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***PEPEROMIA SANDWICENSIS* 'PALIKEA',
A NATIVE INDOOR PLANT SELECTION
FOR TABLETOPS AND OFFICE DESKS**

NO ANTS IN MY PLANTS

**THE BISMARCK PALM: FROM SEED
TO SPECIMEN PLANT HARVEST**

**THE HISTORY OF LANDSCAPE ARCHITECTURE IN HAWAII -
CHAPTER II - ASLA HAWAII HONOR AWARD**

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Editors

Russell Galanti
Hannah Lutgen
Chris McCullough

Advertising Sales

Michael Roth
rothcomm@gmail.com

Executive Director

Garrett Webb
palmsinkona@yahoo.com

Designer

Roann Gatdula

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contents

DEPARTMENTS

- 4 PRESIDENT'S LETTER
- 5 PEST COLUMN

FEATURES

- 9 POTTED FOLIAGE TRENDS THROUGHOUT THE DECADES AND FUTURE PERSPECTIVES
- 16 THE IMPORTANCE OF REGULATORY FRAMEWORK
- 17 CURRENT DISTRIBUTION OF HALA SCALE IN HAWAII
- 20 THE SILICON SOLUTION
- 29 EARN CEUS AND PROTECT HAWAII: SIGN UP FOR A FREE PEST PREVENTION TRAINING SESSION

COVER

- 6 PEPEROMIA SANDWICENSIS 'PALIKEA', A NATIVE INDOOR PLANT SELECTION FOR TABLETOPS AND OFFICE DESKS
- 10 NO ANTS IN MY PLANTS
- 12 THE BISMARCK PALM: FROM SEED TO SPECIMEN PLANT HARVEST
- 24 THE HISTORY OF LANDSCAPE ARCHITECTURE IN HAWAII - CHAPTER II - ASLA HAWAII HONOR AWARD





PRESIDENT'S LETTER

BY CHRIS McCULLOUGH



ALOHA KAKOU,

Aloha 'Aina, malama 'Aina, every day, for now and for our future generations.

Simply said, let's care for our Mother and the resources she provides for us. As a community it can be transformational for us to embrace the vision of the Aloha 'Aina movement, and the sustainability of our life here in our islands is dependent on us doing so.

The situation at the Red Hill fuel storage facility is a prime example of this. *Wai Ola*, water is life in our islands. This needs to be made clear to those responsible for the oversight and operation of this decaying and dangerous fuel storage facility. Built by the Roosevelt administration in the early 1940's, I first recall hearing about the dangers of the Red Hill facility in the 1990's when its existence was declassified. It has been a potential catastrophe since built, as it sits just 100 feet above Honolulu's aquifer in porous rock. Navy and state health officials have known about leakage and groundwater contamination since the late 1990's. Ernest Lau, Manager and Chief Engineer for the Honolulu Board of Water Supply, along with the Sierra Club, has fought for recognition of and remedial action to address this potential danger by sounding the alarm repeatedly since the accidental 2014 leak of 27,000 gallons of jet fuel. Lau has repeatedly stressed that the nearby aquifers are critical to Oahu's drinking water supply, and the need for protection of these aquifers as well as more efficient monitoring of potential contamination is critical. Lau believes that action must be taken now, that the potential risk of contamination could affect our entire aquifer if a major accidental spill occurred.

The Navy and the Environmental Protection Agency have made ongoing statements over the years that the fuel stored under Red Hill was unlikely to reach the water supply. We now have a recent 14,000 gallon spill, the entire Navy water supply system contaminated, both Navy and BWS wells shut down, and we don't know if the highly toxic petroleum will migrate across the valley to the BWS Halawa shaft well, which provides 20% of Honolulu's potable water. A potential environmental disaster, as the contamination could potentially spread to other wells as it migrates through the aquifer.

The Sierra Club of Hawaii and the Board of Water Supply have requested that the Hawaii Department of Health, the Environmental Protection Administration, and the U.S. Navy address this critical issue. The only intelligent solution to avert this potential crisis is to remove it, drain the millions of gallons of jet fuel that are sitting just above our aquifer, no matter how difficult, and as soon as possible. The Navy can no longer use the excuse that the fuel is an asset needed for National security. If so it must be stored elsewhere.

Representative Kai Kahele and many of our community leaders and water advocates have concluded that Oahu's water supply system is the precious asset that should be considered first and foremost. You cannot operate a military operation on an island with a poisoned, contaminated water system. We as a community must recognize that this is a clear and present danger for our economy, our health, and our way of life on Oahu!

Please inform yourself and take action on this critical issue. This is the most important issue for us as a generation to address here in Hawai'i, our Standing Rock, so to speak! Please stand up and make your voice heard in our community! Clean water is a basic human right! *Wai Ola*, together we rise!

Eia ka wai la, he wai e ola

E ola nō e!

Here is the water, the water of life

Life, indeed!

This will be my final President's letter as LICH is seeking a new President for 2022. It has been my honor to serve our industry, and I will continue to do so in the capacity of LICH Secretary. It will always be my endeavor to assist in the beautification of our islands through our Green industry, and to be a voice for Aloha 'Aina and what is pono. Mahalo nui for the opportunity to do so. Malama pono, stay on!

Chris McCullough, LICH President



Looking For Pests & Diseases?

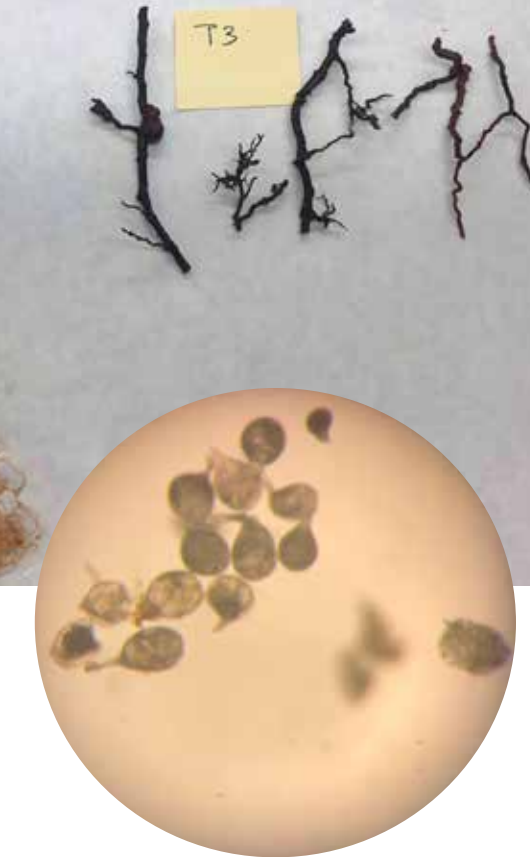
Don't Forget To Examine Your Soil!

Everyday our plants are being attacked by pests and diseases, both in cultivated landscapes and natural areas. Many new pests arrive and cause issues for us to diagnose but there are innumerable pests and diseases already in Hawaii that plague our gardens. As horticulturists, botanists, and everyone else in this industry, we need to remember to keep up with these unrelenting, prevalent pests. When a troubled plant is spotted with symptoms of stress our instinct is to look through the foliage and stems for the cause of these issues. We look for insect damage or spots on the leaves. Many times, the plant exhibits stunted growth, or death of foliage or stems, yet no insects or diseases are readily visible. Here in lies the moment when you must remember to look down at the soil. Insects attack plants' roots, pathogens sneak into the vascular systems causing rot and unexpected death, and sometimes we, as the gardeners, just plain mess up and hurt our precious plants through poor cultural practices.

Soil borne pests are often unintentionally introduced to our gardens through contamination such as through unclean nursery containers, infected plant cuttings and transfer of soils around our islands. Two of the most common, persistent, soil infesting pests are mealy bugs and nematodes.

Mealy bugs are typically found on the foliage of plants but there are a few species that infest roots and soil-level stems of many varieties of plants. Root mealy bugs, including pineapple mealy bugs (*Dysmicoccus brevipes*) and rhizoecus root mealybugs (*Rhizoecus hibisci*), spend their lifecycle in the soil and feed by sucking nutrients out of the plants' roots. They infest a large variety of plants, including, but not limited to palms, bromeliads, vegetables, ferns, crotons. Unless you look specifically at roots, you will not see these insects. Signs and symptoms of infections include stunted and slow growth. Root mealy bugs are notoriously difficult to control, although some natural predators do exist for these small pests. Chemical control requires drenching soils around the plants. The best control is keeping the plants and soil healthy through good maintenance practices.

