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Formed in June 1986, the Landscape Industry Council of Hawai'i is a state wide alliance representing Hawaii's landscape associations: Aloha Arborist Association, American Society of Landscape Architects Hawaii Chapter, Hawaii Association of Nurserymen, Hawaii Island Landscape Association, Hawaii Landscape and Irrigation Contractors, Hawaii Society of Urban Forestry Professionals, Kauai Landscape Industry Council, Maui Association of Landscape Professionals, Professional Grounds Management Society, Big Island Association of Nurserymen, and the Hawaii Professional Gardeners Association.

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PRESIDENT'S LETTER

BY CHRIS McCULLOUGH

LOCAL GARDENS GROWING IN TIMES OF COVID

2020 has been a challenging year for our Green Industry and for Hawaii's homeowner as well. Yet many Hawaii residents have seized the opportunity of self-isolation time to make improvements to our gardens. Many local nurseries are reporting that 2020 was a good year for sales. In light of 2020's safety issues, economic downturn and quarantine life, what does the data say about recent homeowner trends? Here are some key findings:

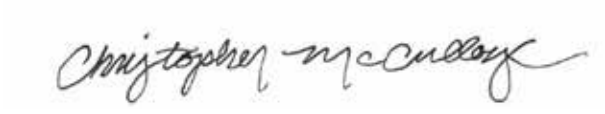
- Over three in four homeowners in the United States have carried out at least one home improvement project since the start of the COVID pandemic. Those homeowners also plan to undertake at least one home improvement project in the next 12 months.

- What specific projects were homeowners working on during quarantine? Many were outside working in their gardens and getting some fresh air! Changes to the house exterior were most common, with many homeowners doing some work on their landscapes.

Did sheltering in place have any effect on inspiring these landscape projects? The data says yes. Over half of American homeowners said the pandemic gave them time to improve their homes. What type of projects did people accomplish? Garden landscaping topped the list of home projects, as one quarter of the homeowners surveyed said they worked on their gardens during the pandemic. In general, this was a boost to the Green Industry, particularly with suppliers and nurseries.
What was the stated reason for improvements in the homeowner's landscapes? "Finally having the time" was the top motivator, with many of homeowners saying that's what drove them to go ahead with their garden improvements. And having a little more food security was the other obvious motivation.

Many Hawaii residents planted more edible landscaping in response to potential food shortages. This trend will continue into 2021 and beyond as the memory of empty shelves at local markets reminds us of our vulnerability in regards to food security in Hawaii. With people sheltering in place and attempting to make fewer trips to the grocery store, CTAHR launched a "How to Start Your Own Home Garden" series to help families stay healthy and engaged. The program recognized that with more than half-a-million housing units packed throughout the islands, containerized vegetable gardening would be ideal for small spaces: apartments, condominiums, patios as well as areas with poor soil conditions. With sufficient growing space, soil drainage and aeration, sunlight, adequate nutrients and irrigation, Hawaii residents can grow vegetables quickly by following the program, right at home. Information about this program can be found online at: www.hawaii.edu/news/2020/04/13/container-gardening-small-spaces/

Like the Victory Gardens planted during World War One and Two, these gardens planted in times of Covid not only supplemented our food supply but also boosted our morale. Audrey Hepburn was once quoted "To plant a garden is to believe in tomorrow."
For many here in the islands 2020 was a time to plant an edible garden in hope of a better, safer and more secure future.
That hope is a powerful and growing force.



Chris McCullough, LICH President

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LICH NEWS

CHRISTOPHER MCCULLOUGH, LICH BOARD MEMBER

Photos (left to right): Kiana Lei Vallente, Lokepa Ka'ilii (the groom), and Suzette Sakarias.

HILA AWARDS VIC PAULSON MEMORIAL SCHOLARSHIPS

The Hawaii Island Landscape Association has awarded its annual scholarships in honor and remembrance of Vic Paulson. This year's recipients are:

First year Kapiolani Community college student Kiana Lei Vallente was awarded a $1000 scholarship based on her excellent performance as a scholar and as an engaged community member. Kiana plans to transfer to U.H. Hilo to pursue a degree in agriculture.

Hawaii Community college students Lokepa Ka'ili and Suzette Sakarias were both awarded $500. Both students are in the Agriculture program at HCC.

All three students proved their need and merit for this award.

HILA typically grants two annual awards of $1000 each, but this year we had three great applicants and decided that Kiana deserved the full award and that the two HCC students deserved to share one award.

The eligibility requirements for these scholarships are that the applicant is enrolled in their Senior year at any high school on the Island of Hawaii or currently enrolled or planning to enroll in any college or university, or any institution of higher learning in a program of horticulture, landscaping, environmental planning or agriculture (the Green Industry). Information about applying for these scholarships may be found on the HILA website.

Congratulations to Kiana, Lokepa and Suzette, and mahalo to Jennifer McDaniel, our HILA Scholarship Chair person.

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To become a 2021 Member, we encourage you to join online at: **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 HMMA Insurance. It will also help LICH build an Industry Survey which has not been done since 1986.

ANNOUNCEMENT BY DANA ANNE YEE, FASLA:

Congratulations to Joshlyn D. Sand, Director of the Honolulu Botanical Gardens for being recognized as Manager of the Year and to Jeanine A. Nichols, Secretary II and Peter Yamashita, Parks Grounds Improvement Supervisor II, who were recognized as employees of the year for the City and County of Honolulu, Department of Parks and Recreation by Mayor Kirk Caldwell, through virtual ceremony, on October 30, 2020.

They truly embody the mission of the City and County of Honolulu, Department of Parks and Recreation to enhance the leisure lifestyle and quality of life for the people of O'ahu through active and passive recreational activities. Thank you Mayor Kirk W. Caldwell, Director Michele K. Nekota, Administrator Stanley T. Oka, Joshlyn D. Sand, Jeanine A. Nichols, Peter Yamashita, and the entire Department of Parks and Recreation team for keeping our island parks and botanical gardens so beautiful.

Millenial Rising

by Matt Lyum & Russell Galanti

Many new faces are entering the green industry, and we are interviewing them all! Considering this issue is related to nurseries, we decided to interview Easton Loa of Nalani Plant Service LLC. Let's take it away! Thanks, Easton, for taking the time to answer these questions. This interview was done in July, so check in to Nalani Plant Services social media or visit them to see how they have evolved since then!

Q: How we grew up has such an important impact on our direction. Where were you raised and how did that affect your path in life?
A: I was raised in Kaneohe. I found an ad in the newspaper for driver at Hawaiian Sunshine. After working there, I fell in love with plants.

Q: Where did you go to high school? College?
A: I am a graduate of Roosevelt HS Class of 2005. I Studied at HPU but left early to work since I had to earn a living.

Q: What is your favorite green industry resource website?
A: Hawaiiscape.com of course.

Q: Let's go of topic for a second, what is your favorite restaurant? Someone out there might be hungry and need some inspiration.
A: I have to say Bravos at Pearlridge for Italian food.

Q: Nice choice, now I have to ask what is your favorite plant?
A:This is hard since I have so many! I'll go with bird nest fern.

Now that we got a little bit of the warmup questions out of the way, let's ask some more thought-provoking questions.

