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## PRELIMINARY DATA ON THE PRODUCTION OF SWEETWATER SHRIMP (*Macrobrachium roseberguii*) AT THE DEPARTMENT OF FISHERIES AND AQUACULTURE OF THE FACULTY OF VETERINARY SCIENCES- UNA

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## **INTRODUCTION**

Shrimp production in Paraguay has historically faced challenges related to the lack of access to saltwater and the scarcity of specialized feeds. To address these obstacles, the Department of Aquaculture Production of the Faculty of Veterinary Sciences (DPA-FCV) has developed a series of technological innovations that seek to overcome these limitations, with the objective of boosting local aquaculture and promoting sustainable economic development in the country.

## **INNOVATION IN ARTIFICIAL REPRODUCTION**

The first step in this process consisted of the selection of oval female shrimp, which were transferred to the Artificial Reproduction Laboratory of the DPA-FCV. These females, with an average capacity of 3000 eggs each, were subjected to controlled reproductive conditions. Since shrimp require salt water for reproduction, artificial salt water was prepared by mixing fresh water and sea salt in a 1000 liter tank. The tank was equipped with a physical and biological filtration system and ultraviolet light, with weekly nitrite controls, the optimum level being 0, which allowed maintaining the water quality in optimal conditions for the development of the zoeae, the first life stages of the shrimp.

This artificial saltwater system was complemented with the addition of probiotics to improve larval health and viability. In addition, the tank had an aeration system provided by three diffuser stones and heaters that kept the temperature stable at  $28^{\circ}\text{C} \pm 2^{\circ}\text{C}$ , ideal conditions for larval development. The larvae were fed three to four times a day with *artemia salina*, a specialized food source.

## **PRE-BREEDING PHASE**

Once the larvae completed their initial development, the organisms were transferred to the pre-rearing stage in four concrete ponds, each with an area of 16 square meters. These ponds housed 100 to 300 post-larvae per square meter, and had a constant water recirculation system and continuous aeration, which guaranteed a stable environment for shrimp growth. During this stage, the shrimp were fed three times a day with a high protein balanced feed, adjusted to 8% of the total biomass.

After two months in this pre-breeding phase, the organisms were transferred to external ponds, designed for the final growth and fattening phase. These ponds have water inlet and outlet systems to maintain the quality of the environment, as well as constant aeration and carp covers to mitigate the effects of temperature variations. During this phase, the shrimp received 5% of their biomass in balanced feed, adapted to their needs.

## **PROMISING RESULTS**

The preliminary results obtained in this project are encouraging, with a survival rate of 83.86% in the pre-breeding and rearing phase. These data represent a significant advance for shrimp aquaculture in Paraguay, as they show the viability of production under controlled conditions adapted to local constraints, such as lack of salt water.

One of the key innovations of this project is the reuse of artificial salt water, which not only reduces costs but also minimizes environmental impact. In addition, the development of an efficient management system adapted to Paraguay's climatic and geographic conditions.

## **CONCLUSION**

The breakthrough in aquaculture technology developed by the DPA-FCV marks a milestone in freshwater shrimp production in Paraguay. Through innovations in artificial reproduction, artificial saltwater management and specialized feeding, this project offers a viable solution to the challenges facing the country in terms of aquaculture. The results obtained to date underscore the potential of this technology to boost the sustainable development of the sector and consolidate Paraguay as a competitive player in freshwater shrimp production at the regional level.