Nematodes are roundworms that live everywhere in our environment. Some are predators, helping our landscapes, while others, cause great damage to plants. The root-knot nematode (*Meloidogyne* sp.), is commonly found in landscapes throughout Hawaii. Some common hosts include hibiscus, tomatoes and lirioppe, but they affect hundreds of varieties of plants. Symptoms of infestations of root-knot nematodes include yellowing foliage, stunted



Top: Root galls on tomato (center) and protea (upper right) from root-knot nematode (*Meloidogyne* spp.) damage. Photo: Hannah Lutgen

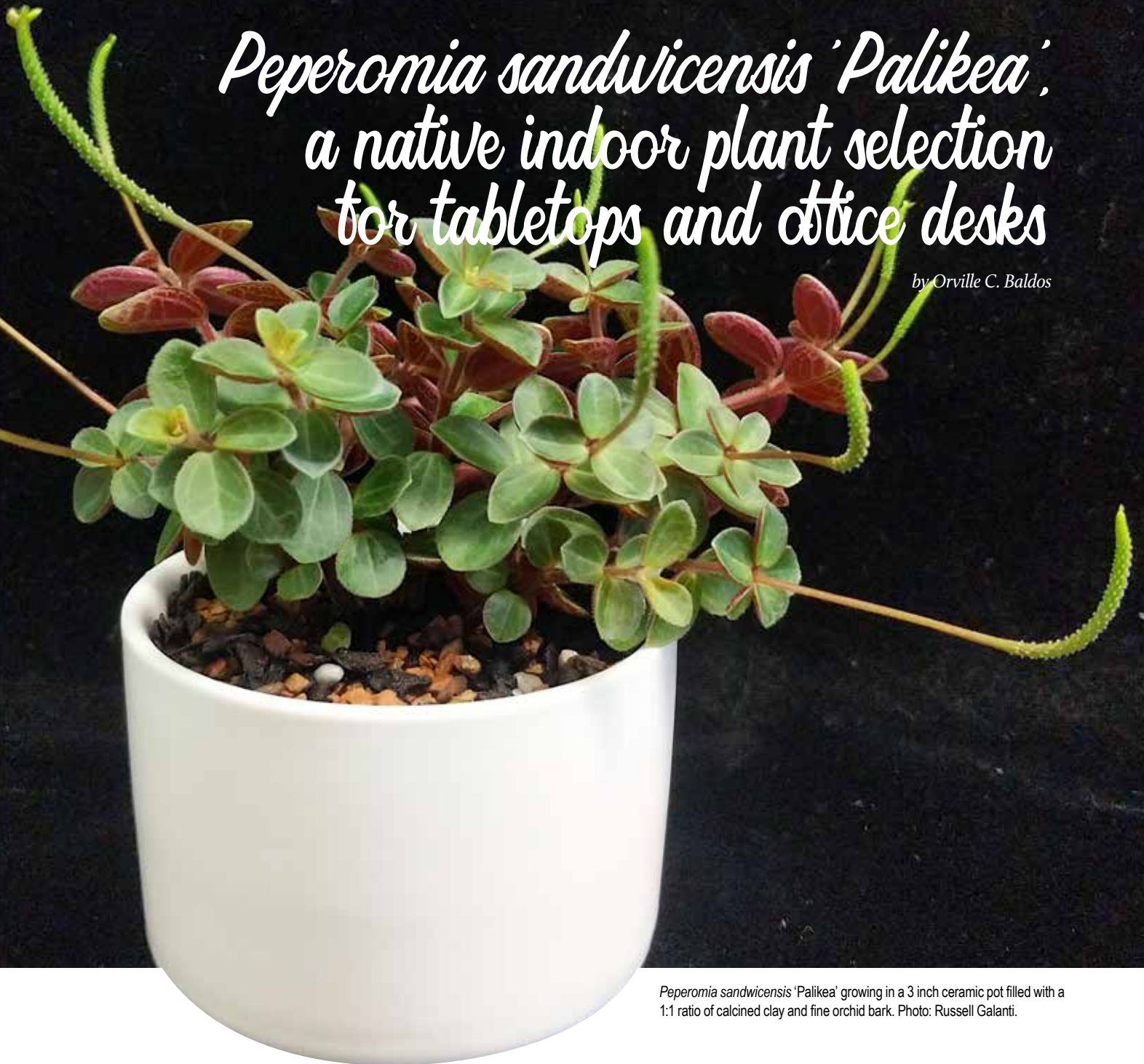
Bottom: *Meloidogyne* spp. (root-knot nematode) sedentary swollen females extracted from tomato sample. Photo: Hannah Lutgen

growth and reduced crop output. Finding enlarged roots with galls is the best marker of an infestation, but these microscopic pests can only be identified through laboratory tests. The nematodes stimulate growth of roots to create more food for adult stages, which live within the galls. Eggs are laid in soil with larval stages moving through soil to other plants. Chemical controls are expensive, difficult to administer, and are not particularly effective. The best control is through management by crop rotation and using plants resistant to nematodes. Keeping soil healthy with proper nutrients and by adding organic matter on a regular basis.

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

Peperomia sandwicensis 'Palikea', a native indoor plant selection for tabletops and office desks

by Orville C. Baldos



Peperomia sandwicensis 'Palikea' growing in a 3 inch ceramic pot filled with a 1:1 ratio of calcined clay and fine orchid bark. Photo: Russell Galanti.

In recent years, there has been a resurgence in the growing of houseplants in homes and offices, due to the emergence of the 'plant parenthood' community in social media. When the COVID-19 pandemic hit in Spring 2020, the demand for houseplants skyrocketed as people turned to growing plants as a means to reduce anxiety and stress during lockdowns. Among the many types of houseplants available, species and cultivars of *Peperomia* are the most popular. People like *Peperomia* plants because

of their small size and easy care (i.e. low maintenance and less watering). They have become so popular that the National Garden Bureau, a non-profit organization promoting gardening in North America, is promoting them for their newly established houseplant category. Under this category, 2022 was named 'Year of the *Peperomia*'.

Here in Hawaii, we have a number of native *Peperomia* species. About 23 are only found in Hawaii and 2 are found here and elsewhere in the Tropics. Although several native Hawaiian species have interesting

leaf shapes and colors, research on the ornamental potential of these has been limited. To date, only one native *Peperomia* species (*P. leptostachya*) is sold commercially by nurseries.

Peperomia sandwicensis is a native Hawaiian species that has potential use as an indoor plant. It is found only on the islands of Kauai, Oahu and Molokai, growing on moss covered rocks, in soil or on tree trunks in valleys and forests. It grows up to 12 inches high and possess ornamental characteristics such as a dark green upper

leaf surface, reddish stems, and reddish leaf undersides. In this article, we describe 'Palikea', a newly released indoor plant selection of *P. sandwicensis*.

P. sandwicensis 'Palikea' was originally collected in west Oahu as a stem cutting by botanist Joel Lau in 2012. This was grown at the Harold Lyon Arboretum and then transported to the Magoon Research Facility in 2016 for plant increase (through stem and leaf cuttings) and indoor plant evaluation. In 2017, we compared the indoor light tolerance of *P. sandwicensis* 'Palikea' with selections of *P. cookiana*, *P. leptostachya* and *P. oahuensis*. After six months under window (4370 lux), office (762 lux) and low light (299 lux) conditions, *P. sandwicensis* 'Palikea' exhibited 60% (low light) to 100% (office light) survival [1]. In 2020, we conducted another indoor light tolerance study and looked at visual quality of *P. sandwicensis* 'Palikea' plants under low (350 lux), office (750 lux) and high light (5000 lux) conditions. Results of this study indicate that all plants maintained good quality at 0, 3 and 6 months under indoor conditions [2]. Based on the two indoor plant evaluation studies, *P. sandwicensis* 'Palikea' was identified and released in 2021.

P. sandwicensis 'Palikea' has leaves that

are oblong, thick and fleshy. Leaves can grow up to 0.67 inches wide by 0.94 inches long. The upper surface of leaves are dark green (RHS N137A; Royal Horticultural Society, 2007) and have no hairs. It usually has three light green (RHS I38D) veins emerging from the base of the leaf. Smaller, light green veins branching from the three veins may also appear, creating a netted appearance. The undersides of leaves are hairy, and red-purple (RHS 59A) with light green (RHS I38D) to pinkish (N170D) veins. The stems are slightly erect with good branching and are red-purple (RHS 59A) to greyed orange (RHS I66A) in color. Internode length, on average, is 0.51 inches. A flower spike, up to 5.1 inches long can be produced at the tips or sometimes on the side of stems. Its slight curvature adds ornamental value. Plants have an average of 3-9 basal shoots at 1 year after propagation from leaf cuttings. Due to its small size, *P. sandwicensis* 'Palikea' is suitable for 3 to 4 inch diameter pots.

P. sandwicensis 'Palikea' can be propagated through leaf and stem cuttings. Rooting hormone (3000 ppm indolebutyric acid) can improve root length and numbers. Propagation can be done indoors under a LED shoplight (placed 11 inches above the cuttings, turning on 12 hours/day).

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Wild *Peperomia sandwicensis* growing on top of moss-covered rocks, Oahu.
Photo: Timothy Kroessig



Plant cuttings in calcined clay, moistened with some standing water at the base of the pot. Rooting takes about a month. Rooted cuttings can be planted either in a 1:1 mix of calcined clay and fine orchid bark or well draining potting medium. Top dress or incorporate slow release fertilizer into the growing medium. Weekly applications of foliar fertilizer (20-20-20) can help speed growth of cuttings and plants. In general, leaf cuttings are slower in generating new plants than stem cuttings.

