

SEED PRODUCTION AND GROW-OUT CULTURE TECHNOLOGY OF BRACKISHWATER CATFISH, *MYSTUS GULIO*



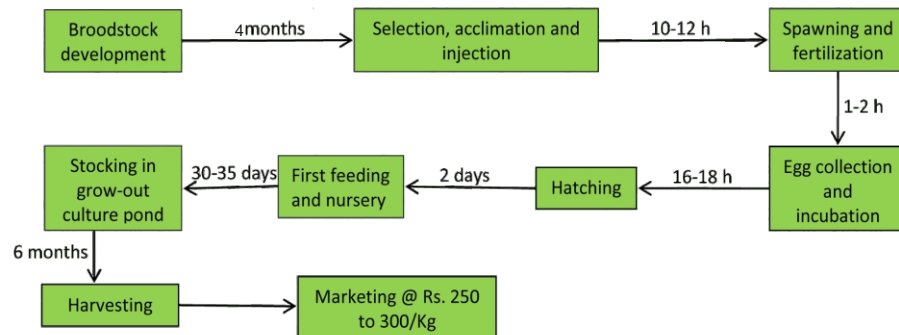
ICAR-CENTRAL INSTITUTE OF BRACKISHWATER AQUACULTURE

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2017



Flowchart on seed production and culture of *Mystus gulio*

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Introduction:

Mystus gulio (Ham.) is a commercially important brackishwater catfish locally known as “nuna tengra”, which is an important small indigenous fish species (SIS) of the Sundarban delta. It is distributed along the Coasts of Bangladesh, India, Sri Lanka, Indonesia, Vietnam, Myanmar, Pakistan, Java, Thailand, and Malay. In India, it is widely distributed in the coastal states of Andhra Pradesh, West Bengal, Gujarat, Karnataka, Kerala, Maharashtra, Odisha, and Tamil Nadu. They inhabit in shoals in low saline water of estuarine and coastal areas. In natural water bodies, they feed on organic matters and small crustaceans. The best salinity for its farming is 5-12 ppt, where it attains a maximum size of 30 cm (250 g) in a year; however, they can thrive well in salinity of freshwater to 22%. Availability of this fish from natural water bodies has been reduced due to overexploitation and environmental degradation. The current low availability results in high market demand and price. Moreover, it is an important candidate species for aquaculture diversification because of its hardy nature, delicious taste, excellent nutritional value and high market demand. To meet up this high demand and also to conserve this species, it is essential to develop production system under controlled condition. In this context, Kakdwip Research Centre of ICAR-Central Institute of Brackishwater Aquaculture has developed a comprehensive technology comprising of captive breeding, larval rearing Nursery and grow-out culture of this fish in brackishwater system.

Seed Production Technology

Sexual dimorphism in *M. gulio* is distinct and prominent, A muscular papilla with dark red tip is present in male and it is absent in female. It has wide spawning season ranging from March to August and individual fish spawns only once in a breeding season. During the month of April (before onset of spawning season), pre-mature brood-stocks of *M. gulio* are collected from brackishwater ponds, and acclimatized to hatchery condition (5-20 ppt salinity) with provision of maturity diet. Selected matured female (>150 g) and male (>50 g) distinguished by external morphological characteristics are induced with hormones for spawning. Single intramuscular injection of gonadotropin or LHRHa to female and half the dose to male result in good spawning. Fertilized eggs are demersal and sticky, and demand provision of substrate in the form of nylon net fibre for their attachment. It is a low fecund fish and total fecundity ranges from 25000 to 150000 eggs depending on size of female. After 16-18 h post fertilization, eggs hatch out.



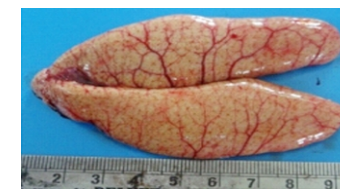
Male



Female



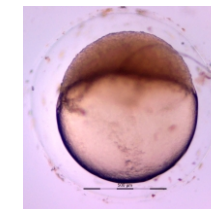
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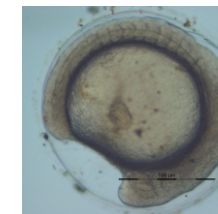
Ovary



Hormonal injection



Fertilized egg



Embryo

The newly hatched larvae start feeding from 2 days post hatching (dph) before the yolk sac gets completely absorbed in 3 dph. In larval rearing tank, larvae are fed initially with green algae and *Artemia* nauplii, *Artemia* nauplii alone from 5 dph, *Artemia* nauplii and crumbled feed from 8 dph and exclusively with crumbled feed from 15 dph. In 30-35 dph, fry attain 48-50 mm size and cost of production for one fry was calculated as 30 Paise only.



Grow-out Culture Technology

During pond preparation it is essential to seal the pond dike and inlet/sluice gate properly to avoid any escape of this fish. After pond preparation with liming and fertilization, 35-day old hatchery produced seeds (40.15 mm/ 0.85 g) are stocked @ 10 no./ m² in brackishwater pond (salinity 5-20 ppt) and fed with Nuna tengra pellet feed developed by KRC of CIBA @8-5% of biomass. In a 6-month culture, fish attain average marketable size of 58.33 g with production of 1000 - 1200 kg/ha. Cost of production comes around Rs. 80 kg and it has a ready market of minimum Rs. 250-500/ kg, which is economically lucrative. High density farming (20-40 no./m²) in small backyard ponds (300 to 500 m²) will be an ideal practice.