Regional e-Notes ~ February 2012 Vol 4, Issue 2

CENTER FOR TROPICAL AND SUBTROPICAL AQUACULTURE

Letter from the Director

Aloha,

This month's issue is packed with new and exciting information. I would like to call particular attention to the AquaClip: the USDA is seeking public comments for consideration in their FY13 and FY14 development cycles. This is a valuable opportunity for our industry to voice opinions about where aquaculture funding is most needed, and I urge you to contribute by the deadline March 22.

Also in this issue is a summary of the recently completed CTSA project to develop a local tilapia feed in American Samoa, along with links to its two resulting manuals. There is also a new video from our Island Farmer Spotlight series profiling Big Island microalgae farm Cyanotech.

On another note, our Board of Directors convened at the University of Hawaii for the annual meeting during the last week of January. In addition to approving the CTSA FY11 Plan of Work, the Board approved some changes to the CTSA development cycle. Instead of calling for Pre-Proposals in March, we will now call for Letters of Intent sometime in the late Spring or early Summer. We will keep you informed as the year progresses.

As always, if you have any questions, concerns, or comments, please feel free to share them with our team.

Mahalo,

Cheng-Sheng Lee
Executive Director, CTSA

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Island Farmer Spotlight Video: Cyanotech

Cyanotech is the Big Island Microalgae farm responsible for putting Hawaiian aquaculture at the forefront of the nutrient supplement market with their Spirulina and BioAstin products. They are also responsible for over half of the aquaculture sales in the state during FY2011. Watch this short video for a profile of this innovative Hawaiian aquaculture company.

Click here to view the video.

New Tilapia Feed Made from Local Resources Impacts Aquaculture in American Samoa

CTSA Project Outputs Include Two New Feed Manufacturing Manuals and hands-on training!

Analysis and Compilation of Tilapia Feed Ingredient Resources in American Samoa

by Warren Dominy, Dong-Fang Deng, Zhi Yong Ju, Oceanic Institute
Darren Okimoto, UH Sea Grant
Ephraim Temple, Francis Leiato, American Samoa Community College
Edited by Meredith Brooks, CTSA

Figure 1. Tilapia farmers and their families learned how to process their own feeds at a CTSA-sponsored workshop at the American Samoa Community College

Feed is the largest single variable cost in aquaculture production. For remote or island locations, the cost of transportation of ingredients or feeds contributes considerably to the overall cost. Better utilization of locally available feed ingredient resources can lower feed costs and serve as a catalyst for development of regional aquatic animal production.

American Samoa is a tropical island nation with a small fish culture industry that is dependent on feeds imported from Asia, which are typically unavailable for purchase. The agriculture industry in Samoa generates a wide variety of plant and animal products and byproducts, some of which may be efficacious in feeds development for the local aquaculture farmer.

The most expensive components of fish feeds are protein and lipid (oil). American Samoa has a fishmeal plant that produces considerable fishmeal and fish oil. Most of this fishmeal is exported to Australia, while the fish oil is refined into food grade products or used as fuel. There are other byproducts in Samoa that may be utilized as protein or energy feed ingredients from the processing of coconut into oil and a protein press cake. Starch ingredients are critical in the production of a feed pellet, and can be found locally in bread fruit, bananas, sweet potatoes, cassava, and yams. Prior to the commencement of this project, little information existed about the processing effect on water stability and nutrient compositional changes of these products and byproducts. Gathering some of this information was an essential first step in developing those ingredients for aquaculture feeds.

The Oceanic Institute's (OI) Aquatic Feeds and Nutrition Program proposed a project to CTSA to "Analyze and Compile the Nutritional Composition of Potential Feed Ingredient Resources in American Samoa into a Feed Manual for Use in Developing Formulated Aquaculture Feeds". Together with the Sea Grant Extension Agent at American Samoa Community College (ASCC), the OI workgroup established the overall objective to teach the tilapia farmers in American Samoa how to make tilapia feed by using local ingredients, and to supply them with a corresponding manual. The first step in doing so was to determine locally available ingredients and byproducts suitable for use in feeds, and their nutritional composition.

