

Mugil cephalus Presents a Feasible Alternative To Lates calcarifer Farming in Brackishwater: Evidence From Grey Mullet Mugil Cephalus Farming in Bangladesh

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Abstract : Among the reported suitable mariculture species in Bangladesh, seabass and mullet are the two most popular candidates due to their high market values. Several field studies conducted on the culture of seabass in Bangladesh, it still remains a challenge to commercially grow this species due to its exclusive carnivorous nature. In contrast, the grey mullet (*M. cephalus*) is a fast-growing, omnivorous euryhaline fish that has shown excellent growth in many areas including South Asia. Choice of a sustainable aquaculture technique must consider the productivity and yield as well as their environmental suitability. This study was designed to elucidate the ecologically suitable culture technique of *M. cephalus* in brackishwater ponds by comparing the biotic and abiotic components of pond ecosystem. In addition to growth parameters (yield, ADG, SGR, weight gain, FCR), Physicochemical parameters (Temperature, DO, pH, salinity, TDS, transparency, ammonia, and Chlorophyll-a concentration) and biological community composition (phytoplankton, zooplankton and benthic macroinvertebrates) were investigated from ponds under Semi-intensive, Improve extensive and Traditional culture system. While temperature were similar in the three culture types, ponds under improve-extensive showed better environmental conditions with significantly higher mean DO and transparency, and lower TDS and Chlorophyll-a. The abundance of zooplankton, phytoplankton and benthic macroinvertebrates were apparently higher in semi-intensive ponds. The Analysis of Similarity (ANOSIM) suggested moderate difference in the planktonic community composition. While the fish growth parameters of *M. cephalus* and total yield did not differ significantly between three systems, *M. cephalus* yield (kg/decimal) was apparently higher in semi-intensive pond due to high stocking density and intensive feeding. The results suggested that the difference between the three systems were due to more efficient utilization of nutrients in improve extensive ponds which affected fish growth through trophic cascades. This study suggested that different culture system of *M. cephalus* is an alternative and more beneficial method owing to its ecological and economic benefits in brackishwater ponds.

Keywords : Mugil cephalus, pond ecosystem, mariculture, fisheries management

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