

SUCCESS STORIES ON EMPOWERMENT OF AND ADOPTION OF CAGE FARMING OF FISHES BY ULLADEN TRIBES IN SOUTHERN KERALA THROUGH TSP OF ICAR -CMFRI, KOCHI

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The Ulladan are an indigenous Scheduled Tribe group found in Kerala, south India, and they are so named because they come from the interior forests, and some of them still live near the forests of Kerala and Tamil Nadu, though government has taken initiatives for their settlements. Hunting and fishing are the major source of revenue and way of life. Despite government control over growth, they have a low standard of living and a dated educational system. The community might gain a lot from improvements to these conditions, and preservation of their distinctive cultural legacy could also be aided. Considering these facts, CMFRI has taken initiatives to transfer the technology developed for fish farming in cages to the tribal population. For this CMFRI officials had visited various tribal extension offices, including Kottayam District and Ernakulam Districts and visited the tribal settlement colonies at Thandaserry, Chemmanathukara, North Paravoor and Thathappally. The farmers from these settlement colonies were given Hands on training on various aspects of cage farming right from cage fabrication, float tying, launching, mooring, net tying, seed handling and transportation, seed treatment prior to stocking, hapa rearing of seeds, daily feeding, release of seeds from hapa to cage, feed management during different phases of culture, net cleaning and exchange, monthly sampling and growth monitoring. Partial and need based harvest.

Under the Tribal Sub-Plan (TSP) programme of Head quarter of CMFRI, Kochi has selected farmers from Thandassery colony and formed a self-help group named "Sreelekshmi" with 20 participants and launched four cages in the brackishwater area near to their residence for carrying out the cage culture activity. The cages (4x4x3m) were stocked with Pearl spot *Ertoplus suratensis* (600Nos) and *Tilapia mossambica* (600Nos) in 1:1 proportion in each cage. The fishes were fed with Growel feed of size 0.5 to 4mm ranging protein level 32 to 40% and 10 % crude fat at different stages of culture.

At Chemmanathukara, Vaikom Kottayam District, the Jelarani Self Help Group was formed for undertaking cage fish farming and were provided 3 cages and launched it in Kariyar brackish water for undertaking culture of *Ertoplus suratensis*. Each cage were stocked with 1200 Nos of *Ertoplus suratensis*. The fishes were fed with assorted size of Growel feed during the culture period and successfully harvested four crops during 2020 to 2023 and earned 1.5 to 1.75 lakh/cage /year by the farmers, and the farmers are continuing the cage culture and adopted cage culture as a livelihood option.

All the support in terms of inputs (Cage unit, Inner and outer HDPE Nets, hapa nets, walkway, seed, Feed, fish scoop nets, Camera units, solar light etc.) and

scientific and technical guidance were provided through TSP scheme of CMFRI throughout the culture period.

Calicut Regional Station of ICAR-CMFRI, Mavilan tribe, residents of Kurichikunnu colony of Pariyaram Gram Panchayath, Bekal, Kasargod were selected and formed two self-help groups namely "Navodya" and "Sangamithra" for carrying out the cage culture activity. Totally, 22 Mavilan tribal beneficiaries were involved under this programme. Calicut Regional Station of ICAR-CMFRI offered training and onsite demonstrations on grow-out culture of marine fishes in cages. The culture of Asian seabass, *Lates calcarifer* (Kalanji) and Pearl spot, *Etroplus suratensis* were carried out in five cages of 4x4x3m(48 m³). Fishes were fed with nutrilla floating pellet feed (45% protein and 10 % crude fat). All the technical and financial support for the cage farming practices was provided by ICAR-CMFRI. After 8-9 months culture period, the sea bass reached an average size of 1-1.5 Kg and pearl spot reached 200-250 gm size. The 48 m³ cage with a stocking density of 600 numbers of seabass yielded gross revenue of Rs. 1.8 lakhs and net profit of Rs. 86,200 per cage in 8 months culture period. The internal rate of return was 88.5% with a benefit cost ratio of 2.29. The pearl spot required culture duration of 8 months in cages to reach marketable size (200-250 gm). Two thousand fingerlings (4 cm) purchased @ Rs. 10/ fingerling were stocked in 4 m x 4 m x 3m size cages. During the culture period, the fishes were fed with pellet feed initially at 12 percent of the body weight, then reducing to 3 percent of the body weight as the culture progressed. Pearl spot is also having a very good market demand (about Rs 500-600/ kg) in local market. The 48 m³ cage with a stocking density of 2000 numbers of pearl spot yielded a gross revenue of Rs. 1,75,000 and a net profit of Rs. 55900 per cage within a culture duration of 8 months. The internal rate of return was 86.9% with a benefit cost ratio of 4.25. The partial harvest of cage culture turned out to be an encouraging economic support to the Mavilan tribal community.

Initially, during the first four years of fish farming, beneficiaries received comprehensive support encompassing both technical guidance and financial assistance from ICAR-CMFRI. However, in subsequent farming seasons, the assistance transitioned to solely technical support. This successful demonstration on the culture of high value marine finfishes in low-cost estuarine cages provided an opportunity for improving their livelihood status as well as empowered them to continue the cage culture activity in the upcoming years without any financial support. This endeavor not only provided economic support but also empowered the Mavilan tribes of Kasargod to sustain cage culture independently. The successful cultivation of high-value marine finfishes in low-cost estuarine cages not only diversified income sources but also significantly enhanced the livelihoods of the tribal population, offering a sustainable pathway for their future.



4x4 m dia GI cages installed at Nettoor



Transportation of seabass seeds in insulated truck



Demonstration on preparation of floatation system for cages at Bekal, Kasargod



Certificate distribution to tribal beneficiaries



Stocking of seabass seeds in cages



Distribution of weighing balance to women beneficiaries



Harvest of pearl spot, *Etroplus suratensis*



Harvest of seabass, *Lates calcarifer*



Marketing of fish by Mavilan beneficiaries



Harvest of *E. suratensis*