P. sandwicensis 'Palikea' grows best under bright, indirect light in ambient indoor conditions and under air-conditioning. Optimum growth occurs under cool conditions. Like most *Peperomia*, *P. sandwicensis* 'Palikea' prefers moist but not wet conditions. Water only on an as needed basis. In terms of insect pests, thrips and root mealybugs are the major insects that need to be managed to prevent stunting (root mealybugs), severe defoliation and death (thrips) of plants.

Cuttings of *Peperomia sandwicensis* 'Palikea' can be made available to interested nurseries in Hawaii.

Contact Orville Baldos (e-mail: obaldos@hawaii.edu) for inquiries.

References:

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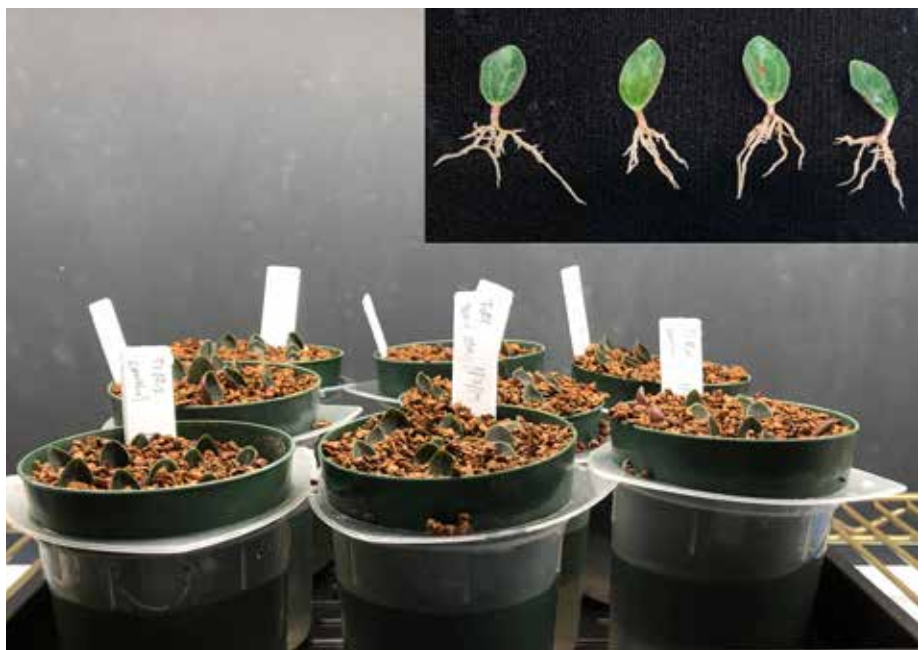
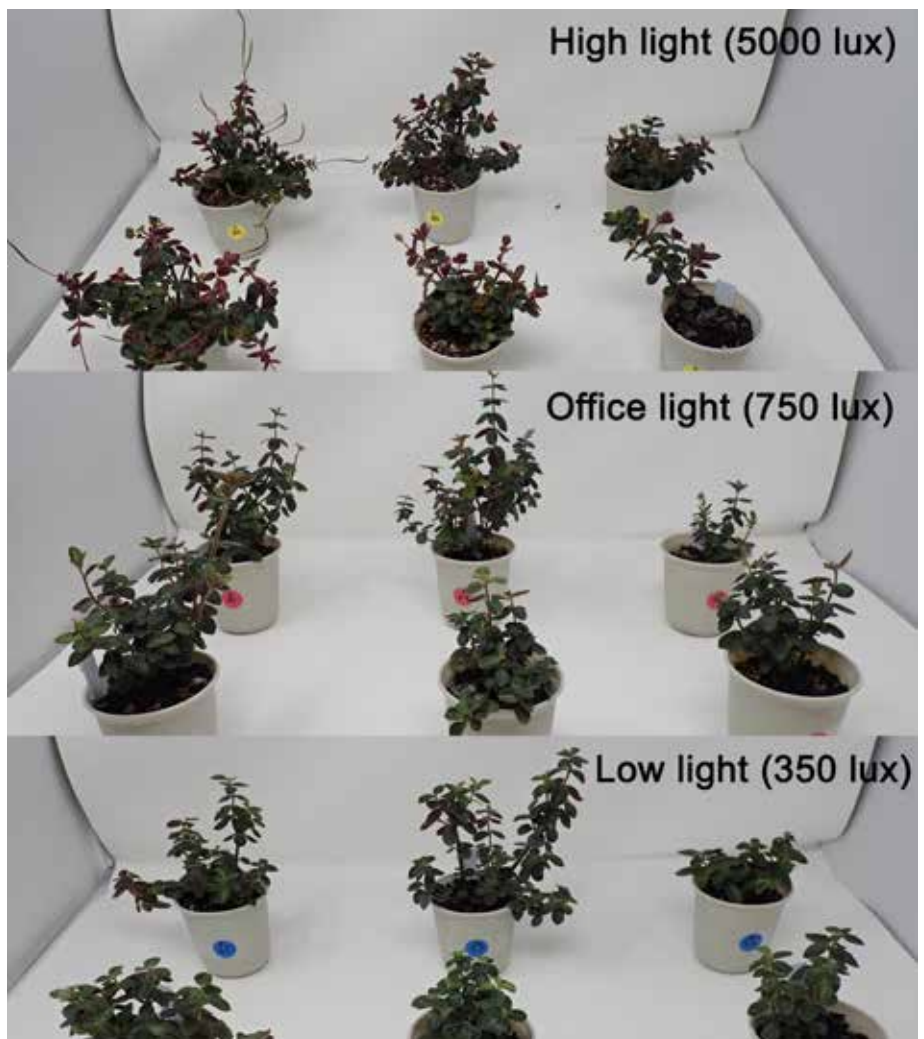
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Orville Baldos is the Assistant Researcher in Sustainable Ornamental Production Department of Tropical Plant and Soil Sciences at the University of Hawai'i at Manoa.



Top: *Peperomia sandwicensis* 'Palikea' plants grown under high (5000 lux, top photo), office (750 lux, center photo) and low (350 lux, bottom photo) light conditions for six months.

Bottom: Indoor propagation setup for rooting *Peperomia sandwicensis* 'Palikea' leaf cuttings. Leaves were treated with rooting hormone (3000 ppm indolebutyric acid) and planted in a pot filled with calcined clay. The pot is placed in another basin that holds water (to a level about halfway of the pot) to keep the medium moist. Pots were placed under a cool white LED shop light that turns on 12 hours per day. Rooted cuttings (top right inset) are ready to pot up after 1 month.
Photo credit: Orville Baldos and Christyn Wong.



Potted Foliage Trends throughout the Decades and Future Perspectives

by Josh McClung

I've been in the Interior plantscape industry for over 15 years, both as an interiorscaper and grower/wholesaler. My journey began when I founded Ojai Plant Works, an interior plant maintenance company servicing hundreds of clients ranging from hotels to offices to private estates from Santa Barbara to Los Angeles. In California, over the last decade and a half, the trends have been towards Hawaiian Foliage. Not only were these preferred by our clients but also adhered nicely to the temperature controlled interior spaces. I have always had interest in "the other side of the pot" and fantasized about becoming a grower and distributor to the wholesale nurseries that my company was purchasing from. That dream became a reality in 2019 when I purchased a Dracaena farm and began my new chapter as a grower. My family moved to the big island and we have never looked back. Living here is truly living in paradise.

Fast forward to the COVID-19 Pandemic, everyone was forced out of their offices and into their homes where they were tasked to create makeshift offices and conduct meetings via zoom.

This put an astronomical demand on interior plants as the desire for house plants grew at a pace that nurseries couldn't keep up with. This is something the industry is still challenged with today. With more and more industries growing into a remote work environment, our homes are becoming our offices. This puts a huge demand on tropical foliage growers here on the big island, specifically. This provides a huge opportunity for Hawaiian foliage growers, an industry that has been trending down over the last few decades as growers whose families have been in the industry for generations are entering retirement and struggling with today's technological world as most of their children would rather move into a modern day career, rather than a physical, yet rewarding, career as a foliage grower and distributor.

This provides a challenge, yet a huge opportunity for our state and our economy. I'm a huge proponent of bringing and keeping, agricultural studies in the classroom, not only at a collegiate level, but a primary education level, as well. The hands-on agriculture learning has many positive influences and it's important to keep it alive, no pun intended, from Garden class in 4th grade to Plant sciences in high school and university.

Hawaiian foliage is wildly popular on the mainland, always has been and it always will be. There's really only one place to grow Hawaiian foliage properly; the Hawaiian islands. Let's work together to educate and excite our youth about the agriculture industry that's unique to our islands.

