

BREEDING OF TILAPIA



INTRODUCTION

- Tilapias are a group of African freshwater fish that exhibit parental care.
- They are widely cultured in tropical and sub-tropical countries.
- Tilapias breed naturally in ponds, tanks, lakes, estuaries, reservoirs, etc. and spawn year-round.
- An important foodfish and commands high price in the international market.



Distribution and importance of tilapia

- Tilapias belong to the family Cichlidae and Order Perciformes.
- Known as 'Aquatic chicken' due to its fast-growing nature, delicacy, ability to convert natural food into flesh very efficiently and absence of intramuscular bones'
- Can be cultured in freshwater, brackish-water and salt water
- Grows to 500 - 600 g in 6-8 months

Identifying characters:

- Body elongate, fairly deep and compressed; upper profile more convex than lower.
- Mouth large, longest soft dorsal ray extending to above proximal part of caudal fin in females and immature males
- Caudal fin truncate, often with rounded corners
- Females and non-breeding males watery–gray to yellowish, with 3 or 4 dark blotches often apparent along flanks;
- Body of males during breeding season deep black; lower part of head chalky or pale-grayish-white; upper lip bluish
- Dorsal fin black with a red margin ; pectoral fin translucent red; caudal fin with a broad red margin

Food and feeding:

- Herbivorous, feeding on algae, detritus, etc.
- Based on parental care, tilapias are grouped into :
 - (1) Maternal mouth-brooder, eg. *Oreochromis mossambicus*, *O. niloticus*, etc.,
 - (2) Paternal (or biparental) mouth-brooders, eg. *Sarotherodon galileus*, *S. macrocephalus* and
 - (3) Substrate spawners, eg. *Tilapia zilli*.



Oreochromis mossambicus,



O. Niloticus

Brood-stock development:

- Broodfish is maintained in cement cisterns with a protein-rich commercial diet
- Tilapia mature in 3-4 months in a tropical country like India. They produce 500-1,000 eggs (brood) per female.
- Males grow much faster than female and exhibit territorial behaviour



Figure: Nile tilapia, *O. niloticus*



Figure: Tilapia breeding cages



Figure: Red tilapia broodstock

Mature broodstock is identified based on their secondary sexual characters, as detailed below

<u>Character</u>	<u>Male</u>	<u>Female</u>
1. body colouration	Dorsal and lateral sides are darker than the ventral region	Dull and grey throughout the body
2. Size and Shape	elongated, belly not inflated larger	Stout, belly is inflated, smaller
3. Genital opening	Papilla elongated and pointed	Round and blunt (wide)
4. Fins	Margins of dorsal, anal and Caudal fins rod, dorsal fin extends beyond the caudal peduncle	Fins without red margins dorsal fin doesnot extend beyond the caudal peduncle
5. Mouth (<i>O. mossambicus</i>)	Narrower	Wider

- Mature male and female are released in a cement cistern (1 m³) at a ratio of 1 : 3-4
- The male builds a nest ('lek') on the bottom and invite a female for mating.
- After spawning, the female collects fertilized eggs in her mouth and leaves the nest.
- The male invites another female for a similar act.
- Like-wise, one male can mate with several females within a short period.

Hatching of eggs

- The developing eggs are allowed to hatch either in the mouth of the female or robbed (removed) and kept for hatching in jars with running water.
- The stocking density of eggs is 5,000 eggs /L water.
- The eggs hatch in 3 days at 26 – 28°C.



Fry rearing:

- The yolk-sac fry is reared in perforated rectangular trays of 40 x 25 x 10 cm, made of aluminium or plastic, with running water.
- Yolk-sac is completely absorbed in 8 – 10 days.
- After about 20 days, the fry are transferred to prepared nursery pond for on-growing to fingerling stage.
- The fry are fed with crumbles (40% protein).



