

# Status of common carp varieties under culture in China

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## Common carp culture

China is vast country where a complex interaction of climatic and geographical conditions has led to the evolution of a diversity of common carps (*Cyprinus carpio*).

Common carp culture has a very long history in China, having taken place for more than 2,500 years. Ranked fourth in terms of cultured species, it is a highly important species in terms of economic value, area under culture and overall production. In 1999, the national production of farmed common carp reached 2.05 million tons. It is also an important component of fisheries in natural waters.

Common carp has many favorable characteristics. It grows fast, it has a high protein content and its production cost is relatively low. It has a low feed coefficient, is highly resistant to disease and widely adaptable, besides being suitable for various farming systems. The culture techniques are simple and require a low input from farmers, who can benefit easily from its culture. It is a good source of animal protein.

## Economically important varieties under culture in China

China is rich in common carp genetic resources. Many morphological variations have been developed through both artificial breeding and natural selection. The Chinese Government has placed a lot of emphasis on the economic

development and genetic improvement of common carp.

## Local common carps

*Cyprinus carpio yuankiang*, *C. carpio chilia*, *C. carpio pellegrini*, *C. carpio rubrofusus* and *C. carpio haematopterus* are some major indigenous common carp sub-species cultured in local waters.

## Artificially selected varieties

*C. carpio* var. *wuyuanensis*, *C. carpio* var. *singuonensis*, *C. carpio* var. *Crystallos* and Jian carp (*Cyprinus carpio* var. *jian*) are varieties that have been developed through selective breeding of local common carps or offspring of crossbreeds. The growth rate

and other productive performances of these varieties have been improved through selection.

## Exotic varieties

China has introduced some varieties of common carp from other countries for culture and breeding. These include mirror carp from Germany and scattered mirror carp from Russia.

## Hybrids

Some crossbreeds have good characteristics such as a high growth rate, low feed conversion ratio or high fishing rate. These are becoming the main varieties of common carp cultured throughout China. They include: Feng carp (*C. carpio* var. *singuonensis* x



Scattered mirror carp), Heyuan carp (*C. carpio* var. *wuyuanensis* x *C. carpio* var. *yuankiang*), Yue carp (*C. carpio* var. *wuyuanensis* x *C. Carpio*), Lotus carp (Scattered mirror carp x *C. carpio* var. *singuanensis*) and Tri-crossed carp (Heyuan carp x Scattered mirror carp).

### Some improved new varieties

Xiangyun carp, a triploid common carp, shows fast growth, good meat quality and strong disease resistance. All-female common carp grow faster than male fish and mixed groups. Both of these varieties have been used in aquaculture. A transgenic common carp has been developed that demonstrates improved growth. It will be utilized in the near future.

### Jian carp: A good breed for culture

Jian carp is a variety developed through selective breeding. It has excellent characteristics including fast growth, a fine body shape, grayish color, delicious taste and high flesh content. Its weight increment is 30% higher than other native common carp and introduced breeds. It also has a low feed coefficient, a docile temperament, strong disease resistance, wide adaptability and high catching rate making it convenient to culture in different systems. Over 660,000 ha of this species

are under culture in China with annual production exceeding 1,000,000 tons.

## Technology of common carp culture in China

### Artificial propagation

Breeding normally takes place from April to May when the water temperature has reached 18°C. Both artificial induction and natural pond spawning techniques are used. The inducing hormones used are HCG, LRH-A and PG in different combination and concentrations depending on circumstance. The fertilized eggs are collected on palm fiber and removed to hatching ponds. The fertilized eggs take 3-5 days to hatch at a water temperature of 18-20°C.

### Rearing of fry and fingerling

Rearing fry and fingerlings involves nurturing 3-4 day-old post-larvae, which have begun to feed, into fingerlings for pond stocking. Natural food (plankton) and soybean milk, soybean dregs, soybean cake and formulated feed are given to fry and fingerlings according to their size.

Rearing is generally divided into two stages. (1) Fry are cultured for 18-25 days until they become juvenile fish about 3 cm long. (2) They are reared for another 3-5 months until they become fingerlings with a body length of 8-20 cm. Most “grow-

out” ponds are stocked with such fingerlings; some are stocked with 2-year-old fingerlings.

### Grow out

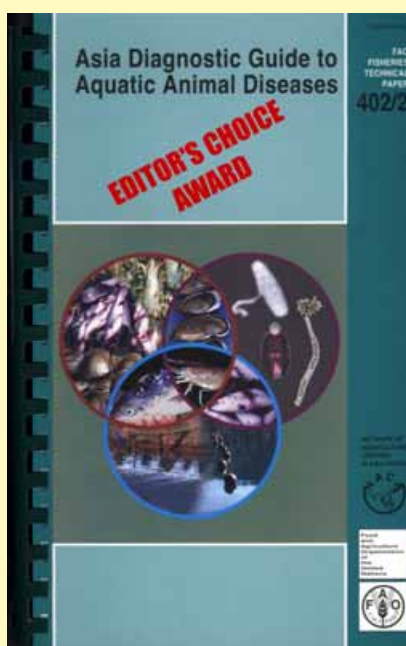
Fry and fingerlings are mainly stocked in ponds, cages and rice-fields for rearing. Stocking, feeding, growth, water quality and disease control are important parameters in grow-out management. Both monoculture and polyculture techniques are used in ponds. In monoculture, the stock density of common carp fingerling accounts for over 70% of the fish with the rest being silver carp and bighead carp.

In polyculture, the common carp makes up only 10% of the stock and is reared with grass carp, silver carp, bighead carp and other Chinese carps. Soybean cake and formulated feeds are provided.

Cages are set in open waters in lakes and reservoirs. A typical cage is about 60 m<sup>3</sup> in volume. Fingerlings are generally stocked at around 50-70g and at a density of 5-10 kg / m<sup>3</sup>. Formulated feeds are the main food used in cage culture.

Rearing common carp in rice fields is of benefit to both the fish and the rice and leads to a substantial reduction in the application of pesticides. Common carp fingerlings are stocked in rice fields at around 3000-5000/ha. After 4 months of rearing they can be sold.

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## Asia Diagnostic Guide to Aquatic Animal Diseases

The Asia Diagnostic Guide is a comprehensive, up-datable diagnostic guide for the pathogens and diseases listed in the NACA/FAO and OIE Quarterly Aquatic Animal Disease (QAAD) Reporting System including a number of other diseases which are significant in the Asia region. It jointly published by FAO and NACA under the Asia-Pacific Regional Programme on Aquatic Health Management.

This 240 page volume contains a general introduction on health and aquatic animals and the roles and levels of diagnostics. Section 2 to 4 cover Finfish Diseases, Molluscan Diseases and Crustacean Diseases. Each host section commences with a chapter on “General techniques” which covers essential starting points that will enable prompt and effective response(s) to disease situations in aquatic animal production. These chapters are not disease specific and emphasize the importance of gross observations and how and when they should be made, including information on environmental parameters worth recording, general procedures for sampling and fixation and the importance of record-keeping. The guide is illustrated with more than 160 colour photos. Limited hard copies and a CD version are available for cost of postage. A free electronic (PDF) version is available from the NACA website (<http://www.enaca.org/aapqis/> - visit the publications link).