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What's up on carp?

Aquaculture Department, Southeast Asian Fisheries Development Center

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What's up on Carp ?

Cage reared juveniles from cage-reared broodstock had the best growth rate

Local trend

Bighead carp is preferred among other species for culture because of its fast growth and high survival rate. Pen and cage culture of carps in Laguna de Bay is sustained by the availability of juveniles as a result of improved hatchery technology. The training on artificial propagation and seed production of bighead carp at the Binangonan Freshwater Station of SEAFDEC resulted in the growing number of hatcheries in the Philippines.

However, progress in large scale production of bighead carp in the lake is being challenged by problems on stock deterioration. Slow growth and physical abnormalities as manifested in the hatchery-produced bighead carps have been observed. Scientists agreed that broodstock management practices to prevent genetic deterioration of stocks should be improved.

Global trend

Common, Chinese and Indian major carps are cultured wherever traditional markets exist. However, their culture potential elsewhere is limited by market acceptability and lack of culture experience in other countries. Asian and European culture production data greatly exceed that of other regions because intensification of culture practices and tremendous technological advances (especially in controlled breeding, genetics and nutrition) are likely given sustained research support. Reports from FAO (1994) showed that the global production is now about 6.6 million metric tons much greater than salmonids and tilapia. The major production as usual comes from China.

In spite of this optimistic view, the trend on carp culture is towards static or declining production in most of the more affluent Asian nations.In Vietnam for example, the major constraint of the carp culture development in the Mekong Delta is the availability of fry and

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Recent developments, SEAFDEC

SEAFDEC is conducting a study on the cage-reared broodstock being fed diets with or without supplemental vitamins A, E, and C. Assessment of reproductive performance was inconclusive as fertilization and hatching rates and larval production from three spawning trials were variable within and among treatments.

The commercial hatchery production of bighead carp in hatcheries around Laguna de Bay relies only on several broodstocks. Purchasing and exchanging breeders among hatcheries is a common industry practice that can lead to problems like inbreeding and negative selection. Thus, the breeding management practice of three commercial hatcheries were assessed based on the growth performance of juveniles. Juveniles were obtained from spawns of broodstocks grown in either ponds, cages, or reared in cages and conditioned in ponds prior to induced spawning. These juveniles were then reared in either cages or laboratory tanks. Growth after 90 days was best among cage-reared juveniles from cage-reared broodstock.

Mass production of the freshwater rotifer *Brachionus calciflorus* for nursery rearing of bighead carp larvae was studied. Mean population density and intrinsic growth rate was higher when the rotifer was cultured in *Scenedesmus* + chicken manure extract. The rotifer did not survive in filtered lakewater, green water, yeast, and chicken manure extract.

BFAR *(Bureau of Fisheries & Aquatic Resources)*

Existing Research Programs for Carps:

The Medium Term Fisheries Management and Development Program (MTFMDP) studies on carp are geared towards:

- refinement of the polyculture technology utilizing various species of carps in combination with tilapia;
- development of carp open water fisheries; and

