



Letter from the Director

Aloha!

Earlier this month, I had the pleasure of attending the Kua'āina Ulu 'Auamo (KUA) "Hui Malama Loko I'a" event on Maui. I am impressed with the work that this dedicated group of people is doing to revitalize the Loko I'a, or Hawaiian fishponds.



2014 Hui Malama Loko I'a group (photo: KUA)

Loko I'a date back to 1000-1200 AD and were an integral part of food production in the Hawaiian ahupua'a system of land division. They were an important source of protein for Hawaiians, particularly during periods of poor fishing due to inclement weather or food shortages. In recent years, there has been a renewed interest in revitalizing the fishponds for food production, as well as educational and cultural purposes.

The fishponds are a prime example of the environmental conservation inherent in indigenous island communities. With minimal external inputs and an emphasis on symbiosis, various species of fish, crustaceans, and bivalves can be grown and harvested from the ponds. As our industry sharpens its focus on sustainability, we can benefit greatly from incorporating this ancient technology into our development.

Nowadays, the fishponds are at the forefront of the Hawaii bivalve farming industry. This issue of e-notes features a video highlighting this emerging industry, and in particular, CTSA's role in its establishment. This issue also includes the CTSA FY14 Request for Pre-Proposals; we look forward to seeing the great ideas you bring to the table this year! In addition, there is an article highlighting last month's CTSA aquaponics workshop in American Samoa.

Mahalo,

Cheng-Sheng Lee

Executive Director, CTSA

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****CTSA FY2014 Request for Pre-Proposals****

The Center for Tropical and Subtropical Aquaculture (CTSA) requests pre-proposals for applied research and extension that addresses problems and opportunities in the regional aquaculture industry ([click here to view the full request](#)). CTSA stakeholders have identified the below strategic areas and species as the top aquaculture development priorities. Pre-proposals that target these strategic areas and priority species will receive highest preference. However, pre-proposals that do not fall under specific priority areas but address CTSA's mission will be considered in our development process. Our focus is on funding projects that will have immediate, positive impacts on the regional aquaculture industry.

CTSA's mission is to support aquaculture research, development, demonstration, and extension education in order to enhance viable and profitable aquaculture in the United States. CTSA is funded by an annual grant from the U.S. Department of Agriculture's National Institute of Food and Agriculture (NIFA). The CTSA region includes the following areas: American Samoa, Guam, Hawaii, the Commonwealth of the Northern Mariana Islands, the Republic of the Marshall Islands, the Federated States of Micronesia, and Palau. CTSA strongly encourages collaboration between institutions and agencies in the region, as well as shared funding of large priority projects. Cultivating strong regional partnerships will catalyze the greatest changes in our industry.

New CTSA Video: Bivalve Farming in Hawaii



Despite clean waters and ideal bivalve culture sites (e.g. traditional Hawaiian fishponds, shrimp farms), Hawaii lacked a bivalve shellfish industry for over 25 years due to regulatory constraints...but the tides are turning.

The CTSA-funded project "Bivalve Farming in Hawaii," led by Dr. Maria Haws, is playing a major role in starting a new bivalve culture industry in Hawaii. [Click here to watch our video](#) highlighting ongoing research, and the potential for bivalve aquaculture to improve

the local economy, food security, and awareness of aquaculture a sustainable method of food production.

Highlights from the CTSA Aquaponics Workshop "Food Security and Self-Sufficiency in American Samoa"

By Meredith Brooks

On April 23-24, CTSA conducted a free aquaponics workshop in American Samoa in an effort to extend aquaponics technology in the region. The workshop was held in collaboration with the American Samoa Department of Agriculture, Department of Marine and Wildlife Resources, and the American Samoa Community College (ASCC) as part of the ongoing CTSA-funded project "Adaptation of Aquaponics Systems for Use in the Pacific Islands."