Q: The trend is that landscape and agriculture are aging community, you're bucking the trend - why?
A: I saw opportunity in nursery business. The experienced, older nursery owners were exiting or scaling back. Since no new ones were opening, I thought I would step in.

Q: Who and/or what was the inspiration to start this business?
A: Other than filling the void of nurseries leaving, I also wanted to grow what people couldn't get easily.

Q: What are you trying to accomplish?
A: At this point just trying to survive, hoping to thrive soon!

Q: We all are trying to make it through these days. Let's focus on positives. What is your best accomplishment so far?
A: I started a business from nothing with no money in the bank and has now hit my 4th year. I'm also proud to of keeping it family run venture. My fiancée, Mom, and Grandma all work with me.

Q: What plants do you sell? particular sizes?
A: 6" to 3-gallon interior and landscape material.

Q: What new plants are coming soon?
A: I'm excited about a new Birkin Philondendron, and Mini Monstera, *Raphidophora Tetrasperma*

Q: Are you wholesale and retail?
A: Both.

Q: What's it like living and working in Waimanalo?
A:I like how most of the nurseries help each other. We are a close knit and cooperative community. We always refer business to each other since we know what everyone has in stock.

Q: What has the current generation done well? What do you think could be improved by your generation?
A: I think we are more open to new plants. We research on the internet and learn about new varieties and want to experiment with them.

Q: What will the landscape industry look like in 30 years?
A: More online presence for nursery shopping. Instead of calling around, you can go to websites to see inventory.

Q: What advice would you give high school students consider a career in the green industry?
A: Go to college for horticulture and get the basic science down. Get ready to work hard and don't be afraid of sweat and mud!

Q: Who are your biggest influences?
A: Warren and Ellen Yee. I wouldn't have made it if not for them. Benny Abrigado and Performance Landscapes to see how big a company can grow and still maintain quality.

Q: What advice would you give someone thinking of choosing a career in the green industry?
A: Love plants and enjoy your work. If you have your own farm, you will work 7 days a week, so you better enjoy it!

Thanks a ton for taking the time to answer these questions Easton, we look forward to having you in the industry for our nursery needs!

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ORGANIC FERTILIZER APPLICATIONS

By: Mike Serant, owner of MicroLife

Organic landscapers and horticulturalists frequently use the common saying, "feed the soil and let the soil feed the plant." Instead of focusing on feeding the plant, it's important to think about feeding soil microorganisms (microbes) first. Why is this important? Soil microbes break down organic matter into specific compounds and elements that plant roots can absorb. These vital nutrients allow the plants to grow, reproduce and flower. Plants and soil microbes are interconnected, they receive nourishment from each other. Using organic products (in this case meaning products derived from natural living things), encourages microbial activity, improves soil and plant relationships, and may create a more productive, healthier, hardier, and balanced environment.

Incorporating organic-based products into the landscape is an excellent way to grow and maintain healthy plants. The use of organic compounds versus lab-made chemical compounds improves soil health, conserves resources, improves plant growth, uses less water, creates less need for plant replacement, and is more sustainable.

Thousands of commercial, residential, institutional, and agricultural operations have been using organic products; some for more than 30 years. After experimenting, these companies and landscape professionals have consistently discovered that the use of organic compounds resulted in superior plant performance, reduced problems, less water used, cost savings, and safer landscapes. These individuals are very passionate about working with organic fertilizers.

Making the jump from using chemical products to using organic ones is quite easy. Generally you will want four annual granular applications and four to six annual foliar sprays (ornamental, flowers, ground cover, food crops but not turf). Depending on your crop(s) some variation is expected. Granular products will provide the heavy lifting and lay the foundation. Foliar sprays act as special health boosters.

Your granular applications will generally look like this; one application of humates inoculated with beneficial microorganisms, then evenly space the three other applications of granular organic fertilizer. Humates are basically "concentrated compost in a bag." They are coarse-grained, very dense particles of carbon that are easy to apply. Humates will also provide your plant with minerals and major root stimulators. Your indigenous microbes will love your humate applications.

Foliar spraying, especially for non turf crops becomes a fun, easy to apply revenue stream that makes landscapes healthier, with fewer pest problems, and fast results. Look for foliar sprays that contain a mixture of fish, seaweed, molasses and humic acid.

Organic products are exciting, thrilling, inspiring, and a never-ending source of satisfaction. You will find endless joy and marvel as you truly understand mother nature and work with her and not against her.

For more information, please visit: MicroLife or *www.microlifefertilizer.com* You can also check out these books: Selhub, E. M., & Logan, A. C. (2014).

Your brain on nature: The science of nature's influence on your health, happiness, and vitality. Toronto, Canada: HarperCollins.

Lowenfels, J., & Lewis, W. (2016). Teaming with microbes: The organic gardener's guide to the soil food web. Portland, Oregon: Timber Press.

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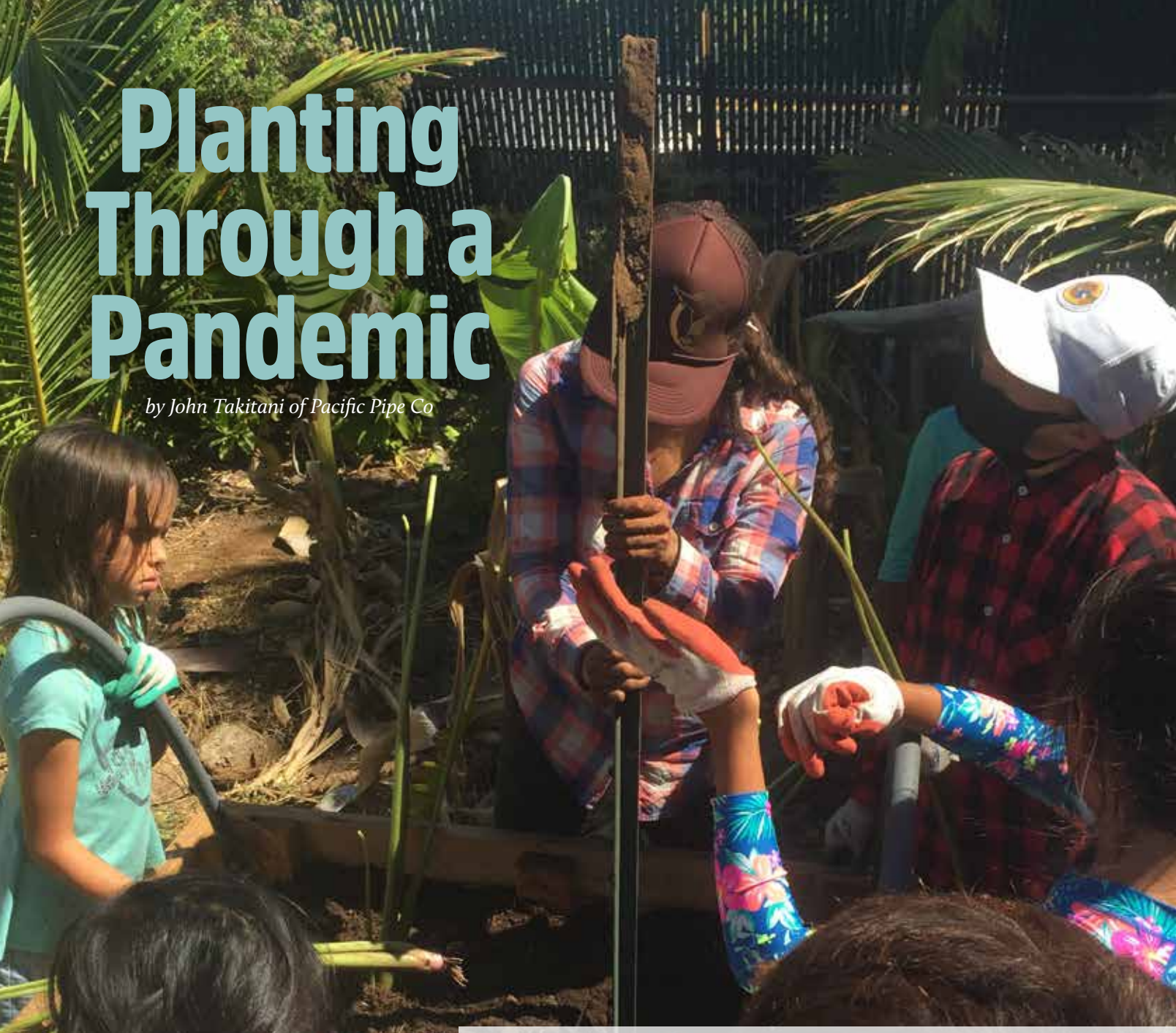
Planting Through a Pandemic