*Always with aloha,
Joshua McClung, Hawaii Global Nursery Exporters LLC
808.345.5400 | Hgnellc.com*

No Ants in My Plants

by Heather Forester, Extension Specialist,

Little Fire Ants on Flower Photo by Melody Euaparadorn, Research Assistant

Let's face it, the nursery industry gets a bad rap when it comes to invasive species. The good news is that clean plant stock is possible, but you need to be a responsible seller and/or buyer. Little Fire Ants (LFA) have been a menace on Big Island since 1999, and have spread to other islands in the State overtime. With that said, we all need to be vigilant, no matter what island you are on, to prevent the spread of this invasive ant. LFA are tramp ants that can hitchhike on...well...pretty much anything! Potted plants, landscaping materials, mulch, cinder, cars, pallets, coconuts, pineapple tops, and other items that have been in an infested area can be home to hundreds, even thousands of LFA. Keep in mind, in order to transport a colony, all you need is one fertile queen and several workers to assist her in starting a new colony where ever they end up, and it is up to us to stop them.

If you are looking to buy plant stock, the first step is to have a conversation with your supplier. Are they in an area known to have LFA, and if so, what are they doing to monitor and control them? Since LFA are so tiny (about as long as a penny is thick), relatively slow moving, and reddish-orange in color, they are very hard to detect with the naked eye. Awareness of high-risk activities and pathways is critical in order to make an informed and educated decision. By asking yourself "What is the risk that the product contains LFA and how easy is it to treat if LFA is found?" you can protect yourself and your clients by making the most informed decision.

Second, quarantine incoming plants and materials in a designated and maintained quarantine holding area to be surveyed, treated (if necessary), and monitored before moving the materials around or off of the property. A residual barrier should be applied around your quarantine area, so that any ants within it cannot walk out and spread. Quarantine areas are beneficial, because if LFA are detected, they are confined to a known area and can be dealt with.

Third, survey the plants and materials in your quarantine holding area according to the Hawaii Department of Agriculture method. Spread a thin layer of creamy peanut butter on chopsticks. Place the sticks with the peanut butter in contact where ants may be foraging in the pots and at the base of pots. Wait one hour and see if ants are detected. Freeze your ants for 24 hours, then submit your samples for identification. If LFA are detected, your best option may be to return the plants and materials to the seller. Your dollar will speak loudly and hopefully bring change to the seller's business practice.

If you find that your business has LFA, the Hawaii Ant Lab is here to help. The Hawaii Ant Lab is a program of the University of Hawaii, Pacific Cooperative Studies Unit. On the Big Island, the Hawaii Ant Lab offers free site visits to educate on prevention, survey, and treatment options. Hawaii Ant Lab will work with you to develop a management plan. On other

islands, there is a collaborative effort to manage infestations which includes agencies such as: Hawaii Department of Agriculture, local Invasive Species Committees, Coordinating Group on Alien Pest Species, and other agencies.

All information is kept confidential, so please do not hesitate to contact us with questions.

For more information on Little Fire Ants, visit:
www.littlefireants.com

For locations to submit your ant samples, visit:
www.stoptheant.org/report-little-fire-ants

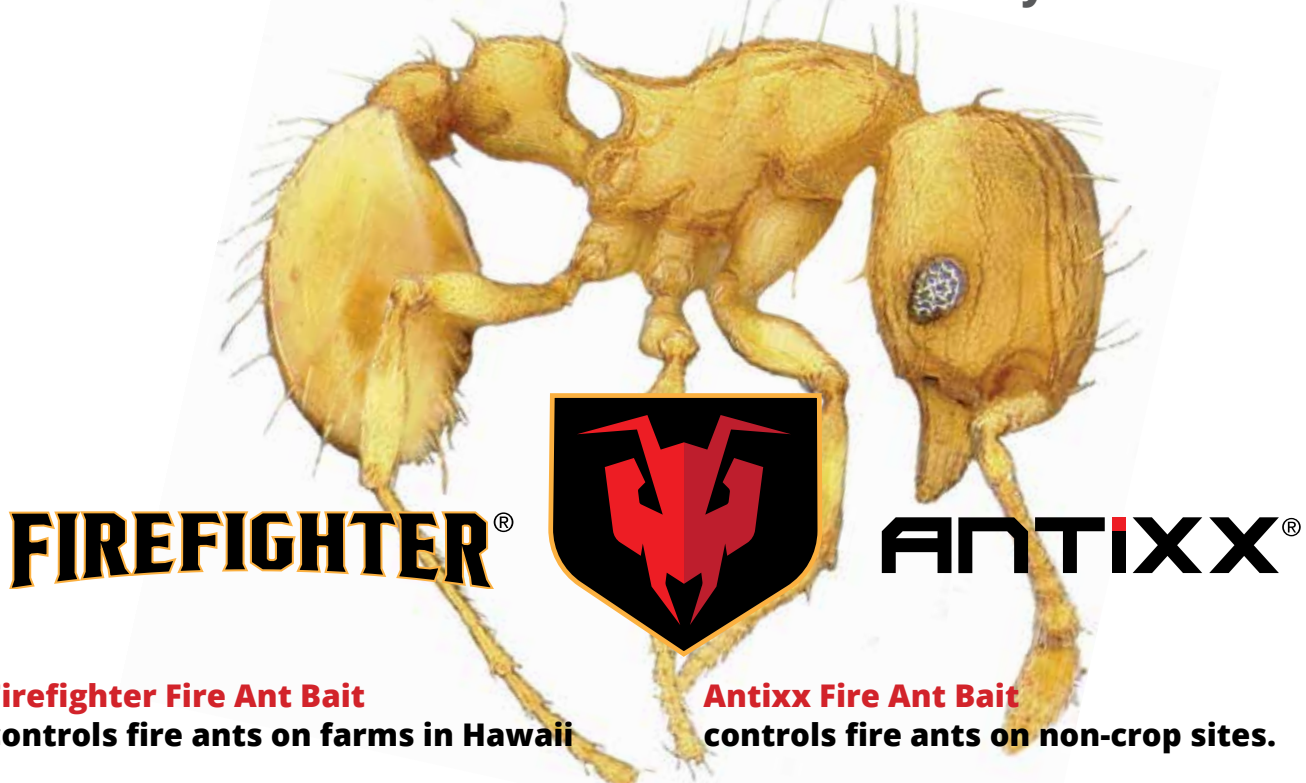
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*Heather Forester is the Extension Specialist
at Hawai'i Ant Lab*



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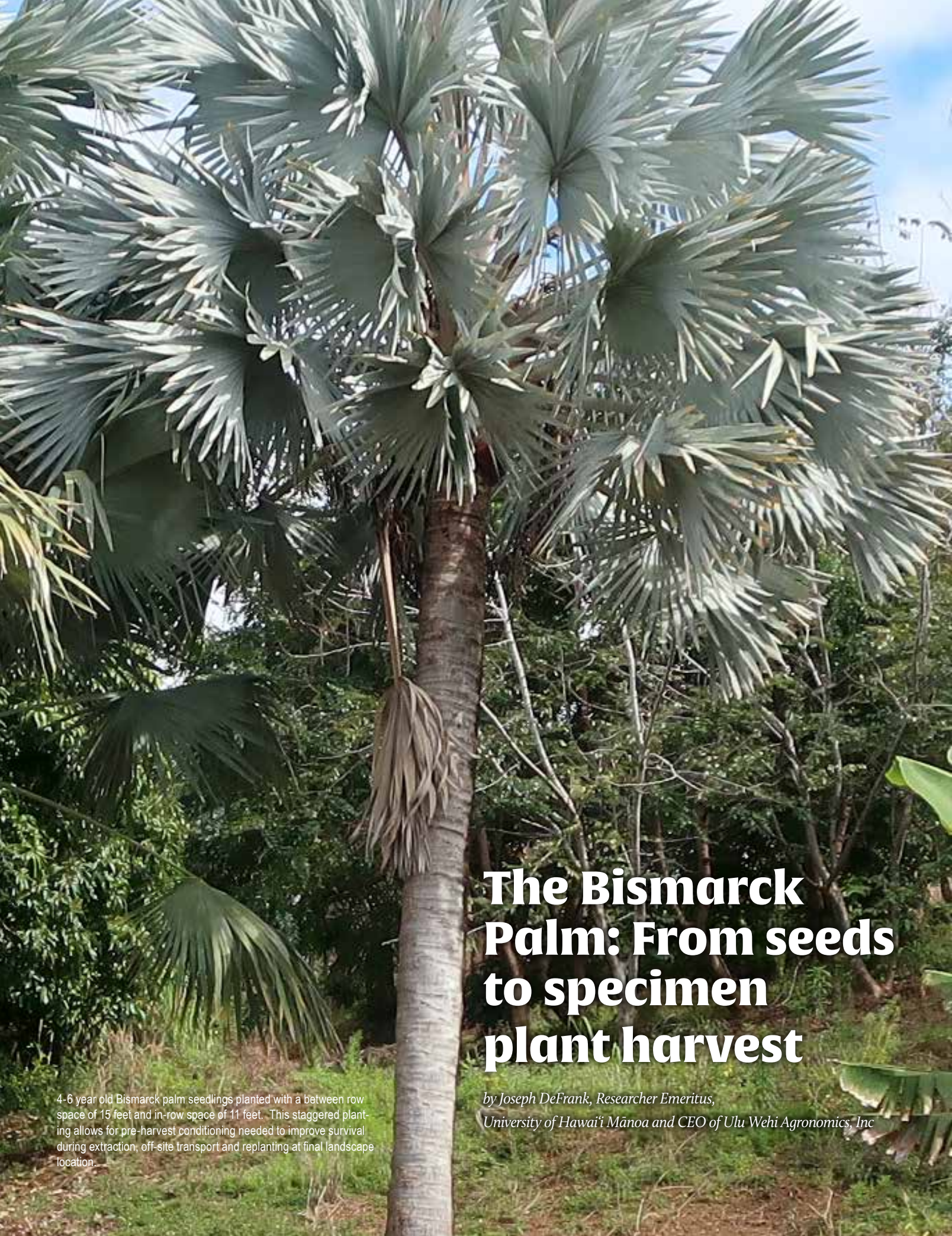
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The Bismarck Palm: From seeds to specimen plant harvest

*by Joseph DeFrank, Researcher Emeritus,
University of Hawai'i Mānoa and CEO of Ulu Wehi Agronomics, Inc*

4-6 year old Bismarck palm seedlings planted with a between row space of 15 feet and in-row space of 11 feet. This staggered planting allows for pre-harvest conditioning needed to improve survival during extraction, off-site transport and replanting at final landscape location.



