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# PRESIDENT'S LETTER

BY KATY DESHOTELS-MOORE



## WELCOME TO SPRING LICH!

It's hard to believe we're already moving past the first quarter of the year, with summer just ahead. We feel the warm temperatures returning as do our landscapes. The change in temperature encourages our plants to bud and bloom, and flush out new growth. This growth also makes our plants thirstier, so generally our first move to remedy this is to adjust our irrigation controllers to run on a "summer" program, which would likely be watering at 100%; however if we are truly committed to be more sustainable with our landscape practices our water usage should increase by smaller increments, keeping our plants just on the threshold of being thirsty. I fear we are entering another year of drought, so water conservation should be at the top of your list for becoming more sustainable in your practices—at home and at work.

Working and living sustainably is all about the choices we make with how we use our resources. If you google "Sustainability" you will find many definitions available. Here are a few that I personally liked; found at this website: [5 Definitions of Sustainability – The Green Dandelion \(rochester.edu\)](https://www.rochester.edu/green/5-Definitions-of-Sustainability/)

- "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs." From: Sustainable Development, as defined in 1987 by the Brundtland Commission (formally known as the World Commission on Environment and Development (WCED)).
- "Our world, the earth, has been given to us as a gift with limited resources; sustainability is the act of not being a glutton of the earth. Each human knows in their heart that they can be better. Consider the earth as our temple; you do not own the temple, revere, care for and respect the earth as you would your children and your elders. Those who respect have the traits of conservation, goodness, giving, self-control and honesty." By Patricia Beaumont.

As you read through the articles in this issue look for other ways to implement sustainability practices in your work and personal life. Educational opportunities are an excellent way to improve your staff's skills, morale, and self-assurance.

Let's keep growing together!  
AHUI HOU!

Katy Deshotels-Moore, LICH President



The LICH Board of Directors invites you to be a part of our dynamic state association, Help us expand our programs by becoming a member today. You will be eligible to receive member discounts on our classes, workshops, and Annual Conference and Tradeshow. Corporate Member logos will be displayed on our web site.

When you become a LICH Member you make a contribution to the continued growth of our statewide association.

- Memberships for individuals are **\$40 per calendar year**.
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To become a 2022 Member, we encourage you to join online at: [www.hawaiiscape.com](http://www.hawaiiscape.com). You will immediately receive an Invoice and a Welcome Notice that you have become a member. This will help as proof of membership when signing up for HMAA Insurance. It will also help LICH build an Industry Survey which has not been done since 1986.



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The new **Find a Landscape Certified Professional** on the LICH website has a list of companies having Certified Arborists in Hawaii, provided by the International Society of Arboriculture. If you don't see your Company, let the Executive Director, Garrett Webb know by sending your information to: [palmsinkona@yahoo.com](mailto:palmsinkona@yahoo.com).

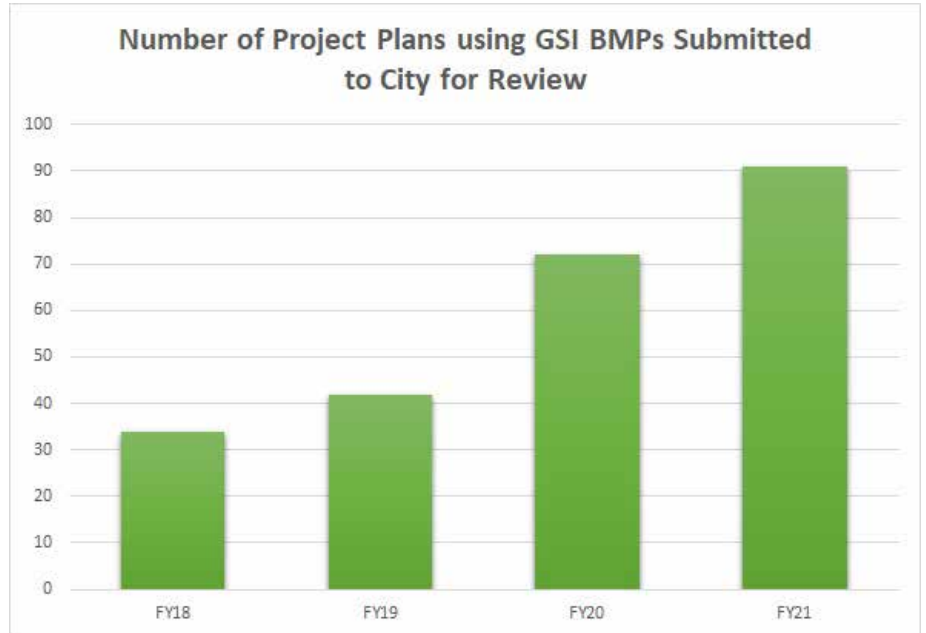
If your company is listed, but you want additional information, also let Garrett know. Company information can include; postal address and location, email address, and website. Names of Certified Arborists are **NOT** included.

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Vegetated bio-filter treats parking lot runoff.  
 Photo Credit: City and County of Honolulu



The use of Green Stormwater Infrastructure has increased steadily since the adoption of the Rules Relating to Water Quality in 2017.

# Certified Professionals Needed to Protect Our Local Waters

*By: Tonya Ketza & Lauren Roth Venu*

**J**oin the Green Stormwater workforce! With the implementation of the Rules Relating to Water Quality (Rules) by the City and County of Honolulu (City) in 2017, which requires most developments and redevelopments to install infrastructure to treat storm water runoff, there has been a steady increase in designs with Green Stormwater Infrastructure (GSI) solutions.