by John Takitani of Pacific Pipe Co



The "new normal" as we call it, includes social distancing, masks and fist bumps. The unfamiliar territory of navigating through a pandemic has caused catastrophic effects on our economy and many businesses throughout the world, not to mention the dire health impacts as well. Throughout this turmoil, sometimes the grass is indeed "greener" on the other side... during this pandemic much of the world has turned to back-yard gardens and self-sustainability, growing healthy fruits and veggies at home.

Even as our daily operations at Pacific Pipe Co. adjusted to meet county requirements, we still noticed a steady trend of customers seeking to design their own back-yard gardens. From raised beds, to in ground planter boxes, there are many ways in which we can grow our own veggies right at home. Most systems require very simple drip irrigation setups or even the classic style of hand watering (which has some meditation and relaxation effects as an additional perk!). New technology has even allowed us automation with smart phones off of hose bib timers. Our team has enjoyed this time to work closely with our customers in supplying the correct irrigation materials in order to meet their family's garden or nursery needs.


Photo Credit: Marie Janiszwski

Many stories of generosity, creativity and community involvement have surfaced throughout these trying times and we were happy to be a part of Ho'oulu Ka 'Ike, a program put on by The Hawaiian Outrigger Canoe Voyaging Society (HOCVS). The organization helps Maui families struggling to find childcare as many schools adapt to distance-learning education. Their program also focuses on Hawaiian culture, sustainability and health.

"As you know, automatic irrigation in an agricultural project provides the freedom for farmers to devote more time and flexibility toward fulfilling the many unexpected and unending needs on the farm" stated Marie Janiszwski of HOCVS.

The idea to implement Hawaiian cultural practices along with teaching skills in order for our keiki to understand the importance of agriculture and its benefits for a healthier lifestyle is something that Pacific Pipe Co. was proud to be involved with.

Serving our customers is our passion and we continue to value the relationships that are rooted and grown (pun intended) in our communities, especially during these difficult times.

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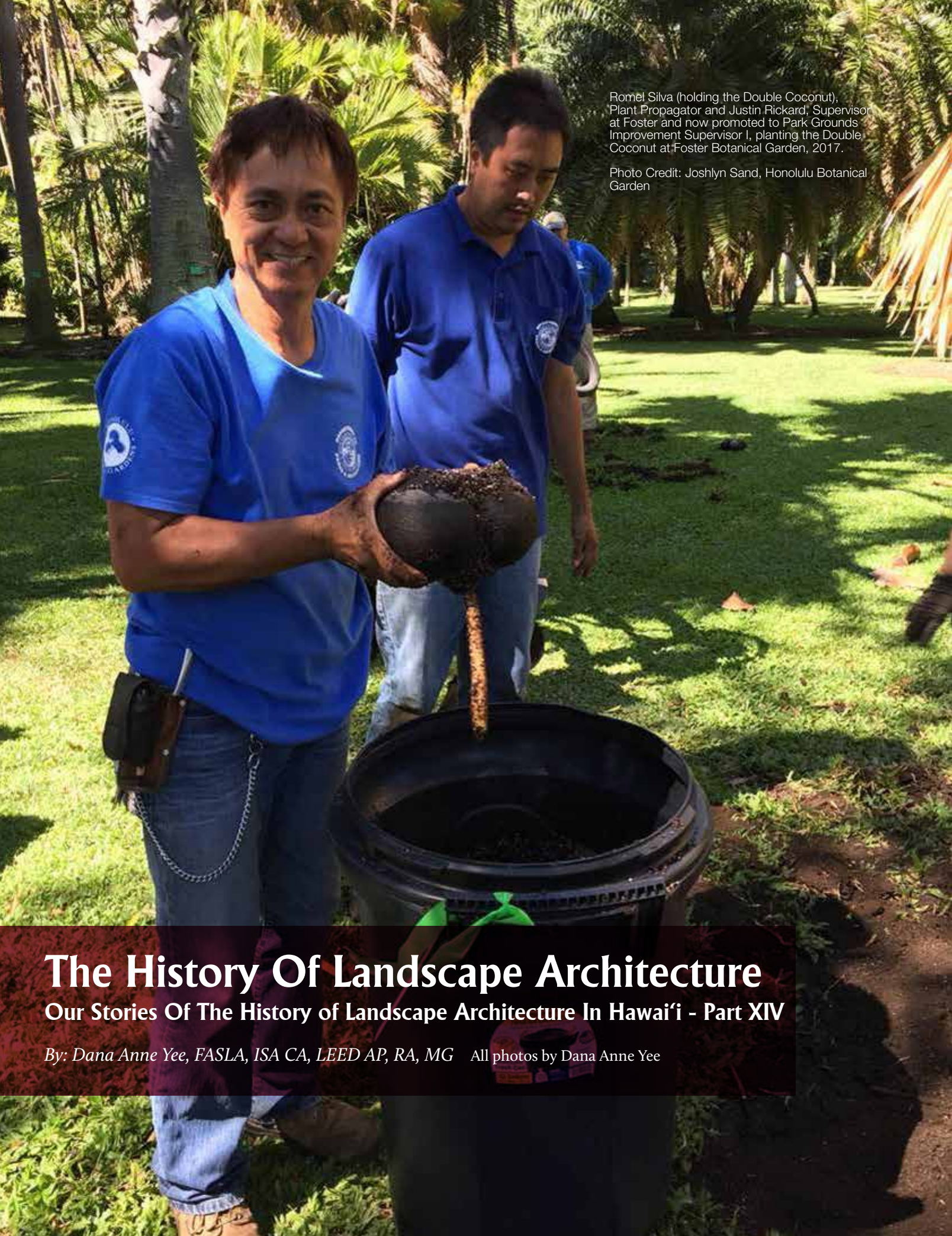

Romel Silva (holding the Double Coconut), Plant Propagator and Justin Rickard, Supervisor at Foster and now promoted to Park Grounds Improvement Supervisor I, planting the Double Coconut at Foster Botanical Garden, 2017.

