

# POLY CULTURE OF TILAPIA WITH SHRIMP IN CHINA

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**P**olyculture of tilapias (*Oreochromis niloticus* and *O. mossambicus/O. niloticus* hybrid) with shrimp (*Penaeus orientalis*) has been investigated several times in China since 1981. The results have caused much debate. Oppositionists held that finfish, especially tilapias, would rapidly consume the shrimp postlarvae and juveniles as happened when shrimp were put together with tilapias in a small tank.

In the summer of 1983, a pond culture trial was carried out. Juvenile shrimps, 2.0-2.5 cm in length, were stocked in a 0.13 ha pond at 3,000/mu (45,000/ha) together with 2,000/mu tilapia (*O. niloticus*). Only 2.25 kg shrimp were harvested after 130 days. It was concluded that the fish had eaten the shrimps and that low dissolved oxygen had stunted the growth of survivors. Thus, there was general opposition to the polyculture of tilapias with shrimp.

However, a review of all experiments of polyculture of tilapia with shrimp undertaken in China since 1981 gives a different point of view. The test of putting tilapia and shrimp juveniles together in small tanks was repeated. Three 10 m<sup>2</sup> tanks were stocked with 120 shrimp juveniles, 2.5 cm in length, (400/mu) and, after two days, with tilapia (*O. mossambicus/O. niloticus* hybrid) 5-10 cm in length. One tank was stocked with 26 tilapia (900/mu), another with 38 tilapia (1,200/mu), and another with 45 tilapia (1,500/mu). Three days later, the fish had eaten all the shrimp. The results, therefore, were similar to that of the early oppositionists.

However, in trials in two large-ponds (0.2 ha), the shrimp lived peacefully with the tilapias and shrimp production was good. From 10 May to 23 June, 4,000 10-cm tilapia (*O. mossambicus/O. niloticus* hybrid) were put into the pond. On 15

June, 10,000 shrimp fry were put into the pond. On 29 September, 142 kg shrimp and 1,315 kg tilapia were harvested. (43 kg shrimp and 401 kg tilapia per mu). Salinity ranged from 28 to 34 ppt and temperature from 16 to 31°C.

The tilapia fry and fingerlings (1-9 cm in length) were strong predators. For example, 2 tilapia fry could easily catch and eat other 1-cm fish fry. Larger fry and fingerlings ate algae and plankton, and had changed their carnivorous habits upon reaching 10 cm in length. Therefore, in most of the polyculture pond trials, the tilapia fingerlings stocked were bigger than 10 cm.

In other tests, shrimp postlarvae were reared separately up to 4.0-5.8 cm in small (0.2 ha) ponds, then stocked together with 1.5-2.5-cm tilapia. In this case, the fish were too small to eat the shrimp.

Another important factor was diet. During the polyculture period, the ponds had abundant food. They were fertilized with manure and a supplemental artificial diet was added when the tilapia were put in. The tilapia ate the plankton, algae and the supplemental feed. Gut content analysis showed a mainly planktonic diet with no evidence of shrimp consumption. Again, with this method, the tilapia and shrimp lived peacefully in the same pond.

These results indicate that if the size of tilapia fingerlings and shrimps is managed, and if adequate natural and supplemental food is provided, tilapia will not eat shrimp fry in polyculture.

Although there are still many problems to solve, polyculture of shrimp with tilapia in China can be successful.

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## Letter to the Editor

### *The Fisheries Literature Freeway*

First of all, I wish you and ICLARM a Happy New Year, as April 17th was Burmese New Year Day.

I have been a regular Naga reader since 1986. I must describe my heartfelt thanks to you for sending me free copies.

A problem for scientific researchers in the tropics is the acquisition of reference materials (Naga 10:1). However, ICLARM assists in carrying out literature searches (Naga 9:3). Dudley (Naga 9:3) investigated the usefulness of through-the-mail technical assistance. I also experience the usefulness of Naga's *Information Department* and the *Who's Working On* series.

Naga can strive to meet its purpose and its audience. It can, of course, give the way of "pig's-blood thinking" and also, among the various journals, serve as "junior burger" for researchers and others interested in developing countries. I have no doubt that Naga will never be an obstacle in the "fisheries literature freeway" - as experienced by those fish in *Lore of the Sea* (Naga 12:1).

Each issue of Naga is a database file for my personal bookshelf-computer.

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### Reply

Thanks, U Tint Tun, for your entertaining views on Naga. You certainly read the magazine thoroughly. We are continually striving to improve Naga. Knowing the contents are useful to readers helps us considerably. - The Editor