Examples of GSI include vegetated swales, detention areas, bioretention, green roofs, tree filters and planter boxes, permeable pavements, and rainwater catchment. These are designed to store, treat, and reduce the volume of stormwater. This aids in protecting streams and nearshore waters, preventing erosion and runoff during heavy storms, reducing the urban heat island effect, preserving habitat, building water security and improving overall water quality.

Key components to the functionality of GSI projects not only include good planning and design, but equally as important, proper installation, inspection, and maintenance. The City will be focusing on project awarded contractors and maintenance personnel to maintain certification in GSI practices. The Rules also requires preparation of an operations and maintenance (O&M) plan for a project's storm water infrastructure upkeep. These plans are formally recorded, and property owners must ensure they are implemented and maintained. Tracking and performing regular maintenance will ensure that problems are detected in a timely manner and prevent common issues such as ponding or flooding resulting from the build-up of sediments and/or trash. Regular maintenance can also extend the life of the BMP and may cut down on the costs associated with rehabilitating it in the event of a failure.



Top: Rain garden with native plants. Photo by: City and County of Honolulu

Top Left: Inaugural Honolulu NGICP class (2019). Interested in joining the local NGICP Certified workforce? Sign up for notifications of local training opportunities at [https://bit.ly/NGICP\\_notify](https://bit.ly/NGICP_notify) Photo by: Lauren Roth Venu



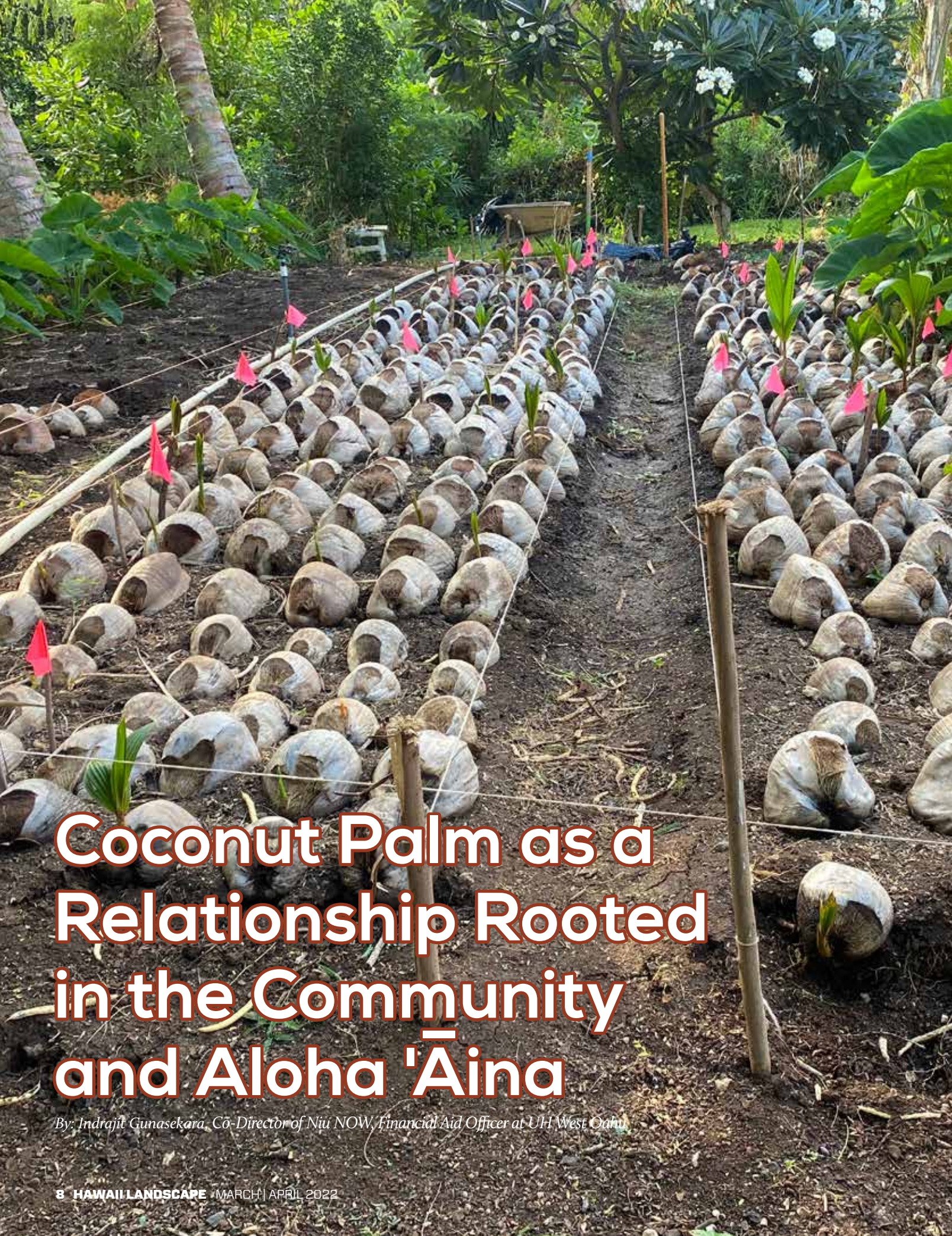
Bottom Left: Pervious pavers reduce stormwater runoff but require periodic maintenance to remove built up sediment. Photo by: Interlocking Concrete Pavement Institute

Effective GSI requires a skilled workforce in their installation, inspection, and maintenance. As GSI becomes more commonplace in our built environment, there is a pressing need to develop an adequately prepared and certified workforce. The Water and Environment Federation in partnership with DC Water developed the National Green Infrastructure Certification Program (NGICP) to meet this need. The NGICP, now managed by EnviroCert, targets contractors, inspectors and landscape maintenance personnel. NGICP is an in-depth course that covers in detail the primary components, equipment needed and considerations for proper installation, inspection and maintenance of a

wide variety of GSI practices. The NGICP process involves applying to the program, taking the 35-hour course, and passing the certification exam. Certified NGICP contractors are listed on the national website ([www.ngicp.org](http://www.ngicp.org)). Local trainings have been hosted by the City in 2019 and 2020 and have been adapted to show local considerations and examples. During COVID the trainings were made available for remote participation that included participants in Honolulu, Hawaii Island and the U.S continent. Additional training opportunities are expected later in 2022/2023. To receive notifications for training opportunities, please sign up at: [https://bit.ly/NGICP\\_notify](https://bit.ly/NGICP_notify).