Photo Credit: Joshlyn Sand, Honolulu Botanical Garden

The History Of Landscape Architecture

Our Stories Of The History of Landscape Architecture In Hawai'i - Part XIV

By: Dana Anne Yee, FASLA, ISA CA, LEED AP, RA, MG All photos by Dana Anne Yee

Mature (palm on the right) and young Double Coconut Palms / Coco de mer, Lodoicea maldivica, at Foster Botanical Garden, 2020.

Photo Credit: Dana Anne Yee, FASLA

King Louis XV "Beautiful Buttocks" Double Coconut Palm / *Coco de mer, Lodoicea maldivica*
Foster Botanical Garden, Honolulu O'ahu Hawai'i

Foster Botanical Garden seems to have remained the same as in my childhood memories of the Gardens. I remember the larger than life majestic trees on the upper terrace, the Bo Tree (*Ficus religiosa*) planted by Mary Foster in 1913, with its see-through leaves, the Prehistoric Glen gardens with plants from the dinosaur ages, and the happy greetings of the workers at the Foster Garden visitor center. Karen Antonio continues this tradition today. Across from the entrance booth was a display of seed pods of the many magnificent plants at Foster Gardens. The largest and most memorable was the Double Coconut Palm Seed or Coco de mer. One of the things that did change was that the Double Coconut seed is no longer on the front display because the value of the Double Coconut seed has risen tremendously and it has become a highly prized collector's item. Another new change to the gardens is the new young Double Coconuts that were recently planted on the upper terrace.

Who could not marvel at this giant seed! As a child, I thought that it looked like a butt. At least I noticed it. Upon research, an old scientific name for the Double Coconut, Lodoicea callipyge is Greek for "beautiful buttocks". It turns out my impression was accurate. The Double Coconut is the largest seed in the world.

Coco de mer is endemic to the islands Praslin and Curieuse of the Seychelles Islands in the Indian ocean. Knowledge of the Coco de mer originated before the 18th century when the Seychelles Islands were still uninhabited. The Coco de mer seeds were carried by ocean currents and were washed up on far away beaches. Prior to the discovery of the Seychelle Islands in the 1700's, people knew only what the seed of the palm looked like and not what the plant was. The Coco de mer is a dioecious species, with male and female flowers that occur on separate plants. Male plants produce the pollen and following pollination, female plants produce the fruits. The genus Lodoicus is monotypic meaning that there is only one species in the genus. The name of the genus, Lodoicea, may have been derived from Lodoicus, the Latinised form of Louis, in honor of King Louis XV of France. *https://en.wikipedia.org/wiki/Lodoicea*
The Double Coconut Palm can grow to over a 100 feet tall. Our Foster Botanical Palm has not yet achieved this magnificent stature and is still growing after 80 years. The seed or mature fruit can weigh 33 to 66 lbs. The fruits often require 6 to 7 years to mature. There are approximately 8,000 mature Coco de mer in the world, but there has been a 30% decline of the mature palms in the past 30 years, partly due to poaching and the collection of the mature seeds.

Unlike Coconut Palms, Cocos nucifera, whose viable seeds are buoyant, viable seeds of the Double Coconut are heavy and sink. And this is probably the primary reason for its limited distribution. It is the spent husk shells of plants that have germinated in the soil, that can float when they get washed out to sea. There were no viable Double Coconuts floating around in the ocean.

Dead seeds of the Double Coconut drifting in the Indian Ocean would wash up on the beaches of the Maldives in the 18th century, where they were collected as prized items used for medicines, carving, magic, and other uses.

The Double Coconut seeds were considered as treasures for hundreds of years. Royal courts appreciated their rarity and bowls and treasures were made out of the outer shells.

No one knew what the Double Coconut Palm looked like, because no one inhabited the Seychelles Islands at that time. They thought that Coco de mer was produced from a mythical tree at the bottom of the sea.

As I promised in the previous issue, here is the fantastic story of a plant that brought two countries together. Singapore Botanic Gardens and Honolulu Botanical Gardens worked together to pollinate the Honolulu Botanical Gardens Coco de mer, Lodoicea maldivica. The Honolulu Botanical Gardens has two mature female Coco de Mer Lodoicea maldivica palms and the Singapore Botanic Garden has three mature male Coco de mer, Lodoicea palms. Joshlyn Sand, the director of the Botanical Gardens, shared with me an article about the pollination. On May 2011, the staff of Singapore Botanic Gardens collected the male flowers and inflorescence. Three vials of pollen were delivered on May 31, 2011 to Honolulu. On the same day, the Singapore Botanic Garden pollen was applied to the tips of 10 of the Honolulu Botanical Gardens female flowers. "Honolulu Botanical Garden's history was made when a single fruit developed from the 10 flowers pollinated." Further details on the pollinating can be found in the article, "Desiccating Palm Pollen – a Technique for Pollinating Rare Palm Species Over Long Distance, Palms Magazine, Vol. 58(1) 2014. G. Staples, Singapore Botanic Gardens and Winnie Singeo, Honolulu Botanical Gardens were the authors and directors of operation of the Double Coconut pollination.

Additional acknowledgments for the success of the newly growing Double Coconut Palms at Foster Garden are shared with George Staples who was in Singapore and was able to guide the pollen and shipping operations. Tom Null, who propagated and cared for the Double Coconuts during the long growing process at Ho'omaluhia Botanical Garden, Jeff Marcus, who provided advice and shared his propagation methods and seed culture work, all the people at the Singapore Botanic

Double Coconut Palms / Coco de Mer, Lodoicea maldivica at the Upper Terrace of Foster Botanical Garden, 2020.
Photo Credit: Dana Anne Yee, FASLA

Gardens who were instrumental in the pollination, and Romel Silva the plant propagator of Foster Botanical Garden were all instrumental in the pollination of the Double Coconut Palms.

Success! In January 2017, a large ripe fruit, weighing 35 lbs. fell to the ground, whereby they planted the seeds and in only 4 months the seeds geminated. In August 2017, the Double Coconut seeds were planted on the upper terrace, with cages around them to protect them, as the Botanical Garden staff cared for them and watched them grow. If you have a chance you can see the Foster Botanical Garden's proud, 80-year-old Double Coconut and the young new Double Coconuts. How magnificent!

Periodically, I will continue the series, Dana's list of Spectacular, Magnificent, Stupendous, Exquisite Trees in Hawai'i.

Let us hope that there is an end to the COVID-19 pandemic soon, but know that the Honolulu Botanical Gardens will remain open. Stay safe, be kind to each other, and protect, preserve, and treasure our valuable Hawaiian land and all its people!