During the two-day workshop, speakers presented on a variety of topics related to aquaponics. In their opening remarks, Dr. Ruth Matagi-Tofiga (Director of the AS Department of Marine and Wildlife Resources) and Lealao Purcell (Director of the AS Department of Agriculture) discussed the need for sustainable agriculture development, and the potential for community farming using aquaponics in American Samoa. Dr. Harry Ako



Dr. Travis Fleming (ASCC Community Nutritionist) provided a brief overview of aquaponics technology, current commercial applications in the Pacific region, and results from CTSA-funded work. Travis Fleming (ASCC Community Nutritionist) presented on the importance of good nutrition and illustrated how fresh vegetables and fish from aquaponics can help reverse the obesity epidemic in American Samoa, while Ian Gurr (ASCC Horticulturist) shared valuable information on the nutritional value of native plants such as laupele. Food Safety expert Jim Hollyer instructed participants on the critical need to practice on-farm food safety, and shared Best Management Practices in a fun and educational manner. Meredith Brooks (CTSA Information Specialist) highlighted the benefits of integrating aquaponics technology in STEM education, and shared the [A.Q.U.A. Curriculum](#).



Francis Leiato demonstrating tilapia feed manufacturing at ASCC

At the end of the first day, Francis Leiato (ASCC Aquaculture Extension) conducted a tilapia feed-making demonstration at the ASCC aquaculture facility. Under the CTSA-funded "American Samoa Tilapia Feed" project, researchers from the Oceanic Institute and ASCC developed two simple feed manufacturing methods and a feed recipe using locally-available ingredients, including fishmeal made from tuna processing by-products. Since introduction of this technology three years ago, tilapia farmers have been manufacturing feeds at the ASCC facility on a regular basis, thereby reducing the island's dependence on imported feeds and ingredients. Participants were surprised at the relative ease of producing local feed, and remarked that it makes tilapia farming an even more attractive business venture.



Apela Afoa (center) discussing his aquaponics system with workshop participants

The highlight of the workshop was a visit to Apela Afoa's aquaponics farm in Taputumi, where participants were delighted to get an in-depth look at a well-maintained commercial system. The success of Apela's farm is largely a result of technical assistance provided through the ongoing CTSA aquaponics project, as well as previously funded work. Over the last few years, his farm has grown from a demonstration system to a medium-scale commercial farm that is impacting the community. Apela and hydroponics farmers Larry Hirata and Kuki Avegalio work together to supply the local school lunch program with fresh vegetables, which are otherwise expensive and scarce on the island.

There is much potential for aquaponics to catalyze significant change in American Samoa and across the Pacific Islands, and CTSA is proud to support work that shares this sustainable technology and assists interested parties in establishing commercial operations.

AquaClip ~ Can insect meal make fish feed more sustainable?

By SeafoodSource Staff www.seafoodsource.com. May 29, 2014

Insect meal could be a future source of protein for American salmon. according to Erik-Jan Lock. a

scientist at the National Institute of Nutrition and Seafood Research (NIFES). Produced by separation of proteins and fats followed by drying of insect larvae, insect meal is extremely rich in proteins, and its amino acid make-up is similar to that of fishmeal, according to Lock.

"Insects can transform all sorts of organic material, such as food waste. Today, we throw out about 20 percent of all our food. This could instead be a sustainable resource for the production of insects. On a global scale, insect meal based on organic waste could provide three times as much protein as all the soya produced today. In other words, it has great potential," said Lock.

"We need more knowledge about which substances, and how much of them, we are talking about in order to be sure that fish-feed based on insects would be safe for the fish themselves and for consumers," said Bente Torstensen, NIFES director of research.

Using insects as a feed in aquaculture is not new, and some scientific trials have already been carried out on tilapia and rainbow trout, among other species, although insect meal has never been brought into use on a large scale.

The trials that have been performed at NIFES are the first that involve Atlantic salmon. The insect meal was provided by Dutch company Protix Biosystems BV, that cultivates insects on a large scale.

"Insect meal could make an important contribution to the sustainable development of the aquaculture industry. We want to do more research in order to develop the necessary knowledge base," said Lock.

[Click here to read the full article.](#)

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 2008-38500-19435, 2010-38500-20948, and 2012-38500-19566. 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.

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