.....  
*Tonya Ketzka leads the City and County of Honolulu, Storm Water Quality Division's Public Education and Outreach Section within the Department of Facility Maintenance.*

*Lauren Roth Venu is the Founding Principal at Roth Ecological Design Int. and is a certified NGICP trainer that has been leading the local trainings in Hawaii.*



# Coconut Palm as a Relationship Rooted in the Community and Aloha 'Āina

*By: Indrajit Gunasekara, Co-Director of Nūu NOW, Financial Aid Officer at UH West Oahu*



**F**our years ago, Jesse Mikasobe-Kealiinohomoku, Pono Bailey and a team of students at UH West O’ahu invited me to visit a kupuna uluniu – an old coconut grove. It had been known and cared for at one time and they stood as hundreds of tall palms on the makai tip of the ahupua’a of Honouliuli. By the time we walked in, the grove had only eight mature palms standing but speedily heading toward the end of their life cycle after thriving there for over a century. We walked back that day asking ourselves a question: *What can we do to step into this cycle to invite at least one of those last palms of that kind in this grove to produce seed nut?* At least one mature

seed, niu malo’o, would need to grow over the next eleven months to become a healthy nut to plant and to thus keep this distinct niu variety alive. For the next four years we witnessed the palms slowly dying without producing any fruit. Those last eight trees, exhausted from extreme heat and rushing winds, died without any notice.

We tried, carrying buckets every few weeks to water where next to a house stood empty and collapsed in this one-time oasis. The uluniu was planted in soil and sand once naturally fed with a naturally fed hydrological system. I witnessed the dropping off of the heart of the last palm of this century old glorious uluniu (coconut grove) of

Hawai’i where that naturally fed hydrological system was greatly distracted and offsetting of a natural cycle of native flora and fauna. Resisting a feeling of failure as we were unable to bring at least one niu malo’o to add to our newly established niu nurseries at the time, we then asked ourselves the question: *What is the destiny of Hawaii’s coconut palm?* Knowing that not having any record-keeping or coconut conservation strategy, extinction of specific and unique varieties could easily go unnoticed and undetected. How would we even know if such unique coconut varieties of Hawaiian coconuts go extinct? Something needed to be done.

*Cocos nucifera L.* (Arecaceae), commonly called the coconut palm, is known as niu throughout Pacific and some part of Asia is the tree most all of our tropical islands’ ancestors collectively chose as the *tree of life* inviting for this close kinship to be with humanity as the coconut palm goes back beyond us over 70 million years. This is the tree that provides the actual visual expression of stories found only in legends and myths. By being available to put into use every part of the tree, the coconut palm provides us with our needs for nutritionally rich and functional foods along with many life supplies that have enriched daily and spiritual experiences of tropical living for thousands of years. Throughout the Tropical island nations coconut palm is been seen as the “first tree” to come and the “last tree” to stand after many natural disasters, helps us re-establish a working relationship that guides us through these global changes. In other words, when coconuts did well, people who lived and cared for them also did well. When the coconut tree lives long, so did the people.

As it has always been throughout coconut growing nations, coconut palm related knowledge is belongs to the common people of their places. These people of place who understood, connected, support, and sustain coconut practices for millennia are the ones to maintain these



practices. Those who's cultures are shaped around the food, art and spiritual inspiration of their coconut groves. Therefore, the kumu niu - coconut palm - is a vital source of our collective and cultural emergence of today because of the capacity to connect and support the livelihood and lives of over one hundred million people around the world. The coconut holds cultural understanding telling the tropical islands' Indigenous stories of who we are within places, and as people. Hawai'i should not be any exception.

However, what we have in contemporary Hawai'i is the negation of these true and ancient coconut values. Current beliefs and practices of the coconut palm forces indiscriminately most coconut palms to be fruitless here in Hawai'i. The coconut palm is treated as overproduced exotic symbol of tropical islands luring tourists to the white sandy shorelines labeling coconut palm as an 'ornamental tree' and considered mostly a liability—coconut ignorance. Even in some history texts, authors write that niu did not flourish in Hawai'i, nor did Hawaiians utilize coconuts as a staple in their food system. How can this be possible when there are hundreds of different and unique

ways to describe the niu, the uses, the stages, the stories, the linkages with diets and the famous uluniu – groves of each island with cultural and symbolic applications? These are some common factors of most historically coconut eating nations share. This historical inaccuracy is just only one example of the in-depth misunderstanding of the coconut palm that is being transformed with coconut knowledge and renewed awareness. The marginalization and mistreatment of kumu niu – the coconut palm – is needed to be change.

With this mission began the Uluniu Project at the University of Hawai'i West O'ahu with the collaboration of Dr. Manulani Aluli Meyer and myself. We are creating an inclusive community that is rediscovering niu as a cultural remedy standing right in our front yards, and now in our campus setting at UH West O'ahu. We are building a skilled student, faculty, and staff community who are working to understand the use of land by utilizing the resources available naturally with niu-centered planting practices. With our newly created Aloha 'Āina Service Club, we stepped into a campus community commitment to learn and lead with others by sharing our niu knowledge.

