

# General Mills' Experiences in Fresh-Water Shrimp Farming in Latin America

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## RESUMEN

Agua Finca de Camarones es una finca piloto, desarrollada por General Mills, Inc., para el cultivo de camarones de agua dulce. La finca está localizada cerca de San Pedro Sula, Honduras. Esta ponencia girará en torno al interés de General Mills en el cultivo de camarones; un recuento de los problemas mayores confrontados y planes para el futuro.

General Mills, Inc. owns and operates the Red Lobster Inns seafood restaurant chain, consisting of over 300 restaurants with 30 additional restaurants being built annually. Last year these restaurants consumed over ten million pounds of shrimp tails. To develop a technical base that ultimately will allow expansion to supply at least part of this demand, and to develop a profitable new venture, a pilot-scale shrimp farm was constructed in 1972. *Macrobrachium rosenbergii* was picked as the species to culture because of the successful results being obtained in Hawaii. This fresh-water shrimp was demonstrating good production in both the hatchery and pond grow-out areas. More importantly, with this fresh-water shrimp there was no problem with life-cycle control, which was, and still is, a major problem area with marine-shrimp culture.

In 1973 construction of the pilot-scale shrimp farm was completed. The site is near the city of San Pedro Sula, Honduras, C.A. The ponds were stocked and the following year these ponds were drain-harvested with average annualized production results of 3,400 whole-weight pounds/acre. These 0.5-acre ponds were then restocked, but before they could be harvested again hurricane Fifi arrived. As a result of this hurricane, all ponds were flooded and the shrimp escaped.

By the time the flood waters receded and the ponds were ready for restocking, a second problem had developed. This problem was in the hatchery where shrimp larva are hatched and cultured through numerous stages until metamorphosis to postlarval shrimp that can be stocked in ponds. For an unknown reason, significant mortalities were occurring in the larval stages. Survival rates to postlarvae dropped below a 10% level and production was not adequate to properly stock all the ponds.

By 1976 postlarval (seed) production was still low, additional biologists were employed and experiments were initiated to determine the nature of the problem. These tests examined many areas, including disease, water quality, broodstock contamination, nutrition and culture-management procedures. For the next 2 years, survival rates and production levels were steadily in-

creasing and the hatchery was producing up to 1 million postlarva per month. Then the survival decreased rapidly for the second time and monthly production dropped to less than 0.25 million postlarva. At this time several specialists were brought in on a consultant basis. However, the consultants were not able to determine the source of the problem.

Subsequently, our company staff from both Honduras and the United States developed a new plan of attack. This plan included simultaneous improvements in culture methods, nutrition, and hygiene. This plan was implemented and production immediately increased to 3 million postlarval per month. While we were never able to identify the specific causitive agent resulting in larval mortalities, we were apparently still able to resolve the problem. Since that time larval production has been consistent on a monthly basis, although we continue to encounter mortalities occasionally in an individual culture-tank.

Production in earthen grow-out ponds (of 3-acre size) is currently at an acceptable level for profitable farming, if capital costs and expenses are not excessive. However, results to date suggest a significant increase in production per unit area in small, 0.5-acre ponds as compared to the larger 3-acre ponds. These small ponds are currently averaging about 3,200 whole-weight pounds per acre-year, compared to only 2,400 from larger ponds (both pond sizes stocked with 2-month old juveniles). We are currently conducting tests to determine why production is significantly greater in smaller pond units. This information might then allow us to devise techniques to increase yields in larger, less-expensive ponds.

Aqua Finca is the name of the shrimp farm in Honduras, and it is currently expanding operations through an associate-grower program. Essentially this program is designed so that local land owners purchase the postlarval shrimp, grow these shrimp to market size and sell them back to General Mills' Pinellas Seafood Company. The associate-grower builds the ponds and manages all aspects of the pond grow-out phase.

Aqua Finca builds and operates the hatchery to provide the seeds (postlarva) to the associate grower. Additionally, we supply technical assistance in pond management and grow-out diets. Since diets are such a significant cost area, General Mills develops special diets for each country, based on the local cost and availability of ingredients—this assures a least cost yet highly effective diet.

#### ACKNOWLEDGMENT

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