



PROYECTO DE APOYO A LA EXPORTACION DE PRODUCTOS AGRICOLAS NO-TRADICIONALES DE CENTRO AMERICA Y PANAMA

**REPORT ON THE PRODUCTION OF PENEID POSTLARVAE (SHRIMP)  
IN GUATEMALA**

**Assignment Number: ST/87-67**

**SUBMITTED TO:**

**Regional Office for Central America and Panama (ROCAP)  
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**SUBMITTED BY:**

**Richard Quast  
through  
Chemonics International Consulting Division  
2000 M Street, Northwest  
Suite 200  
Washington, D.C. 20036**

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## INTRODUCTION

On Tuesday, March 16, 1987, I met with members of the Guatemalan Shrimp Producers Association, in the office of the Guatemalan Gremial of Exporters of Non-traditional Products, to address various aspects of postlarva penaeid shrimp production. Following the discussion, the group agreed that I would accompany David Hudson, a member of the association, to the southern coast to directly observe various shrimp breeding operations. This report includes not only my field observations, but also my recommendations for the improvement of natural and artificial (in a laboratory) production of postlarva shrimp.

### I. FIELD OBSERVATIONS

During my trip to the southern coast, I visited three shrimp breeding operations: those in Acapolón, Marizul and Iztán.

- o Each operation I saw was truly impressive. The personnel involved are dedicated and are always interested in learning new techniques and practices.
- o There is a good availability of postlarva at present, but the threat of a declining supply is a constant worry for producers.
- o The most common complaints included the maintenance of a good, steady water supply for the ponds and the problem of robbery. However, upon consideration of both good and bad aspects of the operations, one may conclude that the shrimp production industry in Guatemala is quite promising and, in general, is off to a good start.

### II. RECOMMENDATIONS

At present, the supply of postlarva in the estuaries, as well as the availability of an adequate supply, are satisfactory. However, the shrimp producers' worries of not having a continuous supply of postlarva in the future have forced them to look for other sources before a scarcity would occur, especially a scarcity of lab-produced postlarva shrimp. Although the techniques of laboratory postlarva production have improved in recent years and continue to improve, the cost of maintaining such an operation continues to be high.

Guatemalan shrimp production operations are small when compared to those of Ecuador, a situation that is not likely to significantly improve due to Guatemala not having enough land suitable for that purpose. It is estimated that there is a

maximum limit of 5,000 ha. Overseeing that land is a group of producers so small that it should be possible to promote cooperation within their ranks so that measures be taken to conserve postlarva resources and to help maintain the natural supply of shrimp before spending a great amount of money in the establishment of laboratories. As such, I propose that the following measures be taken:

A. Establishment of a Postlarva Conservation Program

It is recommended that the Association of Shrimp Producers establish a program for the conservation of postlarva. This should be directed to the breeders, providing them with established guidelines to be followed. For example, once the shrimp collected from an estuary, they should be stored in water, in small receptacles, so as to reduce mortality and ensure a higher quality of postlarva upon arrival at the nursery. Below are some suggested parameters to follow:

- o Salinity--10-25 ppm
- o Temperature--28-35 degrees centigrade
- o Oxygen--8-15 mg/l
- o Density--1000-1200/l
- o During transit, temperature and oxygen level must be checked every hour.

A reduction in the mortality rate would benefit the shrimp producers, the breeders and the future of the industry. If these basic guidelines for the management of postlarva are adopted by breeders, the mortality of shrimp can be substantially reduced and this precious resource will be conserved. Guatemala should do everything possible to prevent what occurred in Ecuador, i.e., the implicit destruction of nature's source of postlarva, leading to the need to establish expensive breeding later. A small inversion of time's money today will pay off in the future.

B. Establishment of a Postlarva Natural Reproduction Program

A postlarva natural reproduction program should be instituted. Every shrimp breeder should establish a small pond (from 1/2 to 1 hectare in size) for the reproductive/maturation phase. The pond should be sowed twice a year with a low density of market-size shrimp, allowing the matched females to freely return to the estuaries, then once again filling and supplying it with postlarva shrimp. The combination of those two programs - the conservation of postlarva and the natural reproduction of postlarva - should ensure that the shrimp breeders have a continuous adequate supply in the future. The alternative would ensure only higher costs and a smaller supply.

## G. Gathering of Information on Shrimp Breeding

With regard to the establishment of a postlarva shrimp laboratory, I recommend that in the coming year the Shrimp Producers Association gather all available information on postlarva labs around the world and keep up with the latest developments in the field. The following year, the postlarva conservation and reproduction programs should be reanalyzed, so as to decide whether or not the need to establish a laboratory still exists. If at that time the group decides to proceed with the establishment of the lab, then the association would have all of the necessary information on the topic at its disposal.

### A Few Final Points

- o I suggest that the association ask for government assistance in the dredging of rivers and in helping maintain the bar-holes of the estuaries opened during the season preceding the rains so as to establish a continual supply of good-quality water for its operations.
- o Shrimp's nutrition
- o Ponds' biological content
- o Soil samples from the bottoms of the ponds

The availability of these services would be especially important if someone experiences serious fluctuations in production, something that may be due to poor nutrition, bacterial infections or such unforeseen problems. A lab would help with the identification of the problem.

### CONCLUSION

If the shrimp breeders' management of the postlarva from the estuaries to the nurseries would be better controlled (via the establishment and enforcement of certain rules), and if they establish ponds for reproduction/maturation and free the paired females into the estuaries, it should be possible to indefinitely maintain a continual natural supply of postlarva for all of the breederries in Guatemala.