Thus begins our cultural agroforestry movement, our vision grew from direct experience and collective effort: *We see niu as a relationship rooted in the community and aloha 'āina.* This approach is the foundation of our discipline where we engage all communities with babies to kupuna, to learn aspects of niu with various outreach services: niu workshops, niu nurseries, niu cooking, niu webinars, and helping start uluniu – coconut groves. For this understanding experience is required, talk, walk and even *climbing* coconut trees is now needed. That is part of a growing foundation we're seeking to build, deepen and needed to be strengthen within.

As we continue to support our community with Indigenous based niu-centered land practices, we're beginning to understand the skill and knowledge-based support and resources our community is asking for. We engage ancient tropical island coconut knowledge that currently seeks expression in this time of climate change – soil mitigation practices, water retention, biotic and abiotic stress relief practices, and a renewed interest in moon, rain and wind cycles. Our work recognizes kumu niu as a vital resource to strengthen three main areas:

- Culture: rejuvenation of the niu practices and multilateral community collaborations
- Nutrition: encouraging coconut as a nutritional and diverse food resource
- Ecology: linking niu with forms of soil rejuvenation, retention, conservation and providing sustainable pollen source for pollinator service providers

Utilizing the coconut husk as a tool for water retention, as a climate change mitigation practice, and for coconut genetic conservation, we have thus created a teaching and learning lab at UH West O’ahu. We’ve exercised these practices by planting 10 niu selected from 5 unique dwarf varieties, along with 10 ‘ulu of 4 varieties. We also developed a niu nursery (germplasm) within this uluniu of 500+ seed nuts of 30 documented varieties that we gifted in November of 2021 to 80+ community members. This niu nursery is currently under re-population as we look for more healthy niu malo’o – matured coconuts.

This uluniu at UH West O’ahu is a future niu seed garden to provide high quality dwarf coconut seedlings for Hawaii’s future needs. In addition, with coordinating with Dr. Noa Lincoln and the Indigenous Cropping Systems Lab at UH Mānoa we expanded this practice to establish other uluniu, coconut groves, of 108 coconut palms of 16 selected and documented niu varieties at Kūkaniloku, Wahiawa with the partnership with Office of Hawaiian Affairs. Specifically, this uluniu is created in a planting system referred to as polymotu and acts as a genebank to provide quality true-to-the-kind coconut seedling for future planting and food needs. Both locations do not have irrigation systems. We rely on the ability of coconut husks to capture rain water and to retain moisture.

During last 10 years we have documented over 60 Hawaiian in situ coconut varieties, and completed 5 niu nurseries sowing over 1,000 seed coconuts. In 2020 we gifted over 700 high quality coconut seedlings to community members including the distribution of 220 niu seedling of 18 varieties to MA’O Organic Farms. Currently, we have 4 coconut nurseries in progress with 1000+ niu seedlings on their way to being gathered, planted, gifted and grown: 1) Waolama, Palehua, 2) Wai’anae Coast Comprehensive Health Center, 3) UH West O’ahu, and 4) Molokai Island. By the end of 2022 all niu seedlings will be freely available to the communities who seek to connect and grow with niu practices. *We see niu as a relationship rooted in the community and aloha ‘āina.*

.....  
*Indrajit Gunasekara is Co-Director of Niu NOW, Financial Aid Officer at UH West Oahu and a graduate student at University of Hawaii at Manoa’s Tropical Plant and Jacquemontia sandwicensis ‘Leeward Community College White’.*

Left photo: Meeting to strategize a Uluniu (coconut genebank) at Kūkaniloku, Wahiawa, (from left to right; Uncle Tom Lenchanko, Noa Lincoln, Indrajit Gunasekara & Kahea Acosta. Photo by: Manulani Meyer  
 Right photo : Indrajit Gunasekara arranging compact green dwarf seed coconuts from La’ie while organizing 32 varieties of 480 seed coconuts for UH West O’ahu Niu Nursery placed in the nursery on December 26, 2020. Photo by: Manulani Meyer



# *Jacquemontia sandwicensis*' Leeward Community College White', an Oahu selection of pā'ūohi'iaka for hanging baskets and landscapes

By: Orville C. Baldos

**P**ā'ūohi'iaka or oval-leafed clustervine is a native Hawaiian vine that commonly grows along the shores of the main Hawaiian Islands. Due to its salt tolerance [1], year-round flowering [2] and mat-forming growth, it has been used as a groundcover for landscaping. In the wild, various forms of pā'ūohi'iaka exist, ranging from hairy plants with green stems and white flowers, to plants with almost no hair, purple stems and bluish flowers. This diversity in growth form allows for selecting plants with highly ornamental characteristics. In 2018, we collected six accessions of pā'ūohi'iaka from gardens and wild populations, and then evaluated them for use in hanging baskets [3]. Results from that study identified two unique selections: *Jacquemontia* 'Puhala Bay' [4] and *Jacquemontia* 'Leeward Community College White' [5]. In this article, we describe 'Leeward Community College White', a cultivated selection with glabrous leaves and white flowers from Oahu. 'Leeward Community College White' was a seedling that originated from a July 2005 seed collection at the Leeward Community College Campus in Pearl City. These seeds, collected by Alvin Yoshinaga, were initially used for long-term seed storage and germination studies at the University of Hawaii at Manoa's Harold Lyon Arboretum. In May 2016, we obtained a seedling from that collection and grew it at the Magoon Research Facility for initial evaluation as a potted ornamental plant. From 2017 to 2018, the plant was increased through cutting propagation and underwent further testing and evaluation.



*Jacquemontia sandwicensis* 'Leeward Community College White' growing as a groundcover in a concrete bed.







*Jacquemontia sandwicensis* 'Leeward Community College White' in an 8-inch hanging basket. Constant pinching and/or pruning is required to maintain a bushy appearance. Repotting or pruning back and fertilizer application may be necessary after 5 months of growing.