By Dana Anne Yee, FASLA, ISA CA, LEED AP, RA, UH MG, from the firm of Dana Anne Yee, Landscape Architect, LLC, City and County of Honolulu Planner. *Dana has been a presence in the Landscape Architectural profession and has a long-standing pattern of service to her profession and the community. Dana was honored as a Fellow with the American Society of Landscape Architecture in 2012. www.danaanneyee.com. The Dana Anne Yee Foundation, www.day1foundation.org, is a 501(c)(3) non-profit organization. The board of directors and members will continue in their commitment to serve to protect Hawai'i's delicate ecosystem and natural environment in their pursuit to help to preserve Hawai'i's beauty and to keep our Hawai'i green.*

SEARCHING FOR ORGANIC LITTLE FIRE ANT CONTROL OPTIONS

by Michelle Montgomery, Research Specialist, Hawaii Ant Lab

With little fire ant (*Wasmannia auropunctata*) detections rising throughout the State of Hawaii, residents on Kauai, Oahu, and Maui have recently begun paying attention to what was once thought of as a Hawaii Island problem. Little fire ants (LFA) have been widespread on the Hawaii Island for decades yet they were not known to be present or widespread on any other island. Isolated infestations on Kauai, Oahu, and Maui are normally monitored and treated for eradication through multi-agency collaborations between the Hawaii Ant Lab (HAL), Hawaii Department of Agriculture (HDOA) and island invasive species committees (ISCs). Unfortunately, local quarantine, stay at home orders, social distancing, and other preventative emergency orders during the 2020 COVID-19 global pandemic has made it nearly impossible for some agency-lead eradications to move forward. In some cases, efforts have temporarily shifted to community-based eradication programs where residents within the treatment areas have taken on the responsibility of treatments under the direction of the HAL, HDOA, and ISC's.

Greater awareness and community involvement in LFA control has brought with it questions regarding the safety of common control methods and demands for non-toxic or organic control options. Although the products and control methods recommended by the HAL and HDOA are not toxic to people, animals, and beneficial insects when used according to directions, there is still a great need for products that can be used on food crops and meet the needs and comfort levels of the public. New products and homemade bait recipes are constantly being tested against LFA in order to provide more options in the hopes of truly offering "something for everyone."

Historically, the only effective option for homeowners and the agriculture industry to use on their food crops and edible landscaping was to mix the HAL gel bait using Tango™ (Wellmark International), a non-toxic insect growth regulator affecting LFA reproduction and development. Although Tango™ is non-toxic and may be used on food crops, it is very slow acting and not suitable for everyone. Tango™ is also not organic. In 2019, two products, Antixx (Neudorff®) and Firefighter™ Fire Ant Bait (Certis USA), were tested and registered for use in Hawaii against LFA. Both products are formulated the same with Antixx being labelled for non-agriculture uses and Firefighter™ Fire Ant Bait being labelled for agricultural use only. Antixx and Firefighter™ contain the active ingredient spinosad, a biologically derived active ingredient commonly used in certified organic farming, and is formulated as a corn-grit granule similar to other fire ant baits. Not only do these products contain an organic active ingredient, but they also appear to be nearly as effective as conventional (non-organic) granular fire ant baits and are labeled for use on many tropical crops grown in Hawaii. As with conventional fire ant baits, Antixx and Firefighter™ Fire Ant Bait are "toxic" baits which kill the ants that feed on it rather than affecting reproduction and development.

Although spinosad is an organic active ingredient, some spinosad products are not OMRI certified. This is usually due to another (inert) ingredient not being certified organic. This is the case with Antixx and Firefighter™ Fire Ant Bait. Since the corn used for the corn grit carrier is not certified organic, these ant baits may not be labelled as OMRI certified. For residents, Antixx fills the need for an organic fire ant bait despite not being OMRI certified. Any organic farmers and nursery workers looking to manage LFA or other "oil loving ants" (such as the tropical fire ant and other species) should consult with their organic certifying agency before using Firefirghter™ Fire Ant Bait.

The good news is that this is not the "end of the line" in our search for organic and control options. Granular ant baits work very well to control ants on the ground, but leave arboreal colonies practically unaffected. The HAL gel bait fills that gap, since it readily sticks to vegetation and can be used to effectively treat the ground and trees. Organic bait options must also be available for those needing to treat tall vegetation in addition to the ground. HAL is evaluating using spinosad in the HAL gel bait recipe as well as other organic active ingredients. If the results of the HAL's product research are positive, HAL will attempt to work with product and chemical manufacturers in order to get formal permission and special product labeling to use the specific products in the HAL gel bait. Unfortunately, this is an excruciatingly long and tedious process with no guarantees in the end. Regardless, HAL is dedicated to finding new options for LFA control. In the meantime, Antixx and Firefighter™ Fire Ant Bait are two excellent products currently available to residents and agriculture workers striving to be as organic as possible in their ant management practices.

Hawai'i's Agricultural Leadership Program - Re-envisioned for an Evolving World

By: Christine Brammer, ALFH Executive Director

Hawai'i's Agricultural Leadership Program (ALP) began with Class I in 1982 when the Agricultural Leadership Foundation of Hawai'i (ALFH) was founded in response to the major shift away from plantation agriculture. ALFH's mission to provide leadership development opportunities for people committed to strengthening agriculture in Hawai'i continues today. With 185 alumni to date, ALFH continues to offer ALP and is now running Class XVII. ALFH also offers the Hawai'i Agricultural Conference - both efforts that invest in the future of Hawai'i's agriculture sector.

ALP Class XVII was set to begin in May 2020 but had to be postponed due to the pandemic. While ALP is not new to being affected by natural disasters and other unexpected changes, this was definitely not the start ALFH was hoping for. It was easy to see that current events were not going to make it possible for ALP to continue as it had before with frequent travel and in-person seminars. ALFH recognized the need to persevere in its quest to continue to empower ag leaders and so the staff took off on a mission to develop a new re-envisioned ALP that launched (virtually) on November 4, 2020.

The re-envisioned program continues to focus on network-building, a foundational component of ALP. In addition, the program includes leadership development workshops, skill-building sessions, guest presentations, virtual site tours, exploration in government processes, and group exploration in Hawai'i and beyond. Additionally, participants take part in hands-on site visits and then share what they learned with the rest of the class virtually.

Although the re-envisioned program may not be the ALP everyone knew previously, ALFH is excited to be providing this creative version of ALP to support the needs of our selected agricultural leaders as they lift-off into leadership. "This group of ag leaders is ready for the challenge," according to Christine Brammer, ALFH Executive & Program Director. "They are flexible, collaborative and adaptive and they will play a key role in leading the necessary changes to Hawai'i agriculture for the benefit of our communities."
Interested in applying for ALP?
ALFH welcomes the involvement of the landscape industry in ALP. Past ALP alumni from the industry include Garrett Webb (ALP Class VI) and Elaine Malina (ALP Class IX).

ALFH plans to recruit the next class in 2021. LICH (Landscape Industry Council of Hawaii) is today's voice of the landscape industry and will greatly benefit if landscapers enroll in the Ag Lead Foundation classes and receive the excellent training in leadership development that the program can provide.

