

INNOVATIVE "MICROSATE" CAGE CULTURE SYSTEMS FOR LIVELIHOOD AND NUTRITIONAL SECURITY: A PARTICIPATORY APPROACH

Hot topic
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Aquaculture is the fastest-growing food production sector in the world and is considered to be of vital importance for the livelihood and nutritional security. Here we describe an innovative "Microsate" cage fish culture model for alternative income generation and livelihood security of inland fisherfolks. The "Microsate" cages were implemented in the Vembanad lake close to Azhikode bar mouth along the West coast of India. The programme implementation include processes such as stakeholder selection, site selection, fabrication of cages, monitoring, harvesting and marketing of the fish. The selected male and female stakeholders were trained for "Microsate" cage fabrication and rearing of the fish. Hatchery reared Asian seabass (*Lates calcarifer*) and indigenous Pearl spot (*Etroplus suratensis*) fingerlings were stocked in the cages. They were fed with pellet feed as well as trash fish at dawn and dusk. After seven months of "Microsate" culture, plate size fishes were harvested and sold out in the domestic market fetching premium price. The income generated was divided equally among the members which in turn was invested for the next culture. The newly developed, ecofriendly "microsate cage culture" can be used as a replicable model to address the livelihood insecurity of the rural fisher folk. Most importantly, it acts as a means for ensured alternative livelihood and to conserve the indigenous fish stocks which are presently overexploited and are under the threat of extinction. This type of food production systems can decrease the fishing pressure on indigenous fish species and also generate alternative income for the inland rural fishers. Thus "Microsate" cage fish culture endeavor for livelihood and nutritional security of the rural fisherfolks can become a promising intervention in India.

Objectives

The present innovative venture was formulated to develop a new "Microsate" cage fish culture model for alternative income generation and livelihood security with an eye on the conservation of native, threatened fishery stocks along the Indian coast. The objectives of the present study are:

To develop "Microsate", location specific, eco-friendly cage fish culture units.

To improve upon the existing human resources potential through participatory "Microsate" initiatives.

To critically analyze the sustainability of the cage culture system with participatory ownership

Furthermore the small scale "Microsate" cage fish culture initiative will act as an alternative income generating model, ensuring the nutritional security of the people.

In this background an initiative has been taken up to develop an artisanal, "Microsate" cage culture model suitable for the culture of indigenous candidate fish species.

Materials and methods

The cage culture study was conducted in the Vembanad lake close to Azhikode bar mouth along the West coast of India (Fig.1). "Microsate" floating cage culture units were developed and implemented through selected fisherfolk groups. The major processes involved in the implementation of the "Microsate" culture were stakeholder selection, site selection, fabrication of cages, monitoring the culture process, harvesting and marketing. A detailed bathymetric survey was conducted in the confluence of Periyar river to Arabian Sea along the West coast of India (100 11' 26.21" N and 760 11' 14.47" E) for selecting the sites for installing the cages. The main frame of the cages of 5m x 2m x 2 m (Length: Width : Depth) with a volume of 20M³ were fabricated with iron rods, coated with antifouling paints to withstand the attack of biofoulers. Six airtight plastic barrels (200Lr) were tied to the main cage to float the cage in the water body. The main cage was partitioned into three compartments of 1.5m x 2m x 2 m area. Each cage compartment was encircled by two net layers - an outer high density polyethylene (HDPE- 20 mm) and an inner nylon press net (12 mm).

Results and Conclusions

The experimental culture using different designs revealed the suitability of the present "Microsate" design using the durable materials described earlier using iron rods, airtight plastic barrels, HDPE and Nylon nets. After seven months of "Microsate" cage culture, the Asian Seabass and Pearl spot reached an average size of 675 ± 75 gm and 250 ± 50 gm respectively (85% survivability). Based on the highly encouraging results of this venture, efforts are being made to popularize the "Microsate" cage farming in the coastal areas by the Government of Kerala and other entrepreneurship development agencies. Presently, for scaling up the "Microsate" cage culture activities among the Tsunami affected coastal fisherfolks of Kerala, Japanese Fund for Poverty Reduction (JFPR) has taken the initiative and is giving financial aid to the fisher folks of Kerala to start the "Microsate" cage as an alternative income generating programme. The pioneer venture on "Microsate" cage farming for livelihood and nutritional security of the rural fisherfolks has become a promising intervention in India and has the potential to be scaled up globally to increase the employment opportunities, social status of the fisherfolks and aquaculture production. Fisher folks 'Own Fish Farm' dream can be fulfilled through the presently developed innovative "Microsate" concept.

Key words: Microsate cage culture, Asian Seabass, Livelihood security, Fisherfolks, South west coast of India.



Schematic representation of the "Microsate" floating cage unit



Fabrication of the "Microsate" cage by the fisherfolks



Inauguration of first harvest festival of the "Microsate" by the Mr. S Sharma Hon. Minister of Fisheries, Govt. of Kerala & "Microsate" cage harvested fishes

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