Researchers collected and analyzed samples of bread fruit, bananas, sweet potatoes, cassava, and yams. Most of the local plant ingredients were found to have similar nutrient profiles (after cooking), with low amounts of crude protein, fat and fiber, and were found suitable to provide the starch portion of the diet. The fa'i (banana) stalk was the exception, with a high level of fiber and ash, and only about half the carbohydrate levels of the other plant ingredients; it was not deemed suitable as a tilapia feed ingredient. The banana leaf was also determined as unsuitable due to its high fiber content. Tuna meal collected from a local tuna processor was found to provide sufficient essential amino acid and fatty acids for nutritional requirements of tilapia.

Based on the nutrient analysis data, two formulations were made using a basic formula created by Dr. Chhorn Lim, who visited American Samoa and made the basic tilapia feed ingredient recommendations. The basic formula for the adult method, which was based on the standard weighing of ingredients, was modified into a children's method by estimating ingredient proportions using a soup can. Both methods were tested by OI's AFN staff and transferred to American Samoa where the student interns used the same ingredients to prepare the feeds. The finished feeds were sent back to OI for analysis, and adjustments were made to the children's method to keep both methods similar in nutrient content.

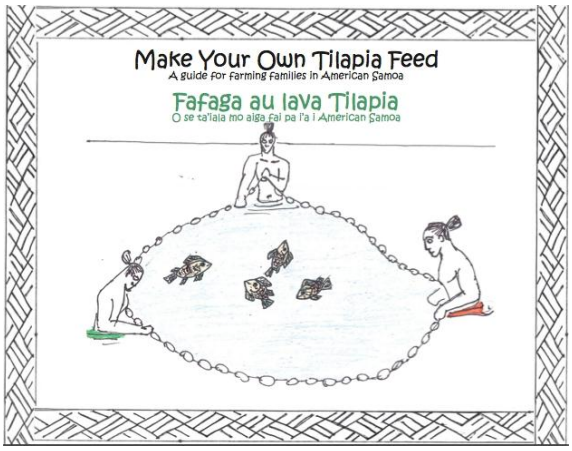
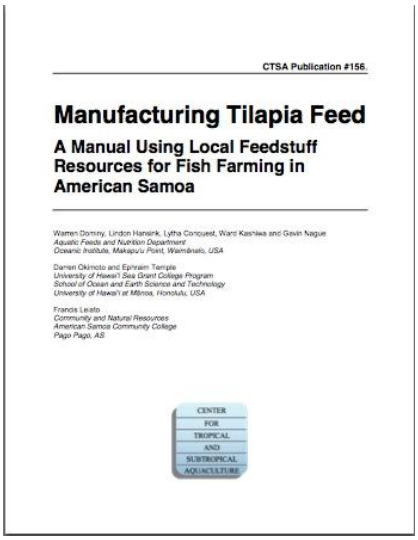


Figure 2. This colorful children's manual was created to demonstrate how farming families in American Samoa can formulate tilapia feeds using simple instruction

Feed manuals were created based on both processing methods. The children's feed manual (Fig. 2) is fashioned like a storybook with cartoons and is printed in English and Samoan. The adult manual (Fig. 3) contains the formulas of the tilapia diet, as well as nutrient analysis of the local starch sources and fishmeal. Profiles of the vitamin and trace mineral mixes are provided alongside information on the companies that they can be ordered from. The adult manual also contains a compilation of protocols for feed processing and quality control tests. The protocols are applicable using the available equipment to run the following tests: 1) water stability of the finished pellets; 2) particle size determination of ingredients by the hammer mill grinding; 3) pellet durability index of the finished pellets; 4) mixing time determination for a mixer to result in a uniform ingredient mixture; 5) ingredient and moisture content of the final product to reduce mold; and 6) the development of mycotoxin contamination.


