Intelligence

White shrimp culture in China performance and impacts

1 October 2005

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Species quickly becomes one of China's most important

Pacific white shrimp (*Litopenaeus vannamei)* were experimentally introduced in China in 1988, and the reproductive cycle was closed in hatcheries after 1992. In 1998, a specific pathogen-free stock was introduced from Hawaii, and spawners and postlarvae have been introduced on a commercial scale since then. Nowadays, over 1,000 hatcheries supply *L. vannamei* postlarvae to shrimp farmers in China, most of which are located in the provinces of Guangdong and Hainan in the southern part of the country.

This intensive *L. vannamei* farm in China uses plastic-lined ponds and regular aeration.

Strong production

In 2003, China's hatcheries produced over 241 billion shrimp postlarvae – 112,622 billion *L. vannamei* and 128,653 billion other species. The yield of *L. vannamei* from sea water farm ponds was 308,947 metric tons (MT), which accounted for 63 percent of the total marine shrimp-farming production, while 296,312 MT were reported from fresh water ponds (Figs. 1 and 2). With an estimated total value of U.S. $1 billion, *L. vannamei* has quickly become one of the most important aquaculture species in China in terms of production scale and economic value.

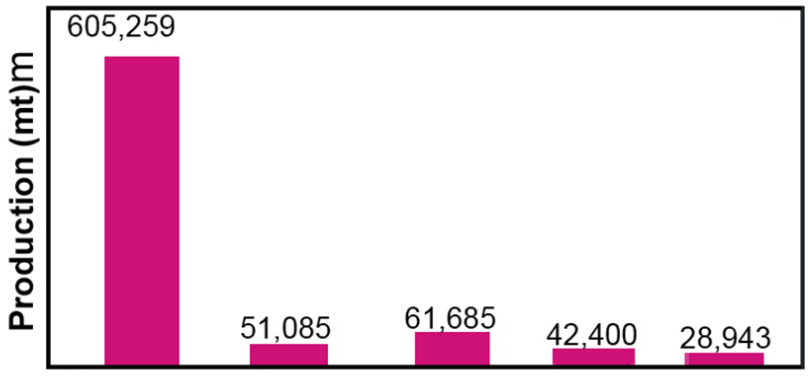


Fig. 1: China's total farmed shrimp production in 2003 was 789,373 MT.

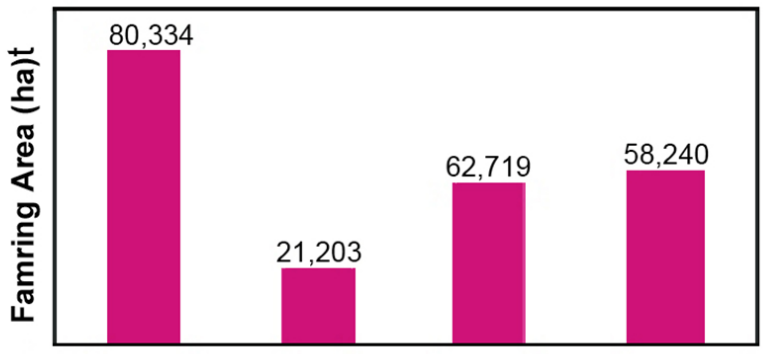


Fig. 2: China's shrimp-farming area in 2003 totaled 221,496 ha.

L. vannamei adapt well to higher stocking densities during culture, relative to other farmed shrimp species. In southern China, two crops can normally be harvested per year, and production in well-managed ponds usually ranges 7.5-15 metric ton per hectare per crop. In the provinces of Shandong, Hebei, and Liaoning in northern China, where water temperatures allow only about 100 days of culture annually, one good crop of *L. vannamei* can be achieved.

Greenhouses or small-scale ponds covered with plastic film are used to headstart the culture cycle of *L. vannamei* in the early spring or later autumn in the northern pro-vinces, to ensure a stable supply of fresh live shrimp for markets. In protected, well-managed farming facilities, *L. vannamei* biomass can reach 5 kilogram per square meter per crop and higher (Fig. 3).

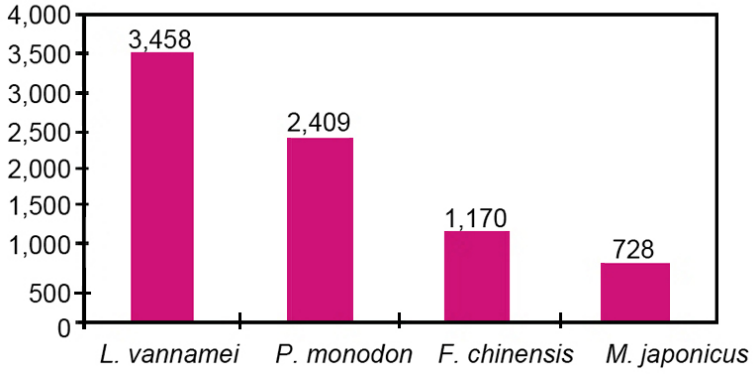


Fig. 3: China's average crop yield of shrimp ponds in 2003.

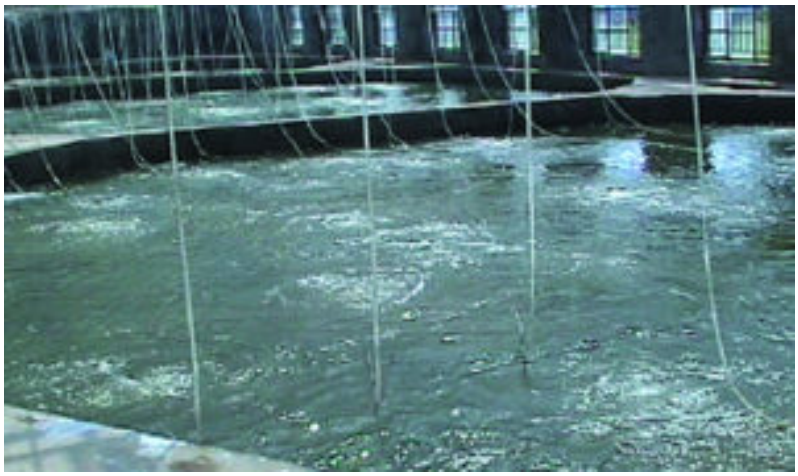
Impacts

After the 1993 collapse of the shrimp-farming industry caused by white spot syndrome virus, the positive impacts of the *L. vannamei* introduction to China are evident. The introduction provided a new species for the industry, and new ideas such as biosecurity and healthier production practices were introduced, along with the development and implementation of new farming models and techniques.

There have also been some negative impacts, including known and new pathogens introduced along with the shrimp. Also, the use of underground water to culture *L. vannamei* in inland areas might have environmental impacts. Finally, the potential impacts of *L. vannamei* escapes to the local ecosystem

should be evaluated in the long term.

(Editor's Note: This article was originally published in the October 2005 print edition of the Global Aquaculture Advocate*.)*



Indoor shrimp farming is practiced in Shandong Province.

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