Hatchery Operations

1. The term “Carp Hatchery” in broader terms is a facility where carp spawn are produced in captivity.

2. The hatchery cycle generally starts from the day when the brood stock is brought to the hatchery from the brood pond until the larvae absorb the yolk sac and spawn are shifted from hatchery.

Brood Selection

Fully ripe brood fish, ready to release eggs should be selected through secondary sexual characters as shown:

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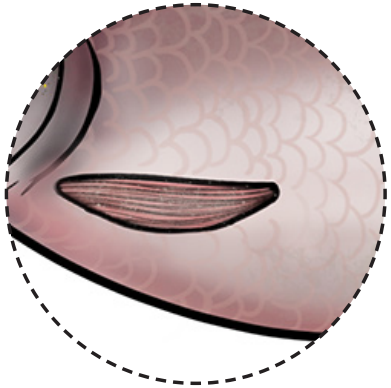
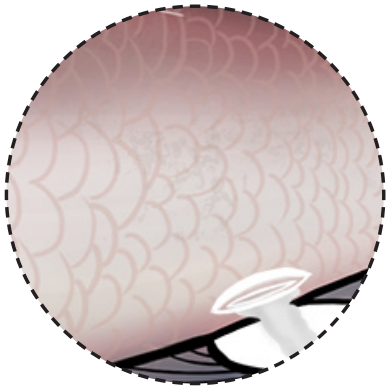
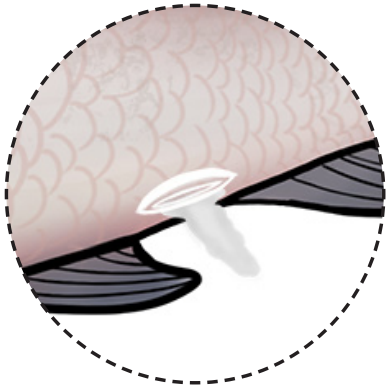
Male Brood



Pectoral Fin: Rough with sandy touch & slightly longer than females

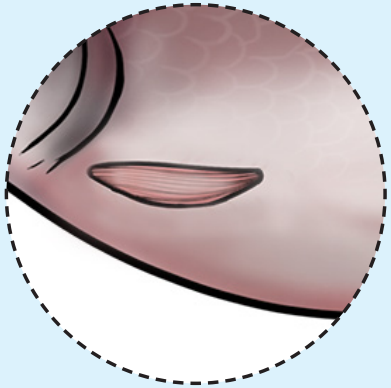


Vent: Concave & white in colour

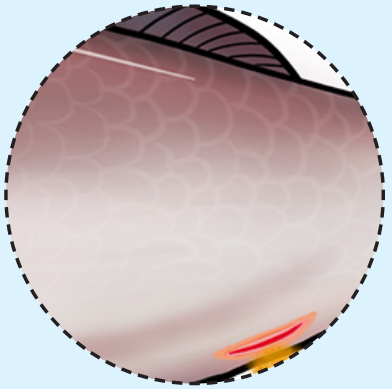


Release of sex products: On slight pressure on abdomen just above the vent, milky white fluid called milt oozes out

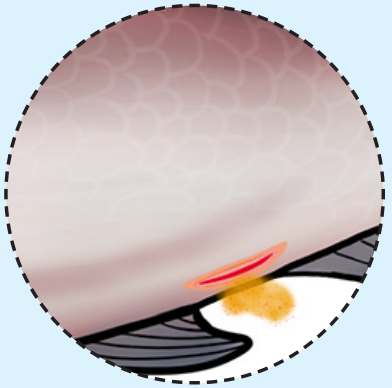
Female Brood



Pectoral Fin: Smooth & slippery



Vent: Convex & reddish or pinkish



Release of sex products: On slight pressure on abdomen above vent, yellowish discharge or ova is released

Brood Conditioning

- Net the brooders in the morning hours and condition them for spawning in haps/ separate tanks 4 -6 hours prior to injecting with inducing agents.
- **Select fish of 2 years or more of age. The female : male ratio should be kept as 1 : 2 but the weight of females should be equal to the weight of the males.**
- Brood stock should be transferred to hatchery in wet condition.

Administration of Inducing Agent

- Number of breeders injected should be based on the capacity of the spawning pool and also the capacity of the hatching pools (normally 60-80 kg of breeders/cycle.
- **Evening hours is the best time for injecting fish. Weight of individual male and female to be injected should be recorded along with numbers.**
- Females should be injected first followed by males. For females the recommended dosage is between 0.3-0.5ml/kg weight and 0.20 ml/kg weight for males.

Spawning Method

- **Injected fish will be introduced to breeding pool**
- **Cover the breeding tank with net covering to avoid possible escape of brood fish by jumping**
- **Water level during spawning should be 60-70cm**
- **Water circulation should be 2-4 RPM initially and reduce to 1-2 RPM at spawning time.**
- **Maintain the water temperature around 30 °C.**
- **Provision for power backup for continuous pumping of water is essential.**
- **Mating and release of eggs and milt takes place 6-8 hours after injection and fertilization.**

Collection & Removal of Spent Fish

- **The spawning takes place in the early morning hours and water hardening of eggs completes in 4-5 hours post fertilization.**
- **Brood fish should be removed from the breeding pool next morning and disinfected by dipping in KMNO4 solution.**
- **Record the number and weight of females fully released the eggs, count the eggs and calculate fecundity.**
- **Fertilization rate can be done by using potassium permanganate for easy identification of dead eggs and computed in percentage.**
- **Record the number and weight of females not responded and shift them to spent fish tank.**

Incubation of Eggs

- The water hardened eggs should be transferred into the hatching pools 5-6 hours after fertilization.
- **Maintain water temperature around 30°C through showers or by using ice blocks to overhead tank, if temperature is very high dissolved Oxygen should be maintained at 4-6 ppm.**
- Alkalinity of water should be maintained below 130 ppm.
- **Remove the dead eggs/hatchlings periodically from the hatcheries to avoid infection to other eggs/ hatchlings.**
- Water circulation rate in the hatching should be maintained at a proper rate(0.2-03m/second).
- **Maintain hatchlings in this tank for 3-4 days or till yolk sac is completely resorbed.**
- Collect the spawn in early morning & calculate the quantity.
- **Spawn should be conditioned in a small tank with water flow for one or two hours before transportation.**
- Survival rate from hatchlings to 3 days old spawn is around 90%.

Spawning Duration & Cycle

Each spawning cycle takes about 5 days and 4-5 cycles can be taken in a month. In a breeding season of about 3 months 12-15 batches of spawn can be produced.