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Lending a Hand from Sea to Land

Most of us today know Maunalua Bay as an evil-smelling mudflat choked with dark,ropy seaweed. Oldtimers, though, may remember it as a rich food source, when commercial fishing was banned and the catch limit for people living in the area was 30 fish and 5 lobster, per person, per day. While there have been many changes since then, one major contributor to the bay’s near-murder has been the encroachment of the invasive alga leather mudweed (Avrainvillea amadelpha). According to Kimo Franklin, site coordinator for Mālama Maunalua, removing the mudweed is the first step to bringing abundance back to Maunalua Bay. In 2008, several organizations teamed up with local community members to begin removing the invasive mudweed. The volunteers got a boost from federal Recovery Act funding awarded to The Nature Conservancy by the National Oceanic and Atmospheric Administration (NOAA), and now 50 Pono Pacific workers are clearing 23 acres for this “Great Huki” project. So far, nearly two million tons of algae have been removed. And the project is working: Areas that have been cleared have stayed clear—for over 2 years so far—and native marine life and birds are being seen regularly by residents and visitors alike.

The next question was what does one do with all that muck? This is where CTAHR’s Ted Radovich and Sgouras Blue came to the rescue. In partnership with other organizations, including NOAA, the Nature Conservancy, Mālama Maunalua, Ala‘a‘aina’O Kamilo Nui, and Pono Pacific, CTAHR teamed up to formulate a plan to compost the invasive algae. Ala‘a‘aina’O Kamilo Nui’s Chayanthumths of Hawaii provided space to drop the algae and create compost piles, tended by volunteers. While CTAHR researchers search for the best formula to decompose the invasive algae, some has already been distributed directly to several farmers for use in growing crops, produce and ornamental plants—with good results: ‘Uala—sweet potatoes, a crop for which the Kamilo Nui area is historically known—has been planted using the compost and the ‘ula is flourishing. Growing food on the land while helping to restore a habitat for native species in the sea—that’s taking the traditional concept of ahu‘pua‘a and making it work in a brand-new way!

Knee-Deep in...Regulations

Livestock waste management can be a sticky mess. The livestock industry’s ability to keep current and compliant with new guidelines grows increasingly difficult and costly. Recognizing the importance of the livestock industry’s viability in Hawaii’s economy, CTAHR’s C.M. Lee and Glen Fukumoto, along with the State Department of Health, assembled a consortium of public-sector agencies and commercial livestock operators to develop a comprehensive livestock waste-management plan, the first in 13 years. The plan’s objectives were to provide methods of addressing compliance issues in the most practical, efficient, and cost-effective manner and to make the information readily available to all interested individuals. The new guidelines acknowledge the need to balance environmental stewardship and livestock operations in an island setting. Best-management practices were developed to help reduce polluted runoff from farms into drinking wells and State waters. The plan also implements agronomic practices and monitoring to minimize the odors and insect problems that can arise from livestock operations. The guidelines commend new innovations by CTAHR such as the portable dry-litter pig pen, which allows less waste to be discharged, and emphasize the importance of practices that appropriately reuse the waste stream, such as composting. They also explain how farmers can get financing to implement new waste-management plans.

The consortium consists of CTAHR, the State Department of Health (Clean Water Branch, Wastewater Branch, and Solid Waste Branch), USDA Natural Resources Conservation Service, EPA-Region 9, and commercial livestock operators (poultry, swine, beef, and dairy producers). The West Maui Soil and Water Conservation District Office provided administrative support to the group. The effort resulted in a network of new partnerships and a greater sense of community amongst the various groups. You can view the plan, “Guidelines for Livestock Waste Management,” here:

http://hawaii.gov/health/environmental/water/wastewater/forms.html

Guidelines for Livestock Waste Management

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O most of us, genetic testing still sounds fairly high tech—something best left to highly trained scientists. But Ryo Kubota (PhD student, MBRE) is working to bring it closer to reach. Ryo is the lead member of the company Diagenetix, which won first place in UH-Mānoa’s 2010 Business Plan competition. Diagenetix has developed “reagent mixes that enable rapid isothermal DNA detection of microbial pathogens on a disposable platform with a simple portable instrument.” In other words, with a machine that fits into the palm of the hand and a special chemical mix, it is possible to diagnose numerous infectious diseases caused by viruses and bacteria, including the H1N1 virus, by looking at the genetic structure of the pathogens. Ryo points out that the other available testing kits on the market are larger and far more expensive than the one the team has developed, which will sell for $1,200 and can allow companies that haven’t been able to do DNA testing to start doing so. The testing can also take place more rapidly, he explains, because it can be done at a constant temperature instead of having to cycle through three specific temperatures to get the results as the other instruments do.

The Diagenetix product line of chemical reagents—several are available, depending on what pathogen is being tested for—is based on technologies developed and provisionally patented by Ryo by his research mentor Daniel Jenkins (MBRE). Other members of the Diagenetix team include Scott Shibata (MS graduate, MBRE), who is now the project manager at Hawaii Bioenergy LLC, and Jimmy Saw, who is a PhD candidate in the Microbiology program. Diagenetix triumphed over fourteen other student teams at UH that advanced to the competition semi-finals and four teams that made it to the finals. The company received prizes totaling $10,000 in cash and more than $17,000 in legal, marketing, and other services to develop and promote the business. Diagenetix is also the recipient of a fellowship through the Pacific Asian Center for Entrepreneurship (PACE), which supports a team of business and legal students to further develop marketing plans. The team is seeking investor support, funding through Small Business Innovation Research grants, and partnerships with non-profit agencies and other businesses.

Genetic Testing Made Easy—Well, Easier
Lending a Hand from Sea to Land

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In 2006, several organizations teamed up with local community members to begin removing the invasive mudweed. The volunteers got a boost from federal Recovery Act funding awarded to The Nature Conservancy by the National Oceanic and Atmospheric Administration (NOAA), and now 50 Pono Pacific volunteers are clearing 23 acres for this “Great Buke” project. So far, nearly two million tons of algae have been removed. And the project is working: Areas that have been cleared have stayed clear—for over 2 years so far—and native marine life and birds are being seen regularly by residents and visitors alike.

The next question was what does one do with all that mud? This is where CTAHR’s Ted Radovich and Nguyen Hue came to the rescue. In partnership with CTAHR’s T ed Radovich and Nguyen Hue visitors alike. Being seen regularly by residents and far—and native marine life and birds are being seen regularly by residents and visitors alike.

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