Close-up photos of flowers and foliage of *Jacquemontia sandwicensis* 'Leeward Community College White'.

After characterizing the plants in pots and hanging baskets, we identified 'Leeward Community College White' as a promising selection.

'Leeward Community College White' has green (144A, Royal Horticultural Society, 2007), smooth leaves that have an average length of 1.77 inches and an average width of 1.14 inches. Stems are hairy and purple (N77A). Flowers have an average diameter of 0.41 inches and are white (N155A). Plants, grown from 3-node cuttings and planted in 6-inch pots have an average of 22 flowers at 42 and 70 days after pruning. 'Leeward Community College White' is ideal for hanging baskets and containers due to the short internode lengths of its stems (0.63 inches) and high number of lateral branches per plant (14 branches per plant 1 month after pruning).

'Leeward Community College White' can be easily propagated through stem cuttings or through simple or compound (serpentine) layering. When propagating from stem cuttings, use 4- to 6-node vine cuttings with leaves and preformed root initials (i.e. bumps at the base of the stem node). Rooting hormone is not required because preformed roots are already present. Cuttings can either be rooted under mist (in a mix containing 1 part perlite and 1 part vermiculite) or under subirrigated containers (in calcined clay).

Rooting can occur in about three weeks. Cuttings can also be directly planted in the final potting medium (e.g., 3 cuttings/8 inch pot) as long as the potting mix is kept moist and the pots are under full shade until plants have rooted.

Cuttings of 'Leeward Community College White' can be made available to interested nurseries in the state. Contact Orville Baldos (obaldos@hawaii.edu).

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'Leeward Community College White' stem cuttings can be propagated in subirrigated trays filled with calcined clay.

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Dr. Hemmes in front of cycads he planted in the botanical gardens"

A man with a beard and glasses, wearing a grey t-shirt with a circular logo, blue jeans, and a cap, stands with his hands on his hips in front of a large, dense cluster of cycad plants. The plants have long, feathery fronds. The ground is rocky and uneven.

# **UH Hilo Botanical Gardens: Learning from a world class conservatory in our backyard.**

*By: Cindy McCarty and Joanna Bloese*



Beautiful Bromeliad

Come visit the UH Hilo Botanical Gardens to experience and learn about sustainable landscape design. The Botanical Gardens at the University of Hawaii Hilo, located on the east side of the campus off Lanikaula Street, has long been an attraction for students and visitors. Upon exploring the gardens, it is easy to see why. The creator of the gardens, Dr. Don Hemmes, has transformed them into not only a beautifully manicured and intentionally landscaped space, but also a site of significant educational and biological importance.

While on a guided tour through the university's gardens, it was easy to catch the contagious

enthusiasm of Dr. Hemmes as he humbly reveals his masterpiece. The tour began at the brilliantly colored bromeliads, leading to the monstrous cycads, and finishing as we craned our necks to look at the lush, tall palms. The botanical gardens at UH Hilo are a hidden gem that holds information to educate students and the public on sustainable landscape species such as palms, cycads, and bromeliads.

As a young child growing up on his family farm in Iowa, Dr. Hemmes dreamed of becoming a landscaper. His love for plants and the natural environment led him to pursue a Ph.D. in microbiology. Dr. Hemmes became



Palm section of the Botanical Gardens

a biology professor at the University of Hawaii Hilo in the fall of 1973. He taught his first class in botany to 70 students. The botanical gardens came to fruition when teaching the life cycle of pine trees and one student remarked that they had never seen one in real life. It was then that he started his mission to assist students on their educational journey. The gardens seemed the perfect place to provide firsthand learning. Since then, the gardens have morphed into an incredible oasis of winding paths to showcase a variety of palms, bromeliads and cycads from all over the world. What began as a simple effort at experiential learning for students has grown into an extensive collection of endangered plant species and a biological repository worth protecting.

As one journeys through the garden, you are traveling through various regions of the world where the palms, cycads, and bromeliads flourish: Asia,

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Bot garden 1: "Front entrance of the Botanical Gardens, displaying colorful bromeliads"



South America, Mexico, and Australia, just to name a few areas. You will find most plants are marked with plaques displaying their scientific names and geographic origin. Many rare and endangered species of palms and cycads are found here, some of them threatened in their native countries by coastal development, burning of forests and excessive harvesting for ceremonial use. All plants in the garden are alien to Hawaii. This is intentional because Dr. Hemmes realizes many Hawaiian residents have limited opportunities to travel (especially students), and he wants to bring the outside world to the botanical gardens for the public to enjoy.

The garden boasts an impressive and massive collection of cycads containing ten genera and more than 100 of the 380 species of cycads in the world. As old as the dinosaurs, cycads have proven to be sustainable, adaptable and do not require painstaking maintenance. Few cycads are susceptible to diseases, and they require little fertilizer. In fact, the only time Dr. Hemmes says he fertilizes the cycads using a slow-release fertilizer is when they are first potted. They do best in half cinder and half potting

soil mixture as they require a great deal of drainage. Cycads grow in dry or rainy climates, making them perfect for either side of the island. They can be propagated by either pollination or budding on the plant that can be removed and planted. Although cycads can be pollinated by some insects, primarily earwigs in Hawaii, he actually control pollinates them himself to ensure the seeds are viable. You need both male and female plants that produce cones at the same time. Some of the cycads can generate up to 300 seeds per cone! Additionally, these plants can live for thousands of years. These factors combine to make cycads an excellent landscape ornamental for Hawaii. The main threats for cycads are new introductions of invasive species and theft.