Newly germinated seed of Bismarck palm was planted in an 8-10 inch grow tube with bottom holes covered with shade cloth and coarse volcanic cinders. When the root tips (technically the "cotyledonary petiole") reaches the cinder, a leaf is produced at the surface of growth medium.



Singular Bismarckia nobilis, bright silvery blue leaves provide accent in both day and nightscape settings.

Bismarck Palm (*Bismarckia nobilis*), originated in Madagascar, an island nation 250 miles off the coast of East Africa. The Bismarck Palm has larger silvery blue leaves, a symmetrical leaf pattern and provides a major accent in both day and nightscape settings.

The Bismarck palm provides challenges from seedling production to the harvest of large specimen plants for use in commercial landscapes. In this article, tips for seedling production, field nursery planting design and pre-harvest conditioning are provided to encourage continued production and use of this majestic plant in the hottest Hawaiian landscapes with only moderate water usage.

Seedling production of the Bismarck palms begins with the collection of seeds from plants with the showiest silver/blue leaves. This palm produces both male and female plants, so collections will require close proximity of compatible seed producing pairs.

Mature seeds will fall to the ground, while seeds collected directly from the tree will most likely be immature with poor if any germination. Mature seeds are rolled between bricks with just enough pressure to break the surface of the pulpy flesh covering a hard seed. Cover seeds with a thin layer of water and allow the pulp to rot off for 10-12 days. Keep changing the water daily until all the pulp is removed and the water is clear. Place pulp free seeds in a zip-lock bag with moist sphagnum moss and store in warm spot, like the eve of your car port. A single root tip will emerge in 6-10 weeks at which time the germinating seed must be removed from the bag and potted up as a single plant in an 8-10 inch grow tube (above photo). Bismarck palm germination is referred to as "remote germination", meaning the root tip will grow downwards until an obstacle is encountered and then produce a leaf near the surface of the growth medium.



At 1.5 to 2 years prior to extraction, the palm root mass is enclosed in a 4 foot deep x 8 foot wide plywood box with sides reinforced with 2 x 4 lumber and metal strapping tape.

To meet these conditions in a nursery setting, place a small piece of shade cloth in the bottom of the grow tube and add inch of coarse volcanic cinder. Fill the rest of the tube with mix of growing medium that contains at least 50% coarse perlite. Bismarck palm seedlings need well drained growth media to produce healthy roots. Place the newly germinated seed in the top 1/2 inch of the growth medium.

Bismarck palm seeds will produce a range of leaf colors from light green to bright silvery blue. Use rigorous selection for the desired silver/blue leaf color and strong growth vigor to produce field ready plants. Color selection should be delayed until the 6th fully expanded leaf is produced. When moving nursery stock up to larger growth containers (at 10-12 month intervals), avoid root pruning and disturbance as much as possible as seedlings have a very low tolerance to root damage. Long narrow deep tree pots with a 10-14 inch depth provide a better Bismarck transplants than conventional 3-4 gallon pots. Seedlings with a vigorous root system between 2-4 years old have the best chance of survival during the transition from nursery to field plantings. Use 3-4 complete nutrient fertilizer tablets in the planting hole (separated from the root mass with soil) for sustained rapid growth in the first 1-3 years in the field. Field plantings need to be designed to accommodate specialized pre harvest treatments to insure the survival of large specimen plants once they are extracted and transported offsite. The



Bismarck palm root ball after 2 years of recovery in a plywood box. The plywood is rated for ground contact and the inside surface is treated with a water sealing compound.



After the plywood box is carefully removed, a steel cable is drawn across the bottom of the root mass to form a flat bottom that allows for upright orientation in a quarantine nursery near the site of installation. Note fine roots at the side surface of the root ball.

between row space should be 15 feet with in-row spacing of 11 feet using a staggered pattern. (see first photo).

Surface fertilization at 3-4 month intervals with a complete nutrient mix (about ¼ pound), that includes minor nutrients, will keep palms growing rapidly.

When palms reach the desired harvest size (depends on landscape architects specifications), special pre extraction procedures must be employed to insure survival at distant locations that may include export to neighbor islands with 4-6 weeks between extraction and replanting.

If one simply digs out a Bismarck palm, and transplants it to a distant location employing heavy watering, survival failure is nearly guaranteed. The fresh cut roots will rot and the stench of the decaying root mass is the telltale sign of transplant failure. To avoid this outcome, a 1-2 year pre-extraction procedure is recommended. Start with a trench cut completely around the stem with about 3-4 feet between the center of the stem and the outer edge of the root mass. Plywood (treated for ground contact with a 2 year life span) is used to enclose the root mass with a 4 foot deep and 8 foot wide box. The box is reinforced with metal strapping tape to keep it intact for 1.5 -2 years, (see top left photo). This long pre-ex-

traction procedure allows for cut roots to heal and new fine roots to grow at the edge of the root ball. Once the plywood box is removed, a heavy steel cable is drawn across the bottom of the root mass to produce a flat bottom with a minimum amount of disturbance to soil encasing the roots, (bottom middle photo). Prior to trailer loading, phytosanitary measures are employed in accordance with Hawaii Department of Agriculture rules for interisland shipments. Large palm trunks are supported on transport trailers with a stack of wooden pallets, (bottom photo).

The production, successful extraction and replanting of specimen sized Bismarck palms is a challenging but rewarding enterprise. A 21-year old Bismarck palm with 20 foot of brown trunk (bottom photo) had an in-ground value of \$6,000.00 in 2018. A 4 to 6 times mark-up to cover costs associated with harvest, pest disinfestation, transport and monitoring (2-3 weeks) in a quarantine nursery is a reasonable estimate for final landscape installation expense. Hopefully these tips will help you in your next large plant extraction and installation in Hawaii's new commercial landscapes.

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Joseph DeFrank is the Researcher Emeritus, for the University of Hawai'i Mānoa and CEO of Ulu Wehi Agronomics, Inc

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Bismarck palm loaded onto 40 ft. flatbed trailer with trunk support provided by stacked pallets. Farm gate in-ground value of this 21-year-old palm valued at \$6,000.00 in 2018.

THE IMPORTANCE OF REGULATORY FRAMEWORK

by Megan Striegel

While Hawai'i is about as far as you can get from Washington D.C. geographically, the Hawaii Department of Agriculture's Plant Industry Division, is an important partner in the registration and regulation of products used by applicators and professionals like you.

The Federal Insecticide, Fungicide, Rodenticide Act gives the U.S. Environment Protection Agency (EPA) the authority to review, regulate and register pesticides federally. While the federal registration of pesticides occurs at the U.S. EPA, it then goes to the states to register, and in Hawaii, and as you may already be aware, individual townships and counties in Hawai'i

can further restrict and regulate the use of pesticides.

As members of the green industry who provide lush green spaces in Hawai'i, treating against invasive species that threaten the diverse native ecosystem of the islands, you know what it takes to create and maintain safe outdoor spaces for people to enjoy. On the national and local level, there has been concerning legislation introduced to further restrict both professional and homeowner use of pesticides and fertilizers.

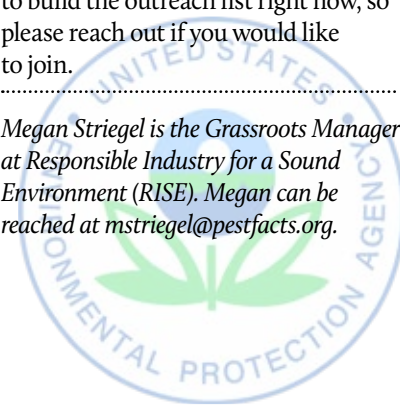
Most recently, in 2021 the Maui County Council heard a proposed bill to ban pesticides and fertilizers on county (non-agriculture) properties. Shortly following, the Honolulu City Council proposed a resolution requesting city administration to use alternatives to glyphosate-based herbicides on city-owned and city-managed properties. These bills, if passed, could open opportunities for other cities and counties to adopt similar laws, and legislation can easily be expanded to include private land.

