

ICAR-CIFA

CULTURE OF MINOR CARP AND BARB

Different types of minor carps and barbs are found in rivers and lakes of our country which includes fringed lipped carp (*khursia*), kuria labeo (*kuri*), kalbasu (*kalabinsi*), bata (*bata pohala*), reba (*reba pohala*)., etc. while barbs include olive barb (*munda sarana*) and silver barb (*Java punti*). These fishes command good demand in the market. While species like kalbasu, kuri, olive barb are incorporated as bottom components, fringed lipped carpand java punti are used as column feeders. Incorporation of minor carps suitably upto 33% in the major carp system has shown to yield production levels comparable to that of major carp system, besides widening scope for the farmers to diversify their species spectrum in the culture ponds.

Induced breeding :

Brood fishes of 2 years or more are stocked @500- 600kg/acre before 2-3 moths of monsoon. Feed (GNOC and rice bran at 1:1 ratio or floating feed) is provided at 2-3% of the biomass in the broodstock pond. Breeding occurs during rainy season. All species of minor carps and barbs are injected with single injection of OVAPRIM or OVATIDE @ 0.3-0.4 and 0.15-0.20 ml/kg body weight to female and male, respectively and then released in the breeding pool. Java punti also breeds automatically under favorable pond condition. However, despite being a high fecund species, the minute hatchlings in this species limit their survival in the pond. Therefore, large concrete tanks are preferred for breeding the species. For olive barb, provision of aquatic weed such as *Hydrilla* in bunches in breeding tank facilitates spawning. The stalked egg of this species attaches to strands and leaf surface of weed. The response time in all the major carps varies between 8-11 hours at water temperature 27-28°C. Fertilized eggs collected from breeding tank are incubated in circular incubation tank. Larvae hatch out after 15 hr incubation at 27-30°C. The hatchlings are kept in incubation tank for another 60-62 hours during which yolk absorption completes and the larvae develop to the tiny fish called spawn.

Seed rearing

In all the minor carps, spawns are stocked in well prepared nursery tank and reared for 25-30 days to produce fry. In silver barb, owing to minute size of the spawn (3 mm), the nursery phase s extends up to 40-45 days to obtain the fry. Concrete tanks are mostly used for high density fry production of minor caps. Pond having 0.5 to 1.0 acre water area and 1 m depth is considered ideal for spawn rearing. Dried ponds are filled up to 30 cm depth and manured with raw cow dung @ 1200 kg/acre. After 2 days, the water depth is raised up to 1 m. In case of perennial ponds, weeds are removed first. Although a wide range of manual, mechanical, chemical and biological methods available for weed control, manual removal is commonly advocated because of small pond size and no time requirement for detoxification.

Eradication f predatory and weed fishes:

Predatory and weed-fishes in the ponds severely affect the seed survival through devouring on the stocked seed as well as competing with them for space and oxygen. Dewatering followed by sun drying the pond is the most effective methods adopted for eradication of these fishes. Other methods used includes, MOC @ 1000kg/acre/1m water depth, bleaching powder (20% Chlorine) @ 200kg/acre/1m water depth, application of urea @ 40kg/ acre/1m water depth followed by bleaching powder (20% Chlorine) @70kg/acre/1m water depth and after 18 hours.

Liming

Generally, the water pH of 7.5- 8.3 considered suitable for seed rearing of these species. If the water pH is below 7.5, then lime ($CaCO_3$) should be applied in the pond @ 80kg/acre. Lime is made to powder form with sprinkling of water followed by stirring and then applied in the powder form uniformly in the pond.

Fertilization

Several phased manuring practices, advocated for nursery preparation show encouraging results, but could not be adopted in large scale due to their complex application schedule. Phased manuring with a total dosage of 750 kg groundnut oil cake (GNOC), 200 kg cow dung and 50 kg single super phosphate (SSP) /ha applied in four splits (4 days before stocking, 6th, 11th and 16th day after stocking) is advocated for plankton on production. Each time, a thick paste of the required dose of inputs are prepared and applied uniformly in the pond.

Insect control

Before stocking of fry, netting is done repeatedly by fry drag net. A bucket half filled with water is added with little amount of kerosene. The collected insects along with the net is dipped in the bucket for 4-5 min to kill them.

Stocking of spawn

Normally the spawn is stocked @ 20-40 lakh (500-1000/m^2). Mono-species culture is. But in concrete tanks, two to three times higher density can be used as follows for fry rearing with 50-60% survival.

Species	seed /m^2	Duration (Days)	Supplementary feeding
Kalbasu, fringed lipped carp	1600	25-30	Rice brain and GNOC at 1:1
Kuria labeo	800	25-30	Rice brain and GNOC at 1:1
Olive barb	1000	25-30	RB (45%)+GNOC (45%)+dry fish meal (10%)
Silver barb	1000	45 days	Soybean meal & egg; after 10 days: RB & GNOC

Supplementary feeding

Powdered feed mixture is the most commonly used supplementary feed in nursery phase. Feed mixture is supplied at 0.4 kg/lakh/day from the second day of release of spawn. The daily feed amount is further increased roughly by 100 g/lakh/day depending on consumption pattern.

Grow-out culture

Minor carps and barbs are compatible with the Indian major carps and can be cultured together with the same feed and pond management protocol as that for major carps. Besides, seasonal ponds with 5-7 months' water retention can be effectively used for culture of minor carps and barbs.

Seed stocking density for grow-out culture

When minor carps are cultured along with major carps, stocking density of rohu, catla, mrigal at 1600/ha and minor carp at 3200/ha gives the higher yield. In such methods, minor carps/barbs are harvested after 6 months while culture of major carps are continued for one year. Such combination of major and minor carps in grow-out culture gives 30% higher yield compared to major carp group alone.

For further details please contact
The Director
ICAR-Central Institute of Freshwater Aquaculture
Indian Council of Agricultural Research
Kausalyaganga, Bhubaneswar- 751 002, Odisha, India
Tel.: 91-674- 2465421, - 2465446, -2465402 FAX: 91-674-2465407
E mail: director.cifa@icar.gov.in, Website: www.cifa.in

Prepared by
Dr. Pratap Chandra Das
Dr. Suhas Prakash Kamble
Published by
Dr. P. Jayasankar, Director, ICAR-CIFA