Are you a landscaper who wants to be involved as a leader in our industry? Do you want to follow along or receive updates?
Join ALFH's blog and email list to receive updates on all things ALFH at agleaderhi.org

ALFH is pleased to announce Class XVII:
Amy Brinker, Kamehameha Schools, O'ahu
Susan Collins - Bird and Bee Hawai'i, Hawai'i Island
Sarah Freeman - County of Hawai'i, Hawai'i Island
Umi Martin - Umi's Farm, Kaua'i
Victoria Matsumura - Hawai'i Department of Agriculture, O'ahu
Stephanie Mock - Kualoa Ranch, O'ahu
Blair Richards - Sensei Holdings LLC, O'ahu/ Lana'i
Laura Rieber - Hawai'i's Simple Gourmet, Hawai'i Island

Want to Get Involved?
ALFH is seeking volunteer mentors to work with ALP Class XVII participants. Find out more by visiting agleaderhi.org.

Want to follow along or receive updates?
Join ALFH's blog and email list to receive updates on all things ALFH at: agleaderhi.org.

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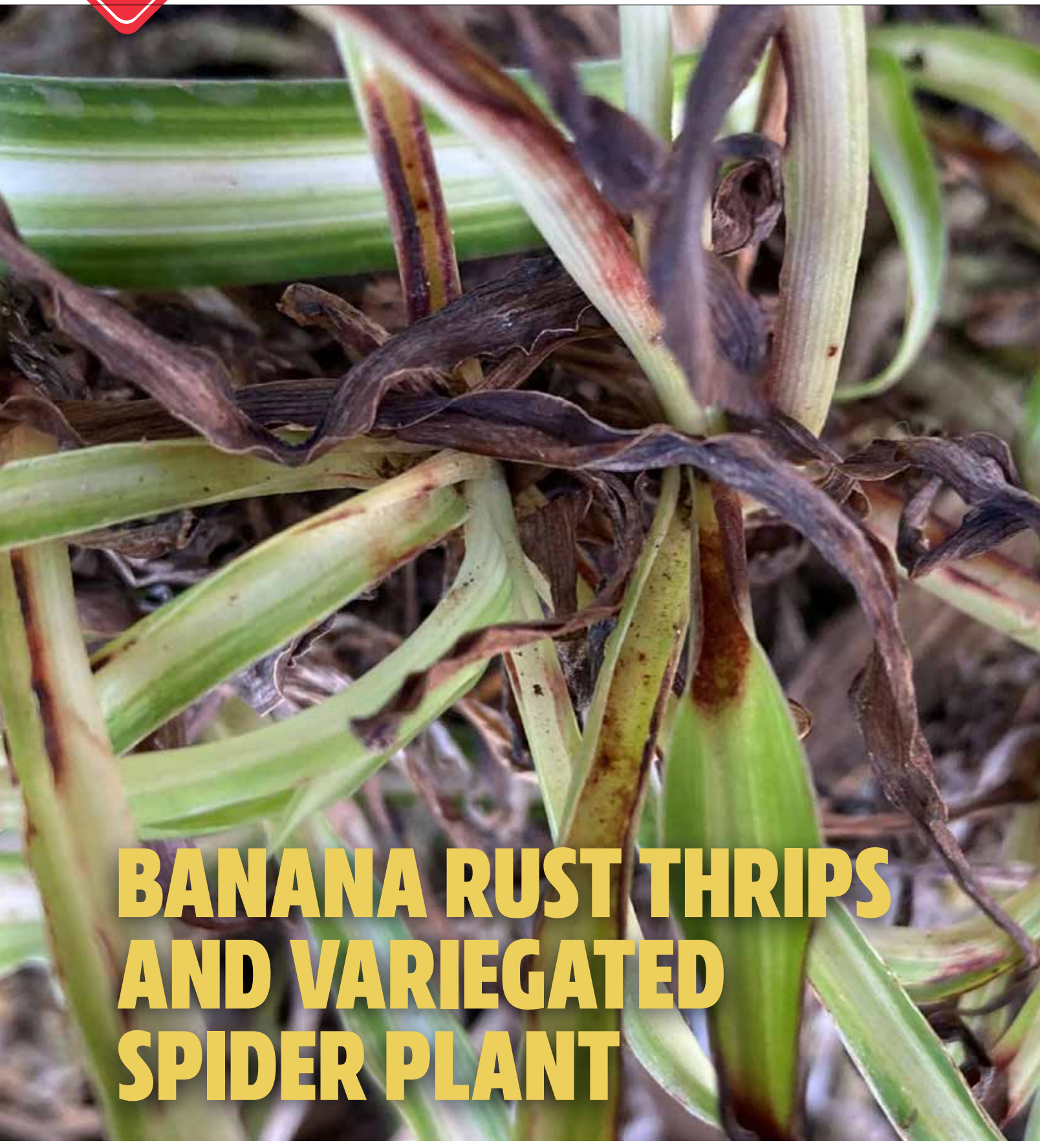
BY: ALLISON WRIGHT



BANANA RUST THRIPS AND VARIEGATED SPIDER PLANT

Chlorophytum comosum 'Vittatum', the variegated spider plant has long been a stalwart groundcover in shaded landscapes throughout Hawaii. In recent years, many plantings of this and related cultivars, have shown signs including rusty discoloration on the foliage, tip die-back, reduction in vitality and size and, eventually, death. Samples sent to Brian Bushe, Agricultural Diagnostician with UH-Manoa CTAHR Agricultural Diagnostic Service Center, show the damage is due to *Chaetanaphothrips signipennis*, banana rust thrips.

Banana rust thrips are minuscule, with adults reaching only 1/25 inch, so visible confirmation is unlikely without magnification and they hide deep within the whorls of the foliage. The best way to determine their presence is to observe the feeding damage. Thrips create damage to the surface of the foliage of the host plants as they feed, but the signs can vary depending on the plant host. In variegated spider plant, banana rust thrip damaged foliage is rust-colored, while on other hosts, the damage can appear as white streaks or deformities in the plant tissues. Also observed on variegated spider plant is brown to black tip-dieback, caused by the disruption in the vascular tissues from the feeding damage. Thrips are difficult to control due to their short life cycle and with different lifecycle stages being both on the plant and in the soil. Instill good cultural practices by heavily cleaning or removing severely infested plants and remove any debris in the garden that can conceal the tiny insects. If you are treating the plant, be sure to include the surrounding plants and soil. Horticultural oils and soaps will provide temporary control. Biological controls such as lady beetles and lacewings may work as well. As with any injured plant, opportunistic pests and diseases often appear. Brian also observed *Fusarium spp.*, and *Rhizoctonia spp.*, both fungi which are common in soils, and will infect vulnerable hosts.

More details regarding banana rust thrips, and its many hosts can be found in the CTAHR publication at: *https://www.ctahr.hawaii.edu/oc/freepubs/pdf/ip-10.pdf*.

Allison Wright is the Superintendent for Island Plant Company, LLC and Co-Owner of Valhalla Flower Farm, LLC

Figure 1.
Freshly chipped tree trimmings make the best mulch to stimulate soil microbial activity. when applied as mulch they do not suck Nitrogen from underlying soils.

