

“Mussel” power to Coastal Women - A Micro level Case study in an Innovation System Perspective on the Diffusion of Mussel Farming in Kerala, India.

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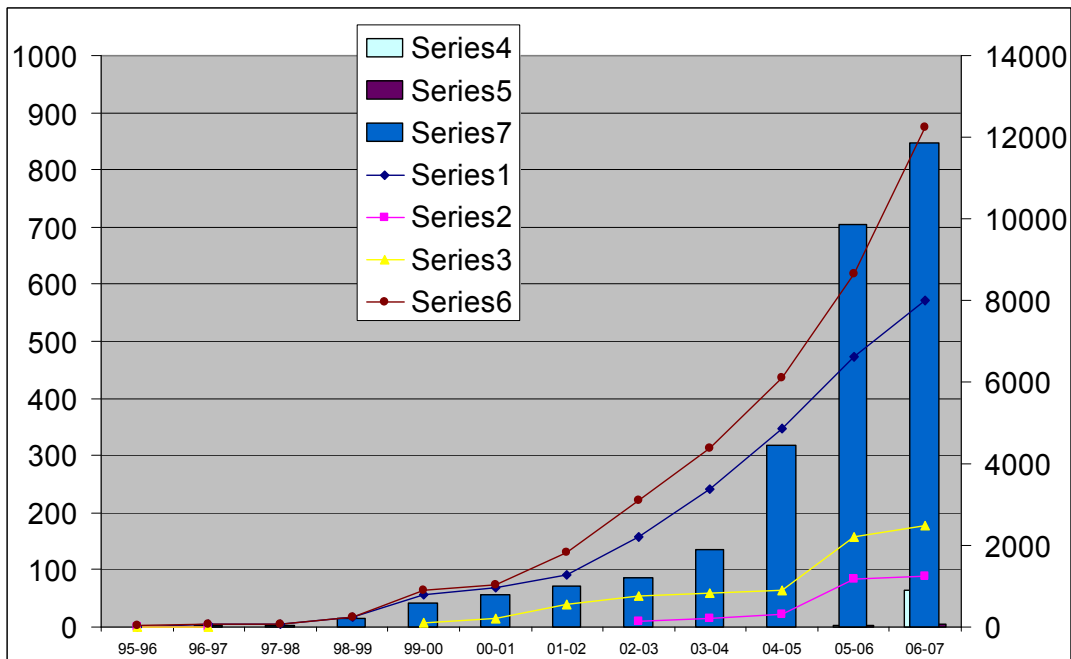
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The development and diffusion of Mussel farming (MF) in the south Indian state of Kerala has a very interesting trajectory – a technology originally developed for open sea mariculture in 1971 taking anchor in the estuarine ecosystem of a nondescript village in 1995-96 , finally becoming popular as a women empowerment tool in many coastal villages of the State in the new millennium. The total production of farmed mussel from five districts of the state has reached an estimated 11,000 tons in 2007 compared to what was absolutely nil before 1995 (fig1).At a mere 0.002 level of adoption the technology has been estimated to yield \$8.3 million as net direct and indirect benefits. MF is dominated by female-led Self Help Groups (SHGs) all over Kerala.

Figure.1 The impact of the technology in terms of production level and diffusion pattern of the technology over years .The bars indicate the production in tons and the lines indicate the number of farms



An innovation system perspective that goes beyond viewing technology as a mere end -of -the pipe product of a public funded R&D process enables us to draw new insights on the way technological change gets characterized in the dynamic interplay of different factors including gender, role of research system as an innovation incubator, institutional pluralism in fisheries extension system etc,. The emergence of state sponsored women empowerment platforms , though increased the bargain power, has been found to exert different levels of influence in the way connectedness to the resource gets mediated by this alternative livelihood opportunity. There are emerging challenges to sustainability like reconciliation of household food security *vis a vis* negative ecosystem externalities which are tackled by invoking the paradigm of Responsible Fisheries in the stakeholder system.

The case study was conducted under the national network project on “Impact assessment of fisheries research in India ICAR/30300028” in Padanna village (of Kasargode district, Kerala State , South India) which is considered as the epicenter of estuarine mussel farming in India. The household data were collected during 2006-07. The principle of methodological pluralism (using a combination of different methods like quantitative and qualitative techniques including PRA methods) based on a grounded theory approach was resorted in garnering inputs for building the case. The reliability and validity was tested by re-discussing the case study draft with key informants during subsequent visits to the village.

According to the study, the mussel farming technology can be said with confidence; going by the impressive socioeconomic and women empowerment impact it has unleashed, to have initiated a revolution in the coastal villages of Kerala as a viable alternative livelihood option. This assumes importance in the context of increasing fishing pressure being felt in the coastal marine waters. The impact of mussel farming justifies the prudence of the investment incurred in the context of its R&D represented by Central Marine Fisheries Research Institute (CMFRI) which has played the key role in getting the technology promoted through incessant efforts of its popularization by way of demonstration, awareness and training programmes.

Though successful diffusion of a technology is often attributed to an effective extension machinery it is but rare that an individual entrepreneur acts as the key driving force .The role played by Mr Gul Mohamed, the first person to commercially adopt this technology in India, is so unique that new insights can be drawn on the role of micro- leadership in an innovation system especially in the Common Property Resource (CPR) context.

The paper details how the synergy and synchrony among multiple change agents like Research institution (CMFRI), credit agencies (NABARD, North Malabar Gramin bank), grass root level extension agents(ADAK), proactive local governance bodies (eg., The village Panchayat in Padanna institutionalized a very innovative estuarine lease policy) , willing and organized entrepreneurs (eg, women Self Help Groups) and responsive marketing channels snowballed into a widely adopted model of innovation diffusion and consequent economic impact through commercialization .

The direct as well as indirect benefits brought out by the technological intervention showed very remarkable success. The potential of the technology in providing income and food security to the coastal poor is immense because the current level of adoption is a mere 0.002.The research system needs to respond to the new problems like seed scarcity and there is a need to come out with sustainable management practices taking into consideration the carrying capacity of the ecosystem in each farming area.

The paper further discusses the factors that should be considered while chartering innovation policy in a multi stakeholder coastal CPR context. It is argued that policies that pursue the creation of livelihood and resource sustainability in fisheries-dependent coastal communities should view innovations as an inclusive process equally mindful of the context-specific factors that construct gender mainstreaming.