While Dr. Hemmes has a weakness for cycads, his bromeliad and palm sections of the garden are impressive. The bromeliads bring in color and are monoecious, meaning they produce both male and female flowers to establish their own keiki. This trait provides affordable propagation for new plants. Palms are easy to obtain in Hawaii, as we



Young and mature palms

have some of the biggest palm nurseries in the world. They have prolific flowers that produce large numbers of fruit that can be germinated and planted for new trees. However, palms require a little more fertilizer as certain species are susceptible to manganese deficiencies.

As for the future of the gardens, Dr. Hemmes said “I don’t know. I’m getting old and I don’t know what we are going to do.” One change he would like to see is that the University of Hawaii grants the gardens official status and provide administrative and financial assistance in maintaining them. Many universities have botanical gardens that are sustained for aesthetic and educational purposes. The value of the botanical gardens is immeasurable. They provide a safe place to educate students and the public, a breathtaking backdrop for photo shoots, walking paths, a therapeutic work environment for volunteers, and a seed repository for rare and endangered cycad and palm species. Admission to the gardens is free and Dr. Hemmes gives tours to groups of two or more people. The gardens are a great resource for anyone interested in these beautiful plants or interested in learning about sustainable landscape design in Hawaii.

Landscaping any area takes time, work, and money. Currently, the garden is maintained solely by donations and volunteers. Dr. Hemmes works in his gardens often, with another volunteer, Normand Goupil, who has generously given a lot of his time to maintaining the gardens for the public to enjoy. The Master Gardeners volunteer periodically as well. If you are interested in volunteering, donating, or learning about how you can introduce more of these self-sustaining plants, please reach out to Dr. Hemmes at [hemmes@hawaii.edu](mailto:hemmes@hawaii.edu). University of Hawaii at Hilo Botanical Gardens | Big Island Guide

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Cycad cones

3-Acre Fenced Quarantine Site



# TAKING STEPS TOWARDS SUSTAINABILITY

*By: Katy Deshotels-Moore, Director, Island Operations Pūlama Lānaʻi*



Controlling invasive species is just one of many ways Pūlama Lāna'i uses for taking steps toward creating a sustainable island. "The Big Three:" coqui frog, *Eleutherodactylus coqui*; little fire ant (LFA), *Wasmannia auropunctata*; and coconut rhinoceros beetle (CRB), *Oryctes rhinoceros* are a primary focus of our Biosecurity Team when inspecting our newly arrived plants; however all pests are considered a threat and must be treated prior to release from our 3-acre quarantine site. Built in 2014, the site was designed to hold all incoming plants for a given length of time—typically 1-2 weeks, depending on where they originated from until the plants can be released safely into a project or one of Pūlama's nursery sites.

The quarantine process begins with a weekly shipping log that provides advanced notifications to our Biosecurity Team, Nursery Crew, and Transportation Department that use this information for planning purposes. The Biosecurity Team is first on the scene to open containers or mount trailers to inspect incoming plants and place peanut butter-baited sticks throughout the shipment to check for little fire ant inhabiting the load. If no LFA are detected the plants can then be off-loaded and stored in shade houses, or a designated holding area for field stock trees and palms within the fenced quarantine site. Song meters are then placed strategically to monitor for coqui frogs that may have hitched a ride on incoming plants. Although Hawaii Department of Agriculture (HDOA) inspects and releases all off-island shipments, occasionally something will slip past their detection and find its way to Lāna'i. The quarantine site was built in order to create an additional firewall against invasive species that may be



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1 of 6 Quarantine Houses

hidden on incoming plants. The cost of building the facility along with added labor used to inspect and monitor the plants is a small price to pay for keeping the island free of “The Big Three,” as well as a host of other undesirable organisms.

Once released from quarantine, the plants are subjected to another treatment of citric acid if they originated from a location where coqui is widespread. The number of hotspots with coqui and LFA are growing throughout several of Hawaii’s islands; so it’s important to keep up with the latest information available about invasive species. Our biosecurity efforts don’t end here however; nurseries as well as new development and current construction sites continue to be monitored for coqui frog as well as tested for LFA. Typically, there are as many as 15 permanently mounted song meter units set up throughout the island, listening for the sound associated with the male coqui. In addition, there are nine CRB panel traps that keep tabs on this unwanted pest. All traps and song meters are

checked monthly by our Biosecurity Team.

When a male coqui is detected, the Biosecurity Team sets up a night hunt to locate and capture the critter. Occasionally it takes multiple evening visits before they are successful with finding and capturing the frog—but they never give up! Once the frog is captured it’s then placed in a freezer and used later for educational and training purposes. Over the past eight years our nursery and biosecurity teams have hunted and captured numerous coqui frogs; as well as locating and removing eggs found on incoming plants. Our team stops at nothing to ensure the frog is found and disposed of. I can remember personally one night climbing high into a Pink Tecoma tree, *Tabebuia rosea*, to locate and capture a singing male coqui during the early stages of construction at our new Sensei Retreat. The crew assisting with the capture shined their lights from below until they could see which leaf he was perched on, then guided me to the exact shoot where I was able

to capture and remove him from the tree.

We go to great lengths to protect Lāna’i from the worst of the invasive species Hawaii has to offer. Several years ago we received a shipment of plants that contained little fire ant. We suspect the 200 pots of *Philodendron bipinnatifidum* ‘Xanadu,’ got added to the shipment at the last minute, once HDOA had completed their checks and released the container. Upon opening the refrigerator the Biosecurity Technician detected LFA in pots closest to the doors. Rather than treating the pots and risk missing some of the ants, we made the decision to burn the entire shipment. Sending it back to the grower wasn’t an option either, since we’d be putting the barge at risk of harboring LFA that could then get transferred to other shipments.