Mulching

By Dr. A. James Downer Ph.D., Advisor
Cooperative Extension Ventura County, California

Mulch and mulching can be confusing to arborists, landscape maintenance specialists, and horticultural professionals because so much misinformation has been disseminated about it. Research corrects many misconceptions and old notions. This article provides some clarity about using mulch around trees and perennial plants. Benefits as well as potential problems associated with mulching have been published in a number of trade, horticultural magazines and scientific journals adding to the confusion. While mulch use is generally beneficial to woody plants and perennials, certain uses can lead to damage, and not all materials make effective mulch, so there is a need to review what makes "good" mulch.

What is mulch?

Mulch is any material laid over the soil surface, e.g., gravel, plastic sheeting, nut hulls, composted organic materials or fresh wood chips or crushed lava/pummice. Mulch is not incorporated or tilled into soil, otherwise it would be a soil amendment. Mulches are not natural per se – they are often man-made or man-processed products,and applied in thick layers to cover soil. Mulches can be organic or inorganic; rock, lava, pumice and even rubber products can be used as mulches but inorganic mulches will not benefit soil as organic mulches can. Organic mulches are made from trees, bark, greenwastes or composts of food, manure and plants. Organic mulches provide carbon to soils and thus the energy that microbes need to grow in upper soil layers. While composts can be applied as mulch they are not preferred. **The best organic mulch materials are made from fresh, uncomposted tree trimmings.**

Mulching replaces litterfall in landscapes

Litterfall is a natural forest process of shedding leaves, flowers, dead branches, dust, dead organisms, and animal wastes. As organic litter layers gradually accumulate under most forest trees, the thickness of the layer is dependent on environmental conditions that regulate how fast the material decomposes. Litter layers are responsible for recycling minerals in the layer back to the soil for use by trees and other forest plants (Gholz et al., 1985). Trees also collect dust, bird droppings and other debris, which is washed into the litter layer when it rains, further enriching the humus developing there. In landscapes, trees are often surrounded by turfgrass, ground covers, or hardscape that prevent the accumulation of leaf litter and provide no opportunity for mulch application. In most urban landscapes leaves and tree debris are regularly removed and disposed of, interrupting natural nutrient recycling and maintenance of soil microbial activity. Mulching allows landscapes to instantly develop a litter layer covering the soil surface. Over time, nutrients are released, the microbial activity of the soil is enhanced, and soil borne diseases are decreased. Mulching also help prevent weed and other pest plants from invading the garden.

Young trees, old trees

The appropriate mulch can contribute organic matter and essential minerals, inhibit weed growth, increase the beneficial physical, and biological properties of soils, reduce runoff, increase infiltration rates, conserve soil moisture, and protect the soil surface from erosion and temperature extremes. Trees of any age benefit from mulch . Young trees benefit from wide mulch rings because their root systems do not have to compete with weeds or turfgrass, soil temperatures are reduced lower during the summer, and evaporation from the root ball and surrounding soil surfaces is reduced. Mulched young trunks are not exposed to weed whip injury. Green and Watson (1989) and Watson (1988), established that turfgrass and trees are incompatible, and that when mulch, replaces turfgrass, trees increased root and shoot growth. Many later studies verified that mulching is beneficial to perennials (Chalker-Scott, 2007) Older or mature trees benefit from organic mulches because they promote larger, open areas of soil that are less colonized by root pathogens, they improve water infiltration, and in some soils, increase water and nutrient-holding capacities. Since older trees are large, people tend to congregate under them, compacting soil over their root systems. Mulches help reduce/prevent soil compaction and maintain soil porosity (Scharenbroch and Watson, 2014). Allocating space for mulch zones under large trees aids in soil modifications that are generally beneficial to a myriad of soil qualities (Scharenbroch and Watson, 2014), and which promotes a healthy root environment and rooting. Mulching stimulates trees to produce more roots and this can be beneficial to their acquisition of nutrients and moisture especially in older trees or trees in decline.

Mulches provide nutrients

Not all mulches add mineral nutrients to the soil (Tukey and Schoff, 1963). Plastic and inorganic mulches provide little or no mineral elements to the soils under them. Organic mulches, especially those made from fresh chipped tree debris, can provide all the minerals that trees need. This is especially helpful on sand, volcanic or other highly mineral soils that may lack some essential elements necessary to tree growth. Mulch studies that look at mineralization rates in the short term (6 months to 1 year) often show little change in underlying soil nutrient status (Duryea et al., 1999; Greenly and Rakow, 1995).

In studies with longer decomposition times, nutrient contributions to soil become more significant (Himelick and Watson, 1990; Downer, 1998; Foshee et al., 1999; Faber et al., 2001; Valenzuela-Solano et al., 2004; Scharenbroch and Watson, 2014). Nutrient input from mulch is dependent on the material used and thickness of the layer applied. The levels of N, P, and K increase linearly as mulch thickness doubles (Faber, et al.,2001). **While the notion that woody mulch draws (binds up) nitrogen from the underlying soil persists in both horticultural lore and the literature (Robinson, 1988), my own research has found no nitrogen tie up in soils under freshly chipped Eucalyptus mulches (Downer, 1998; Faber et al., 2001; Downer and Hodel, 2001; Downer et al., 2002; and Downer and Faber, 2005). This horticultural myth was soundly refuted by Borland (1990). Woody mulches or freshly chipped tree trimmings applied over a period of years will provide mineral nutrients to trees in sufficient quantities that ensures adequate tree growth in most soils, making fertilization unnecessary.**

Mulches change the physical qualities of soil

Mulches have a pronounced effect on the physical qualities of soil. Soil compaction is reduced when organic mulches are maintained over soil (Robinson, 1988; Chalker Scott, 2007; Scharenbroch and Watson, 2014), Yardwaste and Eucalyptus mulch increase soil aggregation and water infiltration rates (Faber, et al., 2001; Downer et al., 2002). Soil aggregate formation stimulated by mulching increases infiltration rates and decreases runoff, leading to greater moisture.
In our work in avocado, tensiometers in mulches reacted to irrigation faster than tensiometers in un-mulched soils indicating faster movement of water through mulch and underlying soils (Downer, 2002). Mulch texture often determines its moisture-holding capacity. For example, fine mulch (especially composted or compost containing mulches) will prevent low volume irrigations from reaching underlying soil. Coarse mulch creates a moisture insulating-layer on the soil without holding much water in the mulch layer. Fine composts make poor mulches due to hydraulic conductivity with the underlying soil which causes wicking of soil water into the mulch and out to the atmosphere. Fine mulches also make a good seedbed for weeds which will germinate in them.
Organic mulches are a food source for arthropods, earthworms and nematodes and microbes. They break down and organic material and help to incorporate the partially degraded material into the upper soil profile. The activity of these soil animals also changes and improves the structure of soil. Fresh wood chips are best mulch as they are the most labile or available source of carbon that will persist and feed the developing soil microbial community. **Compost is not preferred as mulch because its carbon has been "burned" off in the compost pile and so lacks the energy necessary to fuel soil microbes.** To activate the microbial activity of soil nothing is better than fresh tree trimmings chips that contain significant portions of wood.

Horticultural experts agree that mulches increase soil moisture content.

Figure 2.
Fresh mulch provides the carbon (energy) for soil microbial partners of plants that eventually modify the structure of soil increasing its nutrient and water holding capacity.

