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Broodstock management: an integral part of hatchery techniques

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Broodstock Management

an integral part of hatchery techniques

The primary concern of any fish hatchery is to produce a maximum number of high quality eggs and fry. The quantity and quality of seeds depend largely on the condition of the broodstock, method of propagation, availability of appropriate food and environmental conditions.

As an integral part of hatchery techniques, broodstock management will determine the quality of resulting fry and fingerlings.

Selecting broodstock:

- free from any physical deformities
- well developed sex organs
- high fecundity of females
- male carp produces a running milt on slight pressure on the abdomen, rough pectoral fins, and callousness on the head and body.

Notes on broodstock management

- Broodstock management in tropical climates is different because of the possibility of sexual rematuration during the annual reproductive cy-

cle. Male and female fish should be kept in separate cages or ponds. Maturing broodstocks must be separated from the spent spawners for easy management and selection. Low stocking rate and feeding will enhance gonadal development in females.

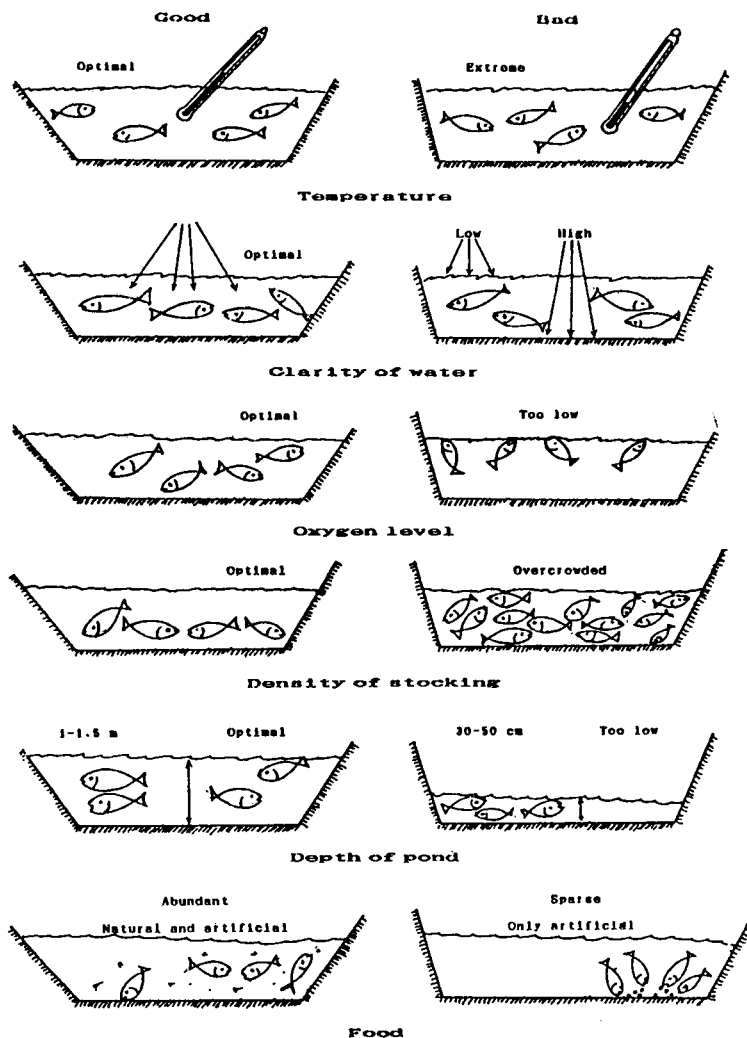
- When rearing broodstock in pond, broodstock feed should be varied according to season. Spent and maturing breeders should be given a mixture of 50% natural food organism rich in protein and 50% artificial feed with high content of carbohydrates. Later, when the dormant eggs have been developed and the fish are ready for spawning they should be given artificial diet with low protein content to prevent accumulation of fat in their gonad.

- Mature breeders are brought into the hatchery for spawning and immature breeders are put back into the pond and cages, while invalid or unhealthy fish are sold in the market. The breeders selected for artificial propagation should be

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Selection of sexually mature broodstock of cage-reared bighead carps.



Proper
broodstock
management

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conditioned in the spawning tank prior to hormonal treatment.

- Selected breeders should be handled with care to prevent stress. Low dissolved oxygen levels should be avoided and a regular change of water in the holding tank is necessary. It is best to handle carp breeders using special net with a strong mesh. It should be open at both ends, the stiffed mouth opening should be about 30 cm in diameter and 1 meter in length. When one

end of the net is opened, the fish can swim out easily.

- A double hammock made of water proof canvas, attached to a wooden or any solid frame is very useful for the transport of the selected breeders to the hatchery. Broodstock transport can also be mechanized using hard plastic or fiberglass containers provided with compressed oxygen.

Source: Gonzal, A. 1995. *International Training Course on Freshwater Aquaculture and Aquaculture Management*. 1995.

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- Average growth rate was highest in bighead carp (4.2-5.5 g/day) followed by silver carp (3.3-5.0 g/day); common carp (0.2-0.3 g/day) and grass carp (0.12-0.15 g/day);
- Average net production of all species in

polyculture ranged from 6.76-8.69 kg/m²

The growth performance of bighead and silver carp was faster than tilapia and common carp.

Source: Tabbu, M.; M. Lijauco.; R. Eguia; and C. Espigadera. 1986. *Polyculture of bighead carp, common carp and Nile Tilapia in cages in Laguna lake*. *Fish. Res. J. Phil.* 11 (1-2) 13-20.