At the federal level in Washington, there has been legislation introduced, both present and in the recent past, which would severely impact the ability of applicators to operate in the United States. These range from specific classes of pesticide bills, to

bans of products currently registered and would change the way that registrations are conducted at EPA. It would allow public comment and petition to have the same if not more weight than science when it comes to registration decisions.

So how do you, as users of specialty pesticides and fertilizers, stay engaged and weigh in on policy decisions? A good first step would be to support your industry by engaging with state and federal policymakers. And there is a relatively easy way to do just that. Professionals across Hawai'i are coming together to talk about policies (local, state, and federal) which would impact their ability to deliver results. We are continuing to build the outreach list right now, so please reach out if you would like to join.

Megan Striegel is the Grassroots Manager at Responsible Industry for a Sound Environment (RISE). Megan can be reached at mstriegel@pestfacts.org.



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Current distribution of the Hala Scale, *Thysanococcus pandani*, in Hawai'i

By Mason Russo and Dr. Zhiqiang Cheng,
Department of Plant and Environmental Protection Sciences,
CTAHR University of Hawaii at Manoa

The hala scale, *Thysanococcus pandani* Stickney is part of the Halimococcidae family (Stickney 1934). These covered scale insects were initially described from specimens collected in Java and Singapore on hala trees, *Pandanus tectorius* and they are not parthenogenic, with both female and males present on the leaves (Andersen et al. 2010). The crawler stage is easily dispersed and able to spread to infest new plants. The hala tree is a characteristic canoe plant that was spread across Pacific Islands where Polynesian voyagers traveled. In the Hawaiian Islands lau Hala refers to the leaf of hala trees (Keawe et al 2014). The practice of ulana, or weaving was integral to Hawaiian culture and exploration, as the sails on their boats were made of woven hala. For many native Hawaiians, the practice of ulanalauhala is integral to their survival, folklore, continuation of culture, and part of their identity. Outside of weaving, the roots and seeds were used for traditional medicine, food, and cordage. A lauhala lei, or necklace was given to a person going through a transition in their lives. *P. tectorius* became the dominant coastal forest in many suitable areas of the Hawaiian Islands, and voyagers were able to smell the scent of the fruit as they approached the shorelines. Unfortunately, many of the hala forests have been replaced by development, but the remaining forests are seen as a buffer to keep out other invasive plant species especially on Hawaii Island and Kauai.

The spread of *T. pandani* Stickney complicates these cultural practices



Figure 1: Typical *T. pandani* Stickney infestation.

as severe infestations can kill young seedlings and prevent forest regrowth or expansion. There are many deleterious impacts ranging from discoloration, stunting, twisting, yellowing, leaf deformities, fruit deformities, and early tree death. The negative impacts on the leaves directly inhibit cultural weaving practices. As a frequently planted landscape tree, this also decreases aesthetic appeal of the plant, and can lead to increased management costs across the urban landscapes of the state. Hala is frequently planted as an ornamental plant and replacing these existing trees would be costly. As there are few hala forests remaining, any introduction of *T. pandani* Stickney would be detrimental to those remaining pristine coastal ecosystems.

Survey and Results:

We conducted an extensive survey to evaluate the current distribution of

T. pandani Stickney throughout the Hawaiian islands. It is already considered widespread on Maui, and infestations have been reported on Molokai, Oahu, Lanai, and Hawaii Island. We evaluated potential pathways such as plant nurseries or ornamental planting at resorts and public areas. Other potential areas of dispersal include botanical gardens and university campuses, which frequently plant native hala into their ornamental landscape. Each individual hala tree that was inspected was evaluated using an initial visual inspection, followed by a closer evaluation if there were any indicators of an infestation. From a distance, a heavily infested hala tree will have discoloration such as yellowing leaves. A closer inspection of the underside of the leaves will reveal a pattern of black dots, with a characteristic white waxy fringe around various specimens (Figure 1).



Figure 2: Molokai surveys conducted during March, April, and May 2021. Yellow pins indicate no infestation of *T. pandani* Stickney at available survey sites, while a red pin indicates infested plant clusters.

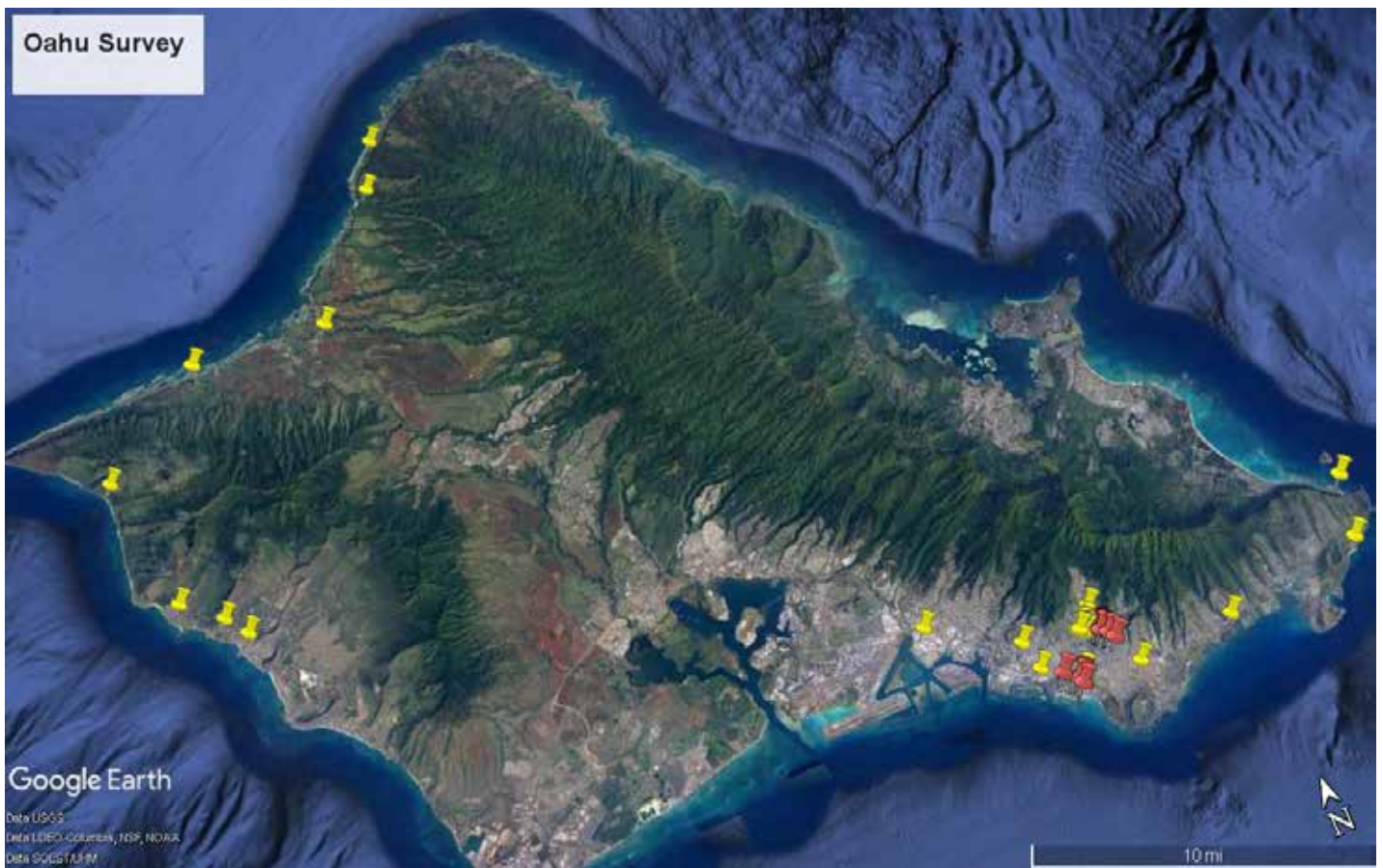


Figure 3: Oahu surveys conducted during March, April, and May 2021. Yellow pins indicate no infestation of *T. pandani* Stickney at available survey sites, while a red pin indicates infested plant clusters.

The results of the 2021 statewide survey indicated that there is widespread distribution of *T. pandani Stickney* on Maui (well documented already), and Molokai (Figure 2), and that Oahu still has the limited established populations previously detected (Figure 3). The infestations were eradicated on Lanai. On Hawaii Island and Kauai no scales were detected. Kaho'olawe had no remaining hala plants and there is no available data for Ni'ihau. The eradication tactic on Lanai was to spray Telsar, cut down the tree, bury the plant debris, and then soak the soil with Safari.

