

# Sustaining Tilapia Production in the CNMI Through the Use of an Artificial Fry Incubation System

## Final Report for FW08-024

Project Type: Farmer/Rancher

Funds awarded in 2008: \$15,000.00

Projected End Date: 12/31/2009

Region: Western

State: Northern Mariana Islands

Principal Investigator:

[Ines Guerro](#)

## Project Information

### Abstract:

The Commonwealth of the Northern Mariana Island's (CNMI) population is about half indigenous (the Chamorros and Carolinians) and half foreign guest workers, mostly from the Philippines, China and Bangladesh. These guest workers come from traditionally fish consuming countries, and Tilapia is a big part of their diet. The indigenous populations have also accepted and added Tilapia to their diet since production started back in 1995.

Before this project, Tilapia grow out was stymied by the lack of CNMI-based fry production to support the industry. Tilapia fry were imported from around the region, but this brought up shipping cost, bio-security, mortality and consistent supply issues that made it difficult to expand production commercially. Unlike marine finfish species, Tilapia can be easily reproduced in a captive environment with minimal technology and capital investment, with technology developed in Thailand.

A proposal was submitted in November of 2007 to attempt to address this constraint. Funding from the Western Sustainable Research and Education (Western SARE) Farmer/Rancher grant program was secured to test the hypotheses of expanding and sustaining Tilapia production in the CNMI with a CNMI-based hatchery supplying the fry need in the CNMI. The project coordinator dedicated sections of her Tilapia grow out facility for this project. This included two tanks with one "Hapa"-style net cage for the broodstock, a room where eight artificial incubation jars were installed, another room for the sac-fry incubation trays, two tanks in the rear of the facility for ten-day old fry to be nursed until they are ready for sale and a packing room for packing and shipping fry to Tilapia farmers in Saipan, Tinian, and Rota.

This project is the first of its kind in the CNMI for aquaculture and has given hope to prospective producers. As a result of this development, one commercial size Tilapia farm is under construction, and a larger one is in the planning stages, with their fry needs being supplied by the project coordinator's hatchery.

The benefits of this project have been shared with other farmers and the CNMI

community through the media by way of the field and media day held in November 2010 and workshops in Rota, Saipan and Tinian in early 2011.

#### Project Objectives:

- To increase the availability of Tilapia fry in the CNMI through the use of the "Artificial Incubation System Technology," support current producers and encourage new producers  
To prevent the introduction of Tilapia pathogens to the CNMI and reduce production cost associated with importation of fry  
Promote sustainable agriculture practices with field and media days and workshops

## Cooperators

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## Research

#### Research results and discussion:

As a result of the Field & Media Day which took place in November 2010 and the articles that followed in the two newspapers that were published in the CNMI, Saipan Tribune and Marianas Variety, there has been a lot of interest generated where current and potential farmers requested a tour of the project coordinator's farm. Many questions with regards to the project were asked during the most recent workshop. The project coordinator has helped generate interest in Tilapia farming in a commercial scale in the CNMI from individuals that were otherwise discouraged by the lack of consistent on-island supply of fry to support the industry.

#### Producer Adoption:

As a result of the small scale demonstration of the system in Tinian recently, the general manager of the SN-Five Tilapia Farm on that island requested technical assistance to design an in-house Tilapia hatchery to supply the fry needs of their fledgling operation. There also have been a lot of inquiries by current and prospective producers about incorporating the system into their operations or designing it into future farms.

#### Reaction from Producers:

Reactions from other producers have been positive and many have requested more information about the project and tours of the farm site to personally view the system.

## Participation Summary

### Educational & Outreach Activities

#### **PARTICIPATION SUMMARY:**

##### Education/outreach description:

The findings of the project were shared with other producers and the CNMI community through the farm tour conducted as part of the Western SARE Sustainable Agriculture Workshop held on February 23, 2010; the Field/Media Day that took place on November 18, 2010; and the Western SARE workshops held on the islands of Rota on March 15, 2011, Saipan on March 27, 2011 and of Tinian on May 3, 2011.

A mini-artificial incubation system was assembled and demonstrated to attendees of the San Jose Fiesta in Tinian.

##### Field/Media Day:

Title: Western SARE Field and Media Day

Date: November 18, 2010

Locations:

Overview - NMC CREES Conference Room, Saipan

Tilapia Hatchery-Mrs. Ines Guerrero, Finasisu, Saipan

Renewable Energy-Mr. Pete Arriola, Dandan, Saipan

Participants: 10

##### Workshops:

Title: Sustainable Aquaculture Practices in the Commonwealth of the Northern Mariana Islands

Dates: March 15 & 27, 2011

Locations:

Songsong, Rota, CNMI, U.S.

Susupe, Saipan, CNMI, U.S.

Participants:

Songsong, Rota, CNMI, U.S. = 33

Susupe, Saipan, CNMI, U.S. = 32

Title: Sustainable Aquaculture Practices in the Commonwealth of the Northern Mariana Islands

Dates: May 23, 2011

Locations:

San Jose, Tinian, CNMI, U.S.

Participants:

San Jose, CNMI, U.S. = 25

Title: Tilapia Hatchery: Small-scale Incubation Jar and Sac-fry Absorption Tray Demonstration

Dates: April 29 & 30, 2011

Location:

San Jose, Tinian, CNMI, U.S.

Participants:

San Jose, Tinian, CNMI, U.S. = 150

# Project Outcomes

## Project outcomes:

Thanks to Western SARE, this project helped established the first commercial Tilapia hatchery in the CNMI. Current and prospective Tilapia farmers can now source their Tilapia fry needed to stock their farms locally without having to resort to regional sources. The introduction of pathogens, losses as a result of long travel time and high cost of freight are finally minimized and improving the bottom line for Tilapia producers. As a result, the Tilapia production industry is poised for expansion, profitability and sustainability. Opportunities abound for improvement in Tilapia genetics for faster growing and higher percentage male fry. This project has addressed one of the major constraints affecting the aquaculture industry in the CNMI.

## Recommendations:

### Future Recommendations

Future projects should investigate the use of locally made incubation jars versus commercially available units that are just too costly. An artificial incubation jar from Aquatic-Ecosystem was selling for \$62.00 in 2008; the same unit is now being sold for \$82.00/jar. On top of per unit cost, the freight cost can cost as much as the unit itself, which make it unsustainable for limited resource Tilapia farmers. A project on investigating and testing locally made products for the same purpose would make a good project and can be modeled after what is being done in Thailand.

Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture or SARE.



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