If we had the luxury of time to grow on island all the plants needed for our current and upcoming projects we could greatly reduce the threat of bringing over invasive species; however that’s not practical,



Citric Acid Treatment to Palm Prior to Leaving Quarantine, Photo Credit: Kari Bogner

so we propagate and grow everything we can and make the extra effort to inspect and treat all incoming plants as well as monitor the various areas we feel are most needed.

To date, the island of Lānaʻi is free of coqui, LFA, and CRB as far as we know. This is due to the dedication of our staff as well as assistance from the Lānaʻi Community, also committed to keeping the island free from the worst of these pests. On several occasions our hotline received a call from a hunter or other person from the community that happened to hear what they thought was a coqui singing in the evening as they passed a particular site. Once they make that call the wheels are put in motion for another night hunt to begin; and another coqui will sing no more.

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*Katy Deshotels-Moore is the Director, Island Operations for Pūlama Lānaʻi*

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# DESIGNING SUSTAINABLE LANDSCAPES AND TROPICAL CERTIFICATION COURSES WITH CHRISTIAN RENZ

*By: Molly Murphy*





Left Photo: O'ahu sedge surrounds a native loulu. Top Photo: O'ahu sedge, is nestled among the larger plants, adding a dash of bright green to contrast the red of regal ti and sealing wax palms.

**S**ustainability and design are inseparable concepts for Christian Renz. When the design is wrong, no landscape can be sustainable, regardless of the plants that incorporate it. According to Renz, the right plant in the right place will be sustaining, while the wrong plant in the wrong place will need more fertilizer, more pesticides, and eventually an entirely new plant. Landscapers and homeowners may think they failed in maintenance when in reality, the design failed them. Since 2011, his company, Pacific 'Aina Management, has designed landscapes with sustainability in mind. Because the biosecurity of Hawaii is paramount, Christian became a Plant Pono Endorsed business committed to preventing the spread of invasive species. And now, looking to the future of the Green Industry, he is sharing his experience and knowledge through new tropical landscaping courses for the next generation of LICH members.

### Sustainable Design

Recently Renz, with help from Greg Boyer of Hawaiian Landscapes, Inc., redesigned the promenade at the Mauna Kea Beach Hotel on the Kohala Coast on Hawaii Island. Management at the hotel had decided to make native Hawaiian plants an integral part of the landscaping and had committed to that intention with action. Classical groupings of tropical plants with native species can be found throughout the resort. Native kupukupu ferns surround bright red heliconias. A tried-and-true thriver, naupaka, sprawls on the hillside. Silvery pohinahina and ever-flowering ilima gracefully adorn the pathway to the pool, while pōhuehue with delicate purple flowers extends along another path.

The building itself had been designed to blend into the surrounding environment, and Renz kept to this founding vision as he worked to bring native Hawaiian plants into his redesign. The results are fresh and inventive,

with the unexpected colors and textures of natives woven with familiar exotic topicals. The grand entrance is the first impression guests receive, setting the tone for a soul-refreshing retreat from the world. The white sands and sparkling waters of Kaula Bay beckon, but in the open-air atrium, the impressive crowns of native loulu and coconut trees draw the eye, stretching up to the second floor. (Renz points out to me the loulu was destined to be scrapped from a different site; he was able to recycle it into a new design). A knowledgeable visitor will recognize the careful selection of plants that thrive in low-light, high-traffic conditions: aglaonema, wax ficus, elephant ear. Another native, O'ahu sedge, is nestled among the larger plants, adding a dash of bright green to contrast the red of regal ti and sealing wax palms.

Since the days before statehood, Hawaii had been branded to the

public as a paradise featuring plants like plumerias, gingers, heliconias, and bougainvillea, ignoring the many unusual Hawaiian plants that thrived in the islands before human arrival. Those plants became ubiquitous and often represent a visitor (or even resident!) imagining of a Hawaiian landscape. But in recent years, a new appreciation for the original Hawaiian plants has developed. After all, visitors can see anthurium or bird of paradise at nearly any tropical island, but the red, blush, yellow, and all in-between shades of lehua blossoms offered by our ohia trees are uniquely Hawaiian.

Landscapers are also being drawn to natives for a more practical benefit: reduced maintenance. A native plant has evolved to utilize existing resources in an area and be resilient against the typical climate conditions. Renz's company, located in the heart of the Waikoloa resort area

installs many designs in salty, dry conditions. To be sustainable and to save money on enormous water bills, native xeriscape plants are a go-to for him. Pohinahina is an excellent choice for low-growing plants with silver foliage complementing the purple flowers. The striking blooms of the native white hibiscus, native yellow hibiscus, and akulikuli add an elegant element to designs.

However, Renz cautions that careful thought should be given to the placement of each plant in the design. For instance, 'a'ali'i, a drought-tolerant shrub popular for its bright maroon seed pods, can be finicky if it's not in the right environment. On the other hand, Beach morning glory (pohuehue) seems the perfect coastal plant: the bright pink flowers and large leathery leaves are beautiful, but slugs can be a problem if planted too far inland. In salt spray that deters slugs, it's virtually mainte-

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Pōhuehue is the perfect coastal plant: the bright pink flowers and large leathery leaves are beautiful, but slugs can be a problem if planted too far inland. Designing for the right environment is the key to sustainable landscaping.

nance-free. According to Renz, native plants, hands down, require far fewer inputs if they are planted in the right place. On the other hand, nonnative plants can become unsustainable, needing lots of water, fertilizer, and pest protection. But again, he insists, it is the design that is key to making a landscape successful.