During the surveys there were other scale insects and mealybugs found on hala trees, but only to a limited extent. Throughout the survey, public outreach was conducted about this insect pest, and this is another aspect that can help lead to early detection if populations were to be accidentally spread. Mitigation tactics such as avoiding exporting *Pandanus spp.* plants from Maui and Molokai and the eradication of the few established populations on Oahu should be a priority in the years to come. If properly implemented, there would be cultural, ecological, and economic benefits to maintaining the healthy hala trees throughout the state of Hawaii.

Acknowledgements:

This project was funded by UH SEED IDEAS Grant and Dr. Cheng's Hatch and Smith-Lever projects. We thank Kenneth Choi, Christina Martiney, Dr. Roshan Manandhar, Nina Ronsted and Mike Demotta from NTBG, Marty Fernandes from Na Aina Kai Botanical Garden, Dr. Roxana Meyers, Kari Bogner and staff from Pulama Lanai, Glenn Teves, Jennifer Hawkins, Alton Arakaki for their help with our surveys.

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Mason Russo is an Entomology PhD student in Dr. Cheng's Lab, UH Manoa. Dr. Zhiqiang Cheng is an Associate Professor and Extension Specialist working on turfgrass and landscape pest management at UH Manoa.

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Early symptoms of Fusarium on dendrobium orchid leaves



Examples of silicon treated Honi Honi variety of anthurium

THE **Si**LICON SOLUTION

by Joanna Bloese



Anthurium Si Trial in progress at Waiakea Research Station

Silicon (Si) based fertilizers are becoming increasingly popular due to the multitude of benefits they provide. Silicon is the 14th element on the periodic table and the second most abundant element comprising earth's crust (Epstein, 1994). Although Si is not considered essential for plant growth and development, recent research suggests there are a myriad of benefits in applying stable soluble silicon to various agricultural crops. These benefits have been shown to ameliorate stress during conditions of drought, salt stress, heavy metals, and act as a deterrent against insect herbivory (Liang et al., 2005, 2015; Guevel et al., 2007; Dallagnol et al., 2015). Not only has Si been shown to improve plant's overall resistance to exogenous stresses, data suggest it can act as a physical protective barrier, fortifying plant cell walls and thereby combating the establishment of various plant pathogens including: fungi, bacteria, and viruses.

There is a wide body of literature to support the effects of Si fertilizer against plant disease, however, it's effect against insect pests is more contentious. Due to the multitude of various formulations of Si fertilizers, their subsequent effectiveness,

as well as the difference in plant physiology between monocots and dicots (including epiphytes), it's potential benefit to plant cropping systems and potential incorporation as part of a larger pest management strategy is disputed among scientists.

Research on Hawaii Ornamentals & Nursery Crops

Currently, there is nominal extraneous information to substantiate the benefit of Si fertilizer against greenhouse pests and diseases in epiphytes in Hawaii. Therefore, we investigated the effects of silicon-based fertilizers on the yield and quality parameters, as well as pest and disease prevalence, in three varieties of Dendrobium (Uniwai Supreme, Uniwai Mist, & Uniwai Royale) and two varieties of Anthuriums (UH-white & Honi Honi).

Since various forms of silicon fertilizer and amendments exist on the market, including but not limited to: calcium silicate (CaSiO_3), sodium silicate (Na_2SiO_3), rice hull ash (soil amendment), fly ash (soil amendment), potassium silicate (K_2SiO_3), and silicate oxide (SiO_2), we decided to test a stable form of Si fertilizer consisting of 22% SiO_2 and 10% calcium. Applications

of silicon fertilizer were either applied as a root zone drench or foliar application on a weekly basis at a rate of 50 mg Si/ plant.

Results

Our results demonstrated positive plant protection effects of Si fertilizer against two thrips species (*Dichromothrips corbeti*, *Chaetanaphothrips orchidii*), two fungal pathogens (*Botrytis* spp. and *Fusarium* spp.) across all three varieties of dendrobium. Silicon treated plants exhibited double the amount of marketable sprays and half the amount of thrips damage in the field within two months of applications.

The effectiveness of Si fertilizer for plant protection in anthuriums was dependent on variety. Both silicon drench and foliar applications increased marketable yield by 31% and 33% respectively for the Honi Honi Obake variety. The UH white variety displayed inconsistent benefits from Si applications. Benefits of Si were exhibited after approximately two months of consistent applications.

The mechanism behind Si-fertilizer's effectiveness is still unclear. This is an area of interest we have begun examining.

Dendrobium SI trial deployed at Waiakea Research Station



Botrytis symptoms on dendrobium orchid



Orchid thrips, *Dichromothrips* on dendrobium
Photo: Dr. Arnold H. Hara, CTAHR

Anthurium thrips, *Chaetanaphothrips orchidii* (Moulton)



Anthurium Si Trial in progress at Waiakea Research Station

Summary:

While there are mixed reviews on the benefit of silicon fertilizer as a plant protection product in the literature, it is clear that there are positive and significant benefits of Si fertilizer in dendrobium production in Hawaii. More research is required to determine the optimum rate for efficient protection and minimal residue. Its benefit to certain varieties of anthurium shows potential for incorporating Si in an Integrated Pest Management regime, however more research is needed to increase precision and efficacy.

There is potential for Si fertilizer to be used as prevention strategy against pest and disease in dendrobium production, however it is not a complete substitute for pesticides. Our hope is that it will allow for less frequent pesticide applications and increase the effective life span of current pesticides on the market by slowing evolutionary resistance.

An important point to remember is that Si fertilizer takes time to become effective. In both dendrobiums and anthuriums we began to see marginal benefits in the first month of Si applications, but we didn't significant benefits until two months of consistent applications. Climate change may require us to drastically alter the way we grow crops and an important part of that plan is to develop strategies that are long lasting, sustainable and environmentally neutral.

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Please contact Joanna Bloese (bloese@hawaii.edu) or Russell Galanti (rgalanti@hawaii.edu) regarding any questions about this research of product.



Our Stories of the History of Landscape Architecture in Hawai'i – Chapter II , IX September / October 2019 – Food Glorious Food! “Historically, people of many races and cultures have gathered and celebrated around food.” “As sugarcane and pineapple plantations grew, there was a need for labor. From 1850 to 1930, immigration workers arrived in Hawai'i with their native culture and foods”. Historical vintage photo provided by: Vince Sortino



The History Of Landscape Architecture

Our Stories Of The History of Landscape Architecture In Hawai'i - Chapter II

by Dana Anne Yee, FASLA, ISA CA, LEED AP, RA, MG, CITY PLANNER All photos by Dana Anne Yee

Dana Anne Yee, Landscape Architect, LLC was honored to receive a 2021 ASLA Hawai'i Professional and Student Award for the articles and photographs in *Our Stories of the History of Landscape Architecture in Hawai'i - Chapter II*. She shares and celebrates this American Society of Landscape Architecture Hawai'i Award with the Landscape Industry of Council of Hawai'i editors, graphic designer, contributors, advertisers, publishers, and all those who help to produce our wonderful Landscape Hawai'i magazine. The following is the award entry for our Landscape Industry of Council of Hawai'i, Landscape Hawai'i Magazine. Mahalo to ASLA Hawai'i, the ASLA Board of Directors, and the Jury for this special ASLA Hawai'i Award. It is with great pride that we at the Landscape Industry Council of Hawai'i, Landscape Hawai'i Magazine shares this honor with our readers.

Project Team:

Articles written by Landscape Architect: Dana Anne Yee, FASLA, LEED AP, ISA CA, RA, UH MG, City Planner, Dana Anne Yee, Landscape Architect, LLC
Photographs by: Dana Anne Yee with historical photographs provided by Vince Sortino and the Hawai'i State Archives.

Client: Landscape Hawai'i Magazine, Landscape Industry Council of Hawai'i (LICH),

Landscape Hawai'i Magazine Editors: Garrett Webb, Russell Galanti, Hannah Lutgen

Landscape Hawai'i Magazine Graphic Designer: Roann Gatlula



16 Landscape Hawai'i Magazine covers of articles published by LICH, honoring the people and exploring the places that shaped our Hawaiian landscape environment. Photo: Landscape Industry Council of Hawai'i magazine covers.

Project Narrative:

“Our Stories of the History of Landscape Architecture in Hawai’i” are bi-monthly featured articles published in the Landscape Hawai’i Magazine, since 2018. Chapter II shares stories and records the history and treasured memories of Hawai’i, communicated through the perspective of a Landscape Architect. These articles are a creative way to reach our ASLA family and the community to share these historical stories honoring the people and exploring the places that helped shape our Hawaiian landscape environment.

It all began at the 2017 ASLA Hawai’i dinner. Our table consisted of veteran landscape architects and new members of our profession. It occurred to us that many of our landscape architects may not know the stories about the influential landscape architects that helped shape our environment. Our profession is relatively young in the islands and many of the landscape architects are either still around or have worked for the original landscape architectural firms.

