bodies or panchayats a began to extend training facilities to farmers by associating the technology developers.

The first impact of these programs was the acceptance of the technology as a technology worthy of promoting as a rural development program by technology promoters and financing institutions. Till then only shrimp farming was considered as a mariculture activity for funding and for rural development. The actual impact of the technology began to be felt in the society when the financial support for the technology became available to the farmers and when women SHG's started adopting this technology.

Based on the support (training and finance) extended to the farmers in 16 test centers, five different types of adoption types were identified (Table 1). There was no impact in 36 % of the sites and in all these villages, the villagers did not get an financial support (Table 2). In 16% of the locations there was low level of adoption even without any financial support. In 16 % of the sites there was medium level of impact (Type III) when the farmers were provided financial assistance. Locations which were in Type I (Elathur phase I) and Type II (Dalavapuram, Phase I) progressed to Type III with moderate levels of adoption when the farmers began to get financial support. In Type IV the adoption levels were high mainly because of the group farming systems and formation of women self help groups. In 5% sites, Type V was observed i.e without any financial assistance and solely based on the demonstration during the training program, villagers adopted the technology.

This study indicates that in a developing country where the farmers are poor it is essential to provide financial support to villagers to start the farms.

Table 1.Details of the five different types of mussel farming adoption patterns observed in Kerala and the percentage occurrence of each Type.

Type of impact	Type of support provided	Level of technology adoption	% of each Type
Type I	Training / Demonstrations conducted, no financial support	No adoption	37
Type II	Training / Demonstrations conducted, no financial support	Low level of adoption	16
Type III	Training / Demonstrations conducted, financial support provided	Medium level of adoption	16
Type IV	Training / Demonstrations conducted, financial support provided	High level of adoption	26
Type V	Training/Demonstrations conducted, no financial support	High level of adoption	5

Table 2. Details of locations along Kerala coast where training has been conducted by CMFRI and the adoption levels of mussel farming

Type of impact	Test Location	Support provided		Level of adoption			
		Training	Finance	No adoption	Low	Medium	High
Type I	Paravur	√	x	√	—	—	—
Type II	Dalavapuram (1999 -2004)	√	x	—	√		—
Type III	Dalavapuram (2004-2006)	√	√	—	—	√	—
Type I	Thankasherry	√	x	√	—	—	—
Type I	Andakaranazhi	√	x	√	—	—	—
Type I	Manasherry	√	x	√	—	—	—
Type I	Panambukadu	√	x	√	—	—	—
Type II	Narakkal Phase I (1999 -2004)	√	x	—	√	—	—
Type III	Narakkal Phase II (2004-2006)	√	√	—	—	√	—
Type III	Sattar Island	√	√	—	—	√	—
Type II	Chettuva	√	x	—	√	—	—
Type V	Vallikunnu	√	x	—	—	—	√
Type I	Elathur Phase I (1999 -2002)	√	x	√	—	—	—
Type III	Elathur Phase II (2004-2006)	√	√	—	—	—	√
Type I	Dharmadam	√	x	√	—	—	—
Type IV	Padanna	√	√	—	—	—	√
Type IV	Cheruvathur	√	√	—	—	—	√
Type IV	Valiaparamba	√	√	—	—	—	√
Type IV	Thrikaripur	√	√	—	—	—	√

A micro level data analysis of four adjacent villages viz Thrikaripur, Padanna, Valiaparamba and Cheruvathur in Kasargod district indicated that most villagers in Thrikkaripur and Valiaparamba were hesitant to take up mussel farming even though they were impressed by the demonstrations and attracted by the funds available. But they became really brave enough to venture into this new

business because of the impressive harvests made by farmers in Padanna and Cheruvathoor. This indicates that most villagers are averse to new ventures when there is some amount of risk involved.

Women Farmers: The major impact on the technology was that the women in rural areas began to get an opportunity for self employment. In Kasargod district there are two different types of women mussel farmers *viz* women who start the farms as family enterprises based on the family support and women self help groups. There has been progressive increase in the number of women mussel farmers since 1996 and in the production of farmed mussels .

Initially, during 1996-1997 there were no family farms owned by women but there were nearly 40 women in mussel farming through two self help groups. From 1998 onwards women entrepreneurs (individuals) began to set up small farms and their number increased to 50 by 2005-06. At the same time the number of women benefited through formation of SHG increased to 3150. This shows that though there are women who can take leadership and establish a business with families support, majority of women in developing coastal areas find group activity better. In each group five or six women who take the lead and 14 to 16 other women follow them. They are also active and comply with the decision of the leaders. They are content with the activities and the profit earned. Contrary to this, men owned and operated small individual farms till 2004. But in the recent years men have also started forming Groups and operating in the same manner as women SHG's. Flexibility of working hours, nearness of the farm site to the homestead, easy adoptability, low risk and reasonably good profit were the main factors motivating more women to start new farms each year

Women as Farm Managers: Women progress as business managers and the fact that they invest more in farming year after year clearly shows their managerial skills. In several instances the number of mussel ropes put up in farm by women SHG 's was about 600 to 800 initially during 2000-01 and the same group found that they can increase the level of investment and consequently increased the farm size and stocking density to a range of 2000 to 3000 ropes . Women SHG's are capable of corresponding with banks, seed suppliers and marketing agents. Though they received the support of the male members initially they gradually became independent and began to handle all the farm activities independently .