CTSA Publication #156.

Manufacturing Tilapia Feed

A Manual Using Local Feedstuff Resources for Fish Farming in American Samoa

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In October 2011, a workshop was held at ASCC for the tilapia farming community. Twenty eight people attended the workshop, including men, women and children. Both methods were taught by the student interns and the UH Sea Grant staff. Once the children got their hands accustomed to squishing bananas and kneading dough into balls, they had a wonderful experience and made some fine tilapia feeds (Fig. 1). Adults were taught how to safely use the machinery to make the feeds. Both methods were successfully demonstrated and the participants effectively made acceptable feeds for their tilapia culture.

The transfer of a basic simple feed processing technology has been made through published manuals, one for the children (click here to view children's manual - PDF) and a more advanced but simple feed processing manual for the adults (click here to view adult manual - PDF). Both are available on the CTSA website.

This project has resulted in the successful creation of a small-scale local base manufacturing community in American Samoa. Tilapia farmers are now able to manufacture their own feeds, which will build up and expand the local tilapia culture industry.

Pacific Island Spotlight: FSM EEZ May Become Marine Sanctuary for Sharks, Rays, Dolphins, and Whales

Kaselehlie Press, February 8, 2012.
POHNPEI, Federated States of Micronesia

Congress is considering a resolution that would request the President of the FSM and the four State governments to take action to declare the FSM exclusive economic zone as a marine sanctuary. In the Western and Central Pacific Ocean the FSM EEZ is second in size only to the EEZ of Kiribati.

It is a huge area of ocean comparable in size to the entire land mass of the Continental United States. The resolution, which has not yet come to a vote in the FSM Congress, would be a Congressional declaration that the FSM EEZ is a marine sanctuary for sharks, rays, dolphin and, whales.

It would urge President Mori to take necessary action to create the sanctuary and for the Governors of each FSM State to do the same for each of their 12 mile zones within the FSM EEZ. The resolution was sponsored by former FSM President, Senator Joseph Urusemal of Yap. The resolution recognizes the important role that sharks, rays, dolphins, and whales play in the ocean's ecosystem, as well as a significant part of the FSM's cultural heritage and tourism throughout the FSM.

AquaClip: USDA Soliciting Public Comments for Consideration in the FY13 and FY14 Development Cycles

Via AquaContacts Mail Group News. February 2, 2012.

In an effort to improve the quality of the Agriculture and Food Research Initiative (AFRI), the USDA National Institute of Food and Agriculture has scheduled a public meeting for February 22, 2012 in Washington, DC and is soliciting public comments for consideration in the development of the Fiscal Year (FY) 2013 AFRI program solicitations and the FY 2014 Budget. AFRI is charged with funding research, education, and extension grants and integrated research, extension, and education grants that address key problems of National, regional, and multi-state importance in sustaining all components of agriculture, including farm efficiency and profitability, ranching, renewable energy, forestry (both urban and agroforestry), **aquaculture**, rural communities and entrepreneurship, human nutrition, food safety, biotechnology, and conventional breeding.

Click here to read the summary information for more details. You can also refer to the February 1, 2012 USDA NIFA Federal Register Notice "Solicitation of Input From Stakeholders Regarding the Agriculture and Food Research Initiative." Please note that public comments are due by March 22, 2012.

The Center for Tropical and Subtropical Aquaculture (CTSA) is one of five regional aquaculture centers in the United States established and funded by the U.S. Department of Agriculture's National Institute of Food and Agriculture (NIFA) under grants 2007-38500-18471, 2008-38500-19435, and 2010-38500-20948. The regional aquaculture centers integrate individual and institutional expertise and resources in support of commercial aquaculture development. CTSA was established in 1986 and is jointly administered by the Oceanic Institute and the University of Hawaii.