Studies still find varying results; some show increases, while other do not (Litzow and Pellet 1983; Robinson 1988; Downer, 2002; Downer and Hodel, 2001; Chalker-Scott, 2007.). Short-term results often show modest or no significant findings and long term projects show greater effects. Mulches that cover bare soil reduce soil temperatures when exposed to sunlight (Singer and Martin, 2008). This, in turn, reduces evaporation from soil surfaces receiving full sun. Mulches, as mentioned earlier, also serve as a vapor barrier and thus slow evaporation. In new plantings where soil is not shaded, soils are likely to show increased moisture retention under mulches compared to un-mulched soils. Theeffect is reduced as trees grow and shade surrounding soil. Mulch increases water content of sands and volcanic soils by incorporating organic matter that retains water and fosters micro aggregate formation. Mulch stimulated aggregation of clay soils increases 'available' water content by separating clay particles and increasing porosity. Soil structural changes require repeated mulch applications over a period of years.

Mulches control weeds

Weed control is a major effect of mulch (Robinson, 1988; Chalker-Scott, 2007). Controlling weeds also controls water use by weeds growing around newly planted trees, a factor that is not always well correlated in mulch studies. Water savings in mulched plantings can be considerable, allowing as much as a 50% reduction in irrigation frequency over un-mulched trees (Downer and Hodel, 2001). Fine mulches and compost mulches do not control weeds well because seeds will grow in composts , but coarse chips do not allow weed seeds to germinate in them and therefor act as good weed barriers. A three inch mulch layer is necessary for good annual weed control (Downer, 2009). Since organic mulches settle rapidly and begin decomposition as soon as they are applied, it is prudent to apply at least six inches of coarse mulch to ensure weeds are controlled.

Pest Spread/prevention

There is always interest in pest spread by mulch since yardwaste recycling is so prevalent and exotic invasive pests have the potential to move in the waste stream. Pathogenic fungi, weeds and insects can easily enter greenwaste recycling programs , however the survival of pathogens is less likely. Koski and Jacobi (2004) found that Thyronectira austroamerica survives up to 143 weeks in mulches containing chipped branches containing the canker fungi. Karel Jacobs (2005) found that Sphaeropsis sapinea the cause of shoot tip blight in pines survived an active compost process for pathogen reduction of chipped tree wastes but that Botryosphaeria and Armillaria were not transmitted in this manner. Downer et al (2008) found that Armillaria, Citrus nematode, and Phytophthora cinnamomi were poor survivors in stockpiled yardwastes, all were killed within the first few days of stockpiling. Although there is little research on what persists in yardwaste processing centers, it is likely that fewer pathogens are found in the chip boxes of tree trimmers since they don't run root systems through their machinery, thus eliminating the possibility of exposure to a huge group of potential tree killing organisms (root rot fungi and Oomycetes). In Hawaii, Ohia wilt is a concern and until research proves otherwise, infested Metrosideros chips should be avoided or used directly on site where they are produced.

Mulches are helpful in urban settings as a source of soil carbon. Mulching creates soil, chemical, physical and biological changes that benefit trees . Mulch with coarse, freshly chipped tree trimmings such as Eucalyptus are not harmful and most trees make good mulch when branches are chipped and applied in a layer at least 6 inches deep.

Figure 3.
A small ring of mulch around young trees reduces competition from turfgrass and prevents string trimmer damage to landscape trees. The mulch controls weeds and adds nutrients to soil over time.

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CERTIFICATION CORNER

BY GARRETT WEBB, LIC-MANAGER, LICT-EXTERIOR ORNAMENTAL MAINTENANCE & IRRIGATION

THE STATE OF LICT-EXTERIOR CERTIFICATION

2020 has been a year of challenges on many levels: the on-going COVID 19 pandemic; the beginning of a computer-only LICT test; and an Employment Training Fund in flux and disarray, are all factors that have made 2020 a year to remember and hopefully put behind us.

NALP LICT-EXTERIOR TEST

As of late November, there has been only one person that has actually taken the new computer-only test and that has been me (Garrett Webb, Hawaii State LICT Administrator)! The way the test is now organized, if a person is not current with the NALP (National Association of Landscape Professionals) certification, they will need to take the computer-only test in two segments: Common Core as one exam, and then the Specialty Component (formerly called module) of their choice as its own Exam. Although I am a LIC-Manager, I was not certified as a technician, but I wanted to have a personal experience with the test.

LICH has prepared a great training webinar as a test prep for the Irrigation Exam. LICH members can access that webinar, 3 two-hour classes taught by Lynnett Tohara of Diamond Sprinkler and Farm Supply, on hawaiiscape.com / Training page for a charge of only $5.00 for all three classes. They may be watched for an entire year at the time of your choice. Hopefully by the time you are reading this article, there will be webinars available by Zoom for the Common Core test and the Ornamental Maintenance test. I am working on the power points for both of these webinars. Fortunately, I passed the three tests I have taken so far, including Common Core, and am now an LICT-Exterior in Ornamental Maintenance and Irrigation. Having the experience of taking the computer-only test, I can assure you that the computer-only test is really nothing like the hands-on and written tests you might be used to. Watch for MailChimp emails and posts on the LICH website that may help you prepare for the computer experience. Or, if you are truly interested in taking the computer-only test, give me a call at 808 960-3650.

EMPLOYMENT TRAINING FUND

The LICT-Exterior Tests are expensive. Depending on your circumstances, the cost of testing can range from $415 to $545, so cutting the cost in half by submitting an Employer Referral Agreement Form could definitely be to your advantage.

The Hawaii State Department of Labor and Industrial Relations, Workforce Development Division, Employment Training Fund (ETF) is funded by the program receiving .04% of every company's unemployment insurance payment to the State of Hawaii, to be used for employee training that is not readily available from the public sector. ETF can pay 50% of the training cost and if the training can lead to certification, 50% of the cost of certification can be paid for as well. LICH is considered a 'school' by the Department of Education We received a Macro Grant to bring the Landscape Certification program to Hawaii in 1998 and have submitted Micro Grants with Workforce Development to keep the CLT - and now LICT - Program active with ETF. The present Micro Grant LICH has with ETF is good until July 31st, 2021. LICH will be submitting a RFP (grant request) for 2021 to 2023 in January 2021 so we can continue to benefit from the 50% discount for LICT training and certification next year.

And why is this relevant today in the midst of the pandemic we are living through? Businesses have been downsizing due to the pandemic and that means a drop in unemployment insurance payments. Each quarter is being reassessed to make sure that ETF funds are available statewide for ETF vendors like LICH to receive funds. ETF funds are secure for the quarter, September through December 2020, but if you are considering certification training and testing in 2021, send me an email at getcertifiedhawaii@gmail.com and ask to be on a "Training List." When ETF fuds are available, I will let you know. With the computer-only test, you set your own test date and that date of your choosing needs to be a part of your Employer Referral Agreement that you will submit to the Workforce Development office on your Island. More detailed information on how that works can be found on the LICH website LICT Test Registration and Information Page: https://www.hawaiiscape.com/lict/.

It is complicated (!) but developing your Profession by **Getting Certified** is worth it!


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