Renz recognizes the critical role of landscape architects and designers to bring more native plants into Hawaiian landscape design. However, a total overhaul from completely exotic to completely native in any space is unrealistic. Pacific 'Aina Management

focuses on slow but steady progress: every client receives some native plants in their design, even if they are not explicitly requested. Eventually, their projects are 25% to 60% native. In the past, finding native plants for horticulture had been challenging, a deterrent for many designers. However, times are changing, supply chains are shifting, and interest in locally grown products has expanded as the ecological costs of shipping have been exposed. The Green Industry is driving the trends, Renz explains: demand drives supply, and as more designers and even home gardeners search for

native plants, growers are stepping up to offer inventory. It's a collective synergy between landscape architects, designers, and clients.

Designing new LICH courses  
Besides being a father, husband, and businessman, Renz likes to give back by volunteering time and expertise to his field like many others in the Green Industry. As the president of the very active Hawai'i Island Landscape Association (HILA), Renz and his fellow board members often meet, planning new opportunities for growth at every level of professional



Christian Renz awarded Molly Murphy a winning ticket from the 2019 HILA conference raffle. Because of pandemic restrictions, the event hasn't been held for over two years. The HILA board is working earnestly to host it in 2022.

development. During COVID, the HILA board remained committed to holding hands-on training classes, which required much additional planning and safety precautions - keeping the board hard at work even during the pandemic. The HILA workforce development program is crucial to the industry in Hawai'i. Under Renz's leadership, HILA looks to invest in the next generation of landscapers, for whom sustainability will be an essential paradigm.

Now Renz has taken on Chris Daucus' former role as the Education and Development Committee Chair for LICH. The current LICH classes are based on the National Association of

Landscape Professionals (NALP) curriculum, but Renz and the committee are revising the classes to be framed around our unique Hawai'i environment. With approval from NALP, a new Tropical Horticulture Certificate is being planned for 2023. Graduates of the program will demonstrate a thorough understanding and competency of tropical landscaping management.

When I pointed out the many things already on his plate and asked about the addition of yet another role, Christian replied, "My father did philanthropic work. So, the values of giving back to the community are instilled in me. If you want to make a

difference, you need to get involved. That is sustainability." Renz's commitment to sustainability in Hawai'i is clearly evident in his work, and it serves as an inspiration for others looking to cultivate climate-resilient landscapes.

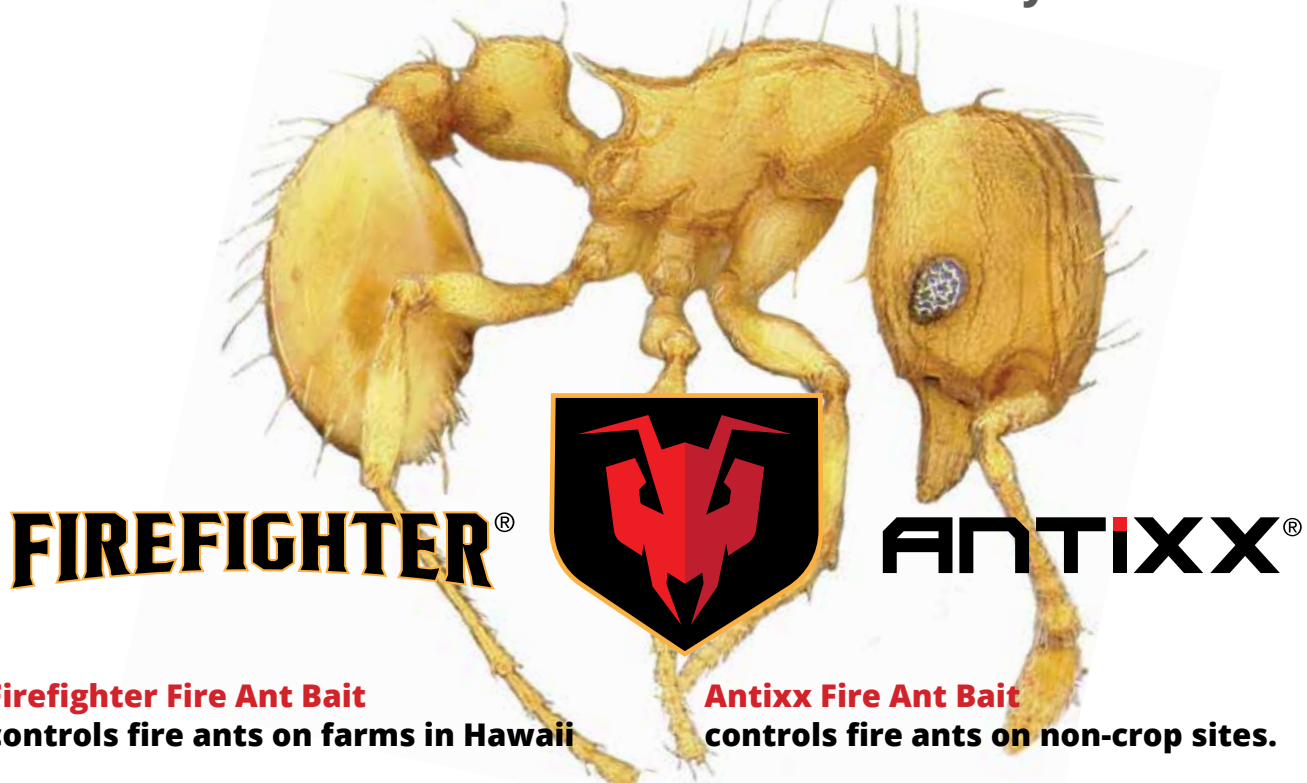
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*Christian Renz and Pacific Aina Management can be reached at <https://pacificainamgmt.com/> or (808) 437-7500.*

*Molly Murphy is the Plant Pono Specialist for the Big Island Invasive Species Committee. For plant-related questions or information about the Plant Pono program, contact her at [mollym3@hawaii.edu](mailto:mollym3@hawaii.edu).*

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