

SUCCESS OF PARTICIPATORY APPROACH IN CAGE CULTURE

The farmers for cage culture were selected from the local Panchayat based on their income level, occupation (fishermen) and accessibility to the open backwater. They were provided with fish seed and feed for cage culture operations and were entrusted with the routine maintenance of the cage frame, nets, daily feeding, watch and ward etc. The PPP mode of operation has made the culture a success in the locality and more cages are being installed in the next season with seed input from the group.

The advantages of brackishwater cages observed were, good water exchange, safe mooring, easy watch and ward and regular monitoring (feeding/net cleaning/net exchange etc.). The cage culture of mullets suggests an alternative farming technology for landless and marginal fishermen, whose income solely depends on inland capture fisheries. It has also been envisaged that for high value species for which no suitable commercial supply of "seed" (larvae, juveniles) available,



the use of wild-caught seed for capture-based aquaculture is possible.

Economic evaluation of mullet culture in backwater cage

Item

1. Variable costs	
Mullet seed (6000 Nos)	30,000.00
Artificial feed (1000 kg @Rs.28/kg)	28,000.00
Labour	60,000.00
Harvest	10,000.00
Total variable costs	1,28,000.00
2. Fixed costs	
Cage frame, net etc	80,000.00
Depreciation (materials and others) (12%)	9,600.00
Total fixed costs	89,600.00
Total operating costs (variable + fixed) (a)	2,17,600.00
3. Return	
Total return (1650kg fish @Rs.300/kg) (b)	4,95,000.00
Net Returns (total returns - costs)	2,77,400.00
Operating ratio (a/b)	0.439

CMFRI supports the farmers and small entrepreneurs with technical support for farming of mullet in cages. Prospective farmers may contact CMFRI for technical expertise.

Address for Communication:

The Director

Central Marine Fisheries Research Institute
(Indian Council of Agricultural Research)

Post Box No.1603; Ernakulam North P.O. Cochin- 682 018; Kerala
Phone: 0484 2394357, 2391407, 2394867, 2394312,
2397569, 2394268, 2394750, 2394296.

Telegram : CADALMIN, Ernakulam

Fax : 0091-0484-2394909

E-mail : director@cmfri.org.in



Published by:

Dr. A. Gopalakrishnan

Director

Central Marine Fisheries Research Institute
Post Box No.1603; Ernakulam North P.O.
Cochin- 682 018; Kerala

Phone: 0484 2394357, 2391407, 2394867, 2394312,

Fax : 0091-0484-2394909

Email: director@cmfri.org.in

www.cmfri.org.in

Prepared by:

Dr. Imelda Joseph

Dr. Bobby Ignatius

Publication Production & Co-ordination

V. Edwin Joseph

V. Mohan

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Central Marine Fisheries Research Institute
(Indian Council of Agricultural Research)
Ernakulam North P.O., P. B. No. 1603
Cochin - 682 018, Kerala, India
www.cmfri.org.in





CULTURE OF GREY MULLET (*MUGIL CEPHALUS*) IN BACKWATER CAGE



The grey mullet (*Mugil cephalus*) is a euryhaline fish widely cultured in brackish and freshwater semi-intensive fishponds. Due to its omnivorous benthic feeding behaviour it is considered an efficient bioremediator in aquaculture and is often used in polyculture systems to improve sediment quality. In Asian and Mediterranean markets, mullet roe (egg) is a high-priced product, supplementing the fish flesh. These commercial and environmental attributes make mullet an important candidate species for farming. However, fingerling supplies for aquaculture come almost exclusively from the wild. In nature, the grey mullet only spawns in seawater; but, then can grow and thrive in low saline waters. The reproductive season of the population ranges from July to December.

FRY COLLECTION AND NURSERY REARING

Artisanal fishers collect wild *M. cephalus* fry (1.6 to 2-4 cm) during south west monsoon months from coastal areas at Cochin and

Thrissur in Kerala. Drag nets developed from locally available nylon/HDPE net materials are used for fry collection. The fry thus collected were nursery reared in velon hapas of 2 mm mesh size (2m x 2m x 1.5m) erected in earthen pond at a stocking density of 2500 fry/ hapa for 30 days. After 30 days stocking was reduced to 1200 nos in similar dimension HDPE hapa of 10 mm mesh for the next 60 days till it reached 10 to 15 cm. During the nursery phase the fish were fed thrice a day with wet wheat flour and flattened rice.



GROW-OUT CULTURE IN CAGES

Six meter diameter HDPE cage was used for grow-out culture of *M. cephalus* in open backwater. The cage was moored in the backwater at Pooyappilly, Chittattukara Panchayat, Ernakulam District at a depth of 6.5 m using bamboo poles fixed at four sides. An inner grow-out, outer (40 mm mesh) and bird nets (60 mm) made of HDPE twisted twine were fixed from the cage frame. The net size was 6 m diameter and 5.5 m deep. The mesh size of the grow-out net had been varied between 16 mm and 25 mm based on the growth of the fish. The volume of the net in the water was 127m³ and it was maintained using weighted ballast at the bottom.



About 5000 nos. of *M. cephalus* fingerlings (10-15 g) were stocked in the cage at a density of 27 fish/m³. Harvest was done after six and half months (195 days) during Onam in Kerala. The total production recorded was 1650 kg. Harvest size of the fish ranged from 380 g to 550 g with a survival of 65%. The price obtained was Rs.300 per kg at farm gate. Total feed used was about 1000 kg. An FCR of 1: 0.60 was obtained. The specific growth rate recorded was 1.80.