

Shrimp Culture in Brazil



Penaeus schmitti with *P. japonicus* (striped).

Penaeid shrimp culture in Brazil has drawn the attention of many local and foreign investors over the past decade. The country offers a huge coastline, most of which lies in tropical climate with flatlands suitable for pond construction. Local labor and land are still fairly inexpensive. Most of the land suitable for shrimp farms is located in the underdeveloped northeastern part of the country. To encourage agroindustrial enterprises to invest in this area, the government has made credit and subsidies available, as well as export tax exemptions. These facts and the international demand for shrimp, their high price, diminishing natural stocks and rising fuel costs, have enticed many investors to take a closer look at shrimp culture possibilities in Brazil.

Today, there are over 30 penaeid shrimp culture projects under way, as well as an unknown number of *Macrobrachium rosenbergii* projects. Most of the shrimp projects have been initiated in recent years and involve *Penaeus japonicus*. This species was introduced into Brazil over a decade ago following Japanese success in rearing and spawning them in captivity. About 15 farms possess hatchery facilities for this species. *P. japonicus* has adapted well to its new environment considering culture practices. Substrates in ponds are mainly clay, quite different from *japonicus*' sandy natural environment. Ponds in Japan are deep, well aerated; shrimp are fed with trash fish, or commercial rations with high levels of protein, and waters are cool. Ponds in Brazil

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are shallow, large (20 ha or more), high in salinity and temperature and not fertilized; very rarely do shrimp receive any form of supplemental feed. A Japanese expert who noticed these differences while travelling through Brazil concluded that the current strain of *P. japonicus* raised in Brazil is of a lighter color, more aggressive and resistant to changes in water quality. He adds they are probably different enough to shy Japanese customers from paying the same price as the Japanese raised shrimp. Japanese also like to buy live shrimp to ensure best quality.

Farms in Brazil vary in size from 50 to 900 ha, averaging 150-300 ha. There are suitable sites in many areas and state research agencies are trying to identify more. Financing has come from loans originating from the Inter-American Development Bank and Fiset, the government subsidized incentive program. Over \$35 million have been invested so far. Production, however, has not reached anywhere close to initial expectations. Average harvests are around 110 kg/ha/crop. If three crops could be harvested per year, yearly production figures would be around 330 kg/ha/yr.

The system usually employed is to stock postlarvae in a 2-ha nursery pond attached to a 20-ha grow-out pond supplied with water via axial flow pumps, either electric or diesel. Since electricity

for irrigation purposes is very inexpensive, electric pumps are preferred. Nurseries are stocked at 30-50 postlarvae/m²; after 45-50 days, 3-g juveniles are transferred to grow-out ponds. After an additional 75-115 days they are harvested at an average weight of 20 g.

The Future

Shrimp culture is still in its initial stages in this promising country. The government has designated a laboratory at Natal, state of Rio Grande do Norte, to research various aspects, including use of other species such as *P. monodon*, *P. schmitti* and *P. brasiliensis*. Private investors are already experimenting with grow-out of *P. vannamei*, *P. schmitti* and *P. stylirostris*. So far, ideal species, and management practices have not been established. While Purina has an experimental shrimp feed, no commercial pelleted ration for marine shrimp is available on the market. Other feed-lot operations, such as hogs and poultry, are chronically affected due to price variations of major constituents of the rations such as soy meal, corn and wheat bran, in the international market. Some farmers are feeding their shrimp trash fish. However, the price can also be high due to transportation costs and competition from the pellet industry. Chemical fertilizers have to come from southern Brazil, where they are produced, and are expensive. Organic manuring is not feasible due to the vast amounts required and the sheer lack of good cattle grazing grounds in the northeast of Brazil, which is very arid.

For those new investors, site selection is the most important factor since the area has had an alternation of five years of drought followed by two years of floods. Farms have had problems of very high salinities in ponds only to be followed by total loss of production due to flooding.

However, Brazil will probably be self-sufficient in hatchery produced postlarvae, due to the numerous hatcheries already producing. If a commercial pelleted ration can be developed at a reasonable cost, Brazil can easily become one of the world's largest producers of farmed shrimp.