February 2010 Vol 2, Issue 2

CENTER FOR TROPICAL AND SUBTROPICAL AQUACULTURE

Regional e-Notes

Letter from the Director

Aloha!

On January 21, CTSA held its annual Board of Directors meeting at the Oceanic Institute Learning Center. The meeting was attended by all CTSA board members, with the exception of Andrew Hashimoto. Much was accomplished at this year's meeting, and I would like to thank our board for their continuous efforts to enhance CTSA. Additionally, I would like to take this opportunity to extend a heart-felt Mahalo to our departing board member Richard Spencer for his decades of contribution to CTSA.

We are currently in the final stages of determining our priority areas for FY2010 cycle funding, so be on the lookout for our Request for Pre-proposals in next month's issue. In the meantime, please take a moment to review the Hawaii Seafood Funding opportunities from NMFS included in this issue. Also in this issue are a report from a recently completed CTSA project that developed a new shrimp feed from local papaya waste, and an industry article about a fish farmers market coming to the Big Island.

If you have any suggestions, concerns, or comments, please do not hesitate to let us know.

Mahalo,

Cheng-Sheng Lee
Executive Director, CTSA

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CENTER FOR TROPICAL AND SUBTROPICAL AQUACULTURE

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New Shrimp Feed Developed from Discarded Papaya Rinds

The availability of cost-effective, renewable protein ingredients for fish and shrimp feeds is key to the sustainability of aquaculture in the Pacific and other remote areas. Much of the local animal production units in island communities are maintained through the importation of feed ingredients or complete feeds, which can end up costing more than the finished animal product. As such, producing cost-effective feeds that utilize locally available ingredients is one of the biggest challenges faced by the aquaculture industry.

The recently completed "Bioprocessing Pacific Island By-Products for Production of Value Added Feed Ingredients, Years 1 and 2" project, led by Warren Dominy, Ph.D., and P.Y. Yang, Ph.D., successfully developed an efficient bioreactor system to produce yeast using papaya waste and investigated the possibility of using papaya processing waste (PPW) yeast as an alternative protein source for aquatic feed. Under the auspices of the project, the team of researchers first developed a controlled laboratory scale 14-L bioreactor and used it to determine a set of operational procedures for batch, and semi-continuous/continuous flow for processing PPW (Papaya processing wastes). Nutritional analysis of laboratory bioprocessed PPW yeast shows that

it contains about 40 - 50% crude protein with other various nutrients. Based on this information, the project work group set out to develop a new shrimp feed that utilizes PPW yeast as a locally-available fishfeed protein substitute.

Following the trials utilizing the 14-L bioreactor, the team used a 500L bioreactor for the production of sufficient quantities of a Papaya Waste (PPW) yeast protein for use in a shrimp feeding trial. The PPW yeast product produced by the 500L bioreactor was slightly less in protein content in comparison to the protein content in PPW product from a 14L laboratory scale bioreactor. To increase yeast production yields in the 500L bioreactor, the oxygen transfer system was enhanced and circulation of oxygen was increased through an Iwaki mag-drive pump. Yeast production was increased due to increased temperatures from ~ 25ºC to 36ºC in the bioreactor by installation of three titanium heaters (800 watts) in the bioreactor. After 15 batches of the bioreactor runs, sufficient quantities of PPW yeast protein were collected for a feeding trial of shrimp.

Five test diets were formulated to include 0%, 25%, 50%, 75% and 100% of the island grown PPW yeast as a replacement for an imported protein ingredient mixture. The feeding trial was conducted at Oceanic Institute in a zero exchange system with 20 fiberglass tanks (1500 liters) stocked with 100 shrimp/tank. The Pacific white shrimp (Litopenaeus vannamei) were fed each diet with four replicate tanks per dietary treatment. The eight week shrimp feeding trial showed that there were no significant ($P>0.05$) differences in survival and FCR among dietary treatment. However, the substitution of 75% and 100% of the imported protein mixture in the diets with the PPW yeast decreased the weight gain of shrimp significantly ($P<0.05$) after eight weeks of feeding. These results demonstrate that up to a 50% replacement level of a PPW yeast ingredient can be substituted for imported protein ingredient mixture without an adverse effect on growth of the shrimp under current conditions.

Pictures shown are of the papaya rinds being prepared and the 1500L fiberglass tank set-up. For more information about this project and others, click here to view the CTSA Annual Accomplishment Report.

Hawaiian Seafood Funding Opportunity

NMFS is soliciting competitive applications for the 2010 Hawaii Seafood Program, which strengthens and sustains the economic viability of Hawaii's fishing and seafood industry through activities that promote Hawaii fisheries products as high-quality and safe domestic seafood produced by a responsible and well-managed fishery. Projects may seek support for cooperative seafood safety research, technical assistance, and/or seafood education.

Organization: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration

Source: Funding Opportunity Number: NOAA-NMFS-PIRO-2010-2002220.

Applications Due By: March 5, 2010

Date Released: 01/20/2010

Contact: Scott W.S. Bloom, NOAA/NMFS Pacific Islands Regional Office, 1601 Kapiolani Blvd, Honolulu, Hawaii 96814, by phone at 808-944-2218, or by email at Scott.Bloom@noaa.gov

Summary: Total funding available under this notice is anticipated to be approximately $1,000,000. Eligible applicants are individuals, institutions of higher education, other nonprofits, commercial organizations, international organizations, foreign governments, organizations under the jurisdiction of foreign governments, and state, local and Indian tribal governments.

Click here to view the opportunity on grants.gov

February AquaClip - Big Island Fish Market

Fish Farmers Market Coming to Big Island (March 26)

Published: Hawaii247.org, February 23, 2010

The non-profit group Friends of NELHA has announced it will host a sustainable Fish Farmers Market 2-6 p.m. Friday, March 26. Taking place at the LEEDS-certified Gateway Center at the Natural Energy Lab of Hawaii (NELHA), this unique Fish Farmers' Market is the first of its kind anywhere in the world.

Sponsored by the county Department of Research and Development, the fish market will feature a variety of eco-friendly aquaculture products grown at the Natural Energy Lab. Big Island residents will be able to purchase seafood directly from the fish farms, including Keahole Lobster, Dungeness Crab, Kona Kampachi®, Big Island Abalone®, and sturgeon.

Fresh whole seafood, as well as cut fillets and prepared sashimi plates, will be available. Other products produced at NELHA will also be featured, such as desalinated deep seawater, Kona Sea Salt®, and algae products BioAstin® and Spirulina Pacifica®.

"The Big Island hosts some of the most innovative, sustainable aquaculture operations in the country," said Guy Toyama, executive director of Friends of NELHA. "The purpose of the Fish Farmers Market is to provide NELHA tenants with a new venue to sell directly to the local community. Now, Big Island residents can purchase - fresh from the farms - locally-grown, premium seafood which has been proudly featured in some of the finest restaurants in Hawaii and the mainland."

Locally-grown produce vendors are also invited to participate. For information on booth rental, contact Guy Toyama at guy@energyfuturehawaii.org, or 938-1017.

Four Fish Farmers Markets are planned in 2010 for the last Fridays of March, April, May and June. The debut market, on March 26, will also feature live music, a farmer presentation, and a chef demonstration by Olelo pa'a Faith Ogawa, with prepared seafood available for purchase.

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). 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.