



BREEDING & SEED PRODUCTION OF MAGUR, *Clarias batrachus*

Broodstock management:

- Brooders require extremely good water quality and proper feed to attain maturity in captive condition
- Cement tanks with the provision of soil base of 4-6 cm thickness are used for brood rearing
- Brood fish are brought into the cisterns at least two to three months prior to the breeding season to avoid collection problem in ponds during rainy season
- Brooders are fed twice daily with fish meal based feed containing 30-35% protein @ 3-5% of the body weight.
- Water quality in brooder tanks should be maintained at optimum level by exchanging 20-30% water at fortnight intervals

Selection of brooders:

- Magur usually breeds during June to August
- Brood fishes of 100-150 g is considered as ideal size for induced breeding operation.
- Male has elongated and pointed genital papilla near anus whereas female has round and button shaped genital papilla and in case of fully matured female, bulgy abdomen and reddish vent indicate readiness to spawn.
- Female maturity stages can be examined by gently inserting the soft-flexible catheter into the vent. The female is suitable for breeding when egg size is 1.2 to 1.4 mm.

Induced breeding:

- Synthetic hormones such as Ovaprim/Ovatide/WOVA-FH/Gonopro and Carp pituitary gland extract are successfully used as Inducing agent for magur. Successful induced breeding requires 1-1.5 ml/kg body weight synthetic hormones (Ovaprim/Ovatide/WOVA-FH/Gonopro). The optimum dose of carp pituitary gland extract is 30-40 mg/kg body weight.
- The females are stripped after 17 h of injection to get ovulated eggs.
- As the male brooders do not respond to stripping, the males are to be sacrificed for collection of testis. The male with creamy white testis is selected for sperm solution preparation. The sperm solution can be prepared by macerating testis in normal saline solution (0.9 % Sodium chloride, NaCl) to get sperm suspension. The ideal sex ratio for higher fertilization is 1 Male and 2-3 Female.

- Eggs collected in plastic tray are fertilized with sperm suspension. Eggs are mixed thoroughly with the help of feather and little quantity of water is added in eggs for activation of sperm for successful fertilization.
- After 2-3 minutes of mixing, the eggs are washed thoroughly in running water and shifted to the flow-through incubation tubs.

Flow-through hatchery:

- The flow through hatchery consists of a metallic stand or cemented platform on which plastic tubs of 30 cm diameter and 15 cm height are placed in a row under the water tap. The tubs usually accommodate 1000 to 1500 eggs. Each plastic tub has the provision of an outlet at a height of about 4-5 cm.
- The fertilized eggs are uniformly distributed in the incubation tubs and feeble water flow is provided to maintain optimum oxygen level.
- Hatching of incubated eggs takes about 24-27 h at 27-30 °C
- The newly hatched larvae measures about 4-6 mm in length and 2-3 mg in weight and retain yolk sac, which get absorbed at the end of 3rd day.

Larval rearing:

Water management

- Aerial respiration commences after 10-11 days and hence, the larval rearing tanks are provided with aerators to provide optimum dissolved oxygen.
- Accumulation of metabolites and unused feed are common in rearing tanks and may pollute the environment, which ultimately cause oxygen depletion leading to incidence of disease and mortality.
- Therefore, it is advised to replenish 50-60 % of water twice daily and the height of water can be maintained to 10-15 cm.
- Optimum water quality parameters for larvae and fry rearing of *C. batrachus* are Water temperature 27-30°C, Dissolved oxygen >3ppm, Carbon dioxide <8ppm, pH 7.3-8.5, Alkalinity 90 -160ppm, Hardness 80-150ppm, Ammonia < 0.1ppm, Nitrite < 0.05ppm.

Larval feed management:

- Zooplankton such as Copepod, Daphnia, Moina, *Artemia nauplii*, & molluscan meat, tubifex and egg custard are often tried as larval feed after yolk sac absorption (on 4th day of life).
- Mixed zooplankton serves as good larval feed during its early life and gradual withdrawal of live feed by compound feed (Starter-M: A product of ICAR-CIFA) from eight days onwards resulted in higher growth and survival of the larvae.
- Cleaning of unused feed and bottom debris, supply of continuous aeration, water management and stocking density (1000-1500/m²) are some of the practices usually followed during larval rearing.
- The larvae grow to 10-20 mm/30-40 mg during 15-20 days of rearing. This is the ideal size to be transferred to outdoor tanks for fingerling production

Common larval diseases:

Skin fluku, Gyrodactylus sp., Ulcerative diseases cause by Aeromonas etc Aeromonosis bacterial diseases and Fungal Infection.

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