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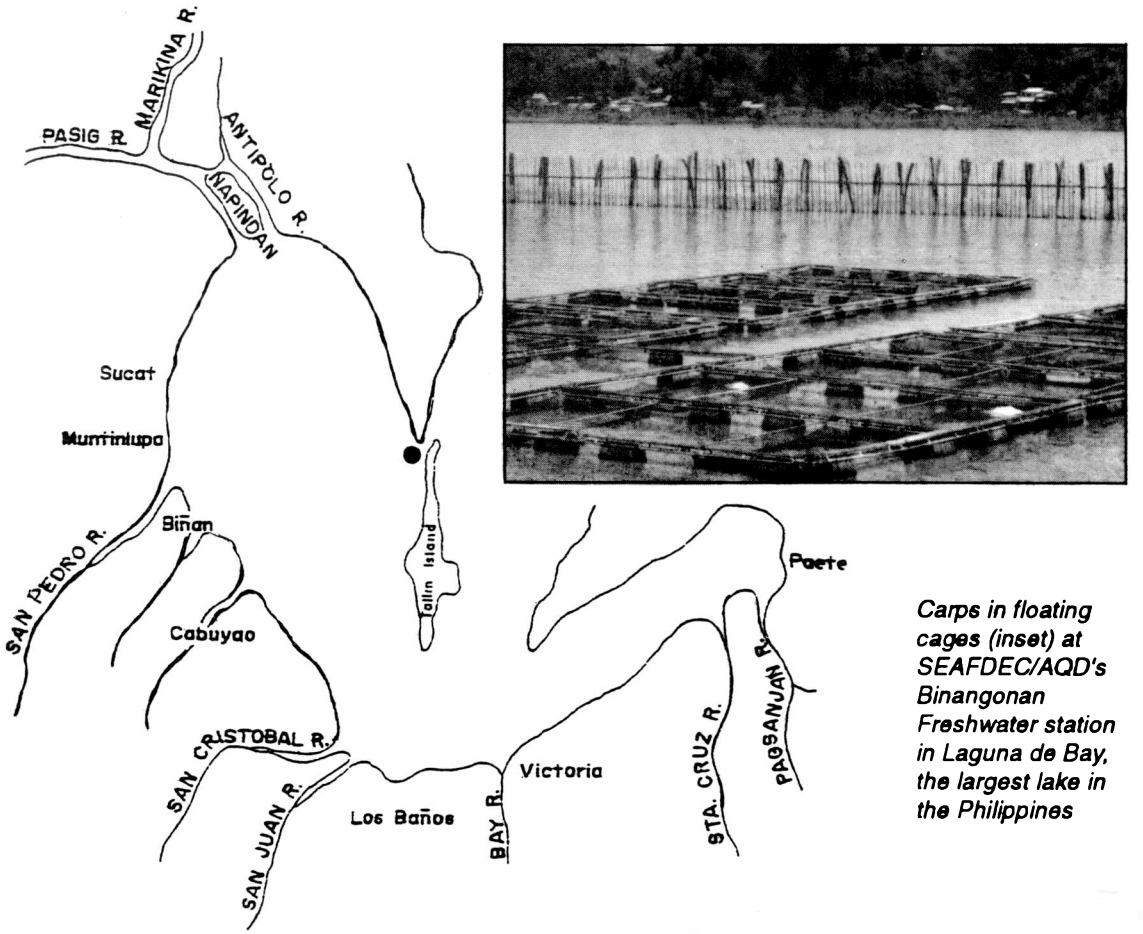

Carps in floating cages (inset) at SEAFDEC/AQD's Binangonan Freshwater station in Laguna de Bay, the largest lake in the Philippines

Global trend ..cont ..

fingerlings. This prompted the WES (West, East, South) Project at Cantho University to gear its program towards development of broodstock management, fish breeding, hatching techniques and larval rearing. The problem of seed supply may be addressed by the establishment of a jar-hatchery which was built parallel with the existing Chinese-type hatchery. The operation of these two hatchery systems will be compared. Since common carp in the Mekong Delta is the most degenerated species, a genetic improvement scheme is now underway by introducing Hungarian strains for crossbreeding experiments with local varieties.

The increase in the demand for carps and other farmed fish will compete with other agriculture products but fish is more acceptable and healthier food. The principal need of the carp industry world-wide at present is an appropriate marketing strategy for processed and package products with better consumer appeal.

Recent developments ..cont....

- fish varietal regeneration towards the genetic improvement of carps.

Approaches to genetic improvement:

- BFAR serves as the national germplasm center for carps which works on its artificial propagation
- Stock improvement through selective breeding
- Conditioning of broodstock from the open waters in ponds and fishpens prior to spawning
- test culture of hybrids of major Chinese carp in ponds and cages to compare growth performance with parent species
- improvement of the gene pool for chinese major carp by maintaining pureline broodstock
- upgrading of common carp

Sources: (1) Gonzal, AC. 1995. Prospects of Hatchery Development in the Philippines. International Training Course on Freshwater species. (2) Pullin, RSV. 1988. The worldwide status of carp culture. Aquaculture of cyprinids. L' Aquaculture des cyprinides, Billard et al., 1986. (3) Nash, CE. and AJ Navotny. 1995. In: Production of Aquatic animals: Fishes, Amsterdam Elsevier. p. 21-54. World Animal Science, C8.(4) Development of Seed Supply in the Mekong Delta of Vietnam, WES Newsletter, No. 3 April-June 1996.