The women farmers utilized the profit to repay the loans, repay already incurred depts., for children's education, health care, building house and for children's marriage. Thus the whole family is benefited.

Development of part-time employment opportunities in villages. Mussel farming is slightly labour intensive. The process of attaching mussel seed on to the rope is called 'seeding' and the seeded rope is called the 'mussel rope'. It was found that in family owned and individual farms the farmers stock about 250 to 700 ropes of 1m length. At the same time in the women SHG owned farms there will be about 800 to 3000 ropes. During the farming season the seeding is done on the banks of the estuary in front of farmer households. Typically it was found that an average farmer employs about 3 extra laborers and the SHG's also hire about 18 to 25 extra women to seed the ropes. Thus during the seeding season it is found that almost all women of the four villages of Kasargod district will be busy seeding ropes.

During the mussel farming season, several villagers, mostly men, get additional income for constructing the farm. Though the farmers themselves get involved, they hire extra laborers for farm construction and as hire charges for their canoes. Similarly during harvesting, additional women laborers are involved to declump the attached mussel and to clean the mussels. Women other than the farmers also sell the farmed mussel in the local markets.

Mussel farmers of Kasargod district use coir rope instead of nylon ropes. There are five main coir spinning units in Kasargod which now have started producing thick coir ropes suitable for mussel farming. It is understood that the majority of the workers in these units are women and the basic process of converting coconut husk to ropes is done in this region itself. This indicated that indirectly mussel farming has helped to increase the production from coir manufacturing industries, which means, more employment for women in other supporting units.

Apart from seed and coir rope, loosely spun cotton cloth (biodegradable) cloth is also used in seeding mussels. This industry has also increased production with the development of mussel farming. Other businesses which have flourished are the wood/bamboo pole suppliers and nylon rope suppliers. However these two businesses are dominated by men rather than women.

Other industries: Mussel farms are located slightly interior in the coastal areas in the estuary. The main input, namely the seed, is available only in the coastal zone in the inter-tidal and sub-tidal regions. In the Kasargode district which is the main farming area the availability of seed is low. Hence most of the farmers source the seed from three neighboring districts covering more than 250 km. The mussel fishers in Kozihkode, Cannonore and Malapuram districts supply seed to the mussel farmers. During the period 2005-06, huge quantity (1878t) of mussel seed worth Rs 10 million was supplied to the farmers. This study indicates that the social impact of mussel farming has spread even to the mussel fishers who reside away from the farm sites.

Women as mussel venders and mussel meat shuckers : The study indicated that farmed mussel meat is sold within the state but in distant markets. About 10% of the farmed mussel is sold as shell-on mussel by women venders in the nearby markets. In other regions, main agents purchase the farmed mussel from the farmers and supply it to other wholesale dealers and retailers. In several regions, the whole seller's employ women to shuck the meat for selling the produce as mussel meat. This shucked meat is usually supplied to hoteliers. Thus during the harvest season of occasional employment opportunities are created

The development of mussel farming in rural Kerala by women SHGs proved the fact that rural poor in India have the competence and given the right support they can be successful producers of valuable goods. It helped the organization of rural poor into Self-Help Groups and in their capacity building.

Mussel farming was found to be certainly more profitable than most other activities that the members undertake, so the benefits for them are substantial.

The fact that women increased the farm area and intensity of farming shows that they became efficient managers and it also proved the fact that women are better carriers of development. They were successful and sustainable. Their prompt repayment of loans increased the faith of the

bankers and the schemes of helping groups continued over the years. The importance of forming groups was established and even unemployed youth of the started forming groups and followed the same method of operation as that women SHG's

One of the added advantages of development of mussel farming is that it promoted the sustained growth of other industries within the village as well as in distant locations. Kerala is a land of coconut palms and the husk of the nut is used to make rope. With mussel farming the demand for these ropes increased and women got an opportunity to spin more rope at their homestead and the coir manufacturing units also started producing more. All these are areas where women are gainfully employed. Hence the technology was able to promote effective utilization of other locally available natural resources.

Impact was felt in distance locations also such as seed collection centers. The development of distant markets for farmed mussels and increased employment opportunities as mussel venders and mussel shuckers is a positive impact. Poverty continues to be of primordial importance, particularly in the developing world (Wagstaff, 2001) and since women represent about 70% of the poor, developmental plans should be for raising women's access to resources, and also to increase their level of autonomy, and decision-making powers. The experience in technology diffusion and adoption of mussel farming has shown that mussel farming can become a prime activity for alleviating poverty and empowering women through the formation of women clusters or groups in developing countries.

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