THE VOICE OF HAWAII’S GREEN INDUSTRY

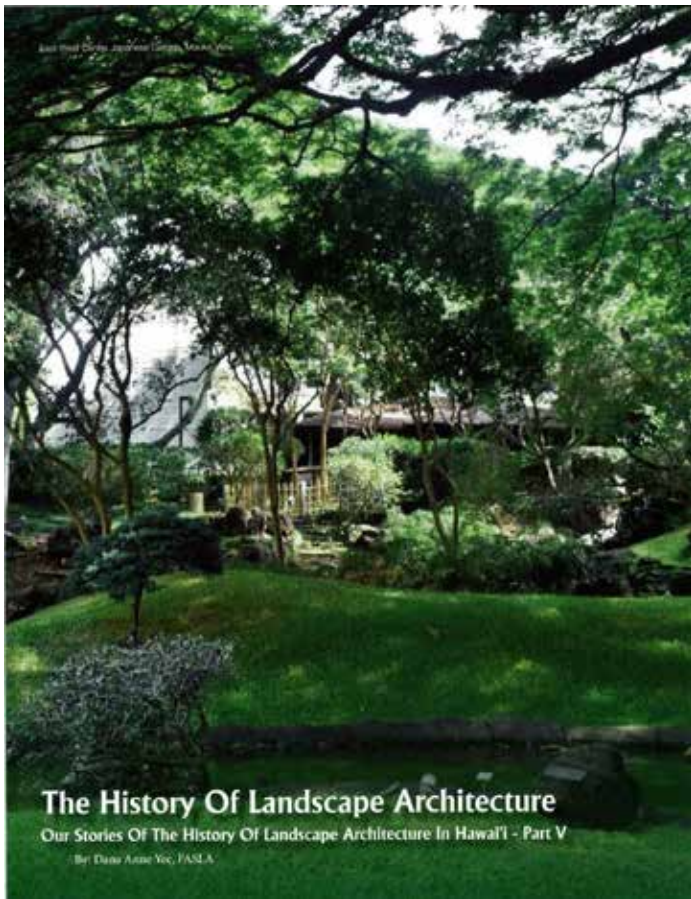
Their stories are shared while we can still hear them firsthand.

The Landscape Hawai’i Magazine is produced by the Landscape Industry Council of Hawai’i, a non-profit organization composed of many dedicated green industry volunteers. It has a readership of over 20,000. LICH began in 1986 and is an alliance representing Hawai’i’s landscape professionals, including ASLA Hawai’i and green industry members. The articles were written pro-bono to help educate and share informative and historical stories.

RESEARCH: The untold stories, involved careful research about each person, including interviewing people who knew them best and the Landscape Architects who worked for them. Extensive research was gathered about our treasured monuments, parks, plants, and open spaces including interviewing people who were there at the time of events. This includes the timely articles regarding our COVID-19 pandemic.



Part II – May / June 2018 – A horse drawn carriage strolling around the Louise Dillingham Memorial Fountain at Kapi’olani Regional Park. Photo: Dana Anne Yee, FASLA, 2018.



Part V- November / December 2018 of the East West Center Japanese Garden by Landscape Architect, Kenzo Ogata. "A momentous occasion occurred in 1964, when Prince Akihito and Princess Michiko released Koi to bless these gardens."
Photo: Dana Anne Yee, FASLA, 2018.

Part V- November / December 2018 The Nichiren Mission represents the traditions of the Japanese people bringing their gardens to Hawai'i. "Theodore Cooke built his family mansion and these beautiful gardens in 1915."
Photo: Dana Anne Yee, FASLA, 2018.

COMMUNICATION: The goal of the articles is to share and communicate stories about our early leaders who blazed the trail in our Landscape Architecture profession. These articles show their contribution in creating and molding the environment of today. The magazines are distributed state wide and to non-profit venues such as the Botanical Gardens, to students, classes, and events at the University of Hawai'i. All the articles are also available on the web.

It is now our responsibility to steward the land, *Malama the 'Āina*, to protect the land and to preserve and honor our treasured land with green open spaces for future generations.

MAHALO to our thoughtful and wise leaders who had the foresight to preserve our open spaces, to plan incredible public parks, and to design beautiful memorable Hawaiian landscapes. Hawai'i has grown into a truly treasured 'āina. In 2020, COVID-19 had caused a big mark in history and has affected permanent changes to the way things are done.

However, despite this our botanical gardens still flourish and our well-planned public parks and grand open spaces have had some time to recover and remain protected.

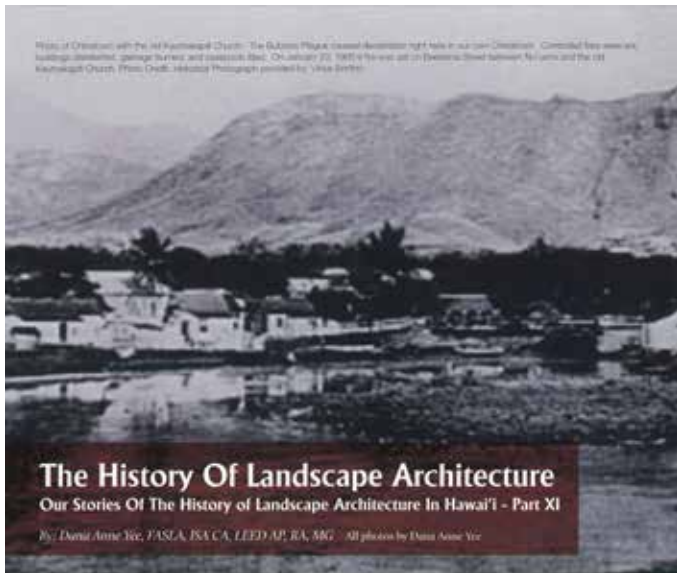
Chapter II, includes 13 issues written about Our Stories of the History of Landscape Architecture in Hawai'i. These include articles about our treasured landscape architects, our incredible multi-acre public parks, open spaces blessed by the Prince and Princess of Japan, off the beaten path secret gardens such as the Buddhist Nichiren Mission with spring fed streams filled with pink water lotuses, our five grand City and County of Honolulu Botanical Gardens, sculptures within the landscapes, our museums of wonder, spectacular magnificent trees, the history of food, the destruction from invasive pest species, our native Hawaiian 'Ōhi'a Lehua Tree forests, Chinatown, pandemics, parks, and volunteering.

Here are brief excerpts from the articles:

PART IV September / October 2018 "Who could image taking advantage of two different climates on the same island and creating two different types of resorts. She transformed the up-country area in the higher colder elevation into a beautiful elegant sophisticated Lodge at Ko'ele, and the warmer beach coastline property into the grand Manele Bay Resort." Juli Kimura Walters helped bring elegance to Lanai. Juli is one of the first women landscape architects in Hawai'i.

PART XI March / April 2020 "Locus, Fleas, Beetles, Ants, and Bugs, Oh My! Invasive insect species have created havoc in the world for a long time. Landscapes that are designed with plants and the care of plants have been paramount to creative designs, grand open spaces, and beautiful landscapes in the world but they can all come to an end with an invasion of insect pest species."

PART XII July / August 2020 "Times have changed! Due to the Coronavirus (COVID-19) pandemic, uncertainty in the world looms... Historically, many of the



The History Of Landscape Architecture

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

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

LOCUST, PLEAS, BEETLES, ANTS, AND BUGS, OH MY!

This may seem like it has nothing to do with landscape architecture but, in reality, it has everything to do with landscape architecture. Invasive insect species have created havoc in the world for a long time. Landscapes that are designed with plants and the care of plants have been paramount to creative designs, grand open spaces, and beautiful landscapes in the world and they can all come to an end with an invasion of insect pest species.

This may seem like it has nothing to do with landscape architecture but, in reality, it has everything to do with landscape architecture. Invasive insect species have created havoc in the world for a long time. Landscapes that are designed with plants and the care of plants have been paramount to creative designs, grand open spaces, and beautiful landscapes in the world and they can all come to an end with an invasion of insect pest species.

Locusts have caused devastating plagues. Locusts have been recorded to cause a devastating plague as far back as 205 BC in Capua, Italy. In 311 AD, locusts were the cause of 40% of the deaths to humans in the northeastern province of China. In 1712, locusts in California recorded a plague. And in 1874 it was called "the Year of the Locust" as the locusts overran the sky and damaged crops to the great plains and caused farmers to migrate.

When the conditions are right (drought followed by rapid vegetation growth) locusts in the locust's beams trigger a dramatic set of changes and they start to breed abundantly. Swarms of the winged adults cause massive damage to crops.

Plagues infected with *Yersinia pestis* bacterium were the cause of the Bubonic Plague also known as "Black Death" in the 14th century. The bacteria enters the skin through a flea bite traveling to a lymph node where it replicates out of control. Fleas serve as host for the fleas. And the plague is also caused by handling of infected animals. The Bubonic Plague is believed to have originated in China in 1334, spreading along the great trade routes to Africa and then Europe. The Bubonic Plague killed an estimated 50



In August 1899 that 175,000 acres show signs of the fungi *Ceratocystis lakoakoa* and *Ceratocystis hulensis*. 'Ōhi'a Lehua Trees have been infected on Hawaii's island, Kauai, and just recently in the summer of 2019 on O'ahu. Maui had a single 'Ōhi'a Lehua Tree infected but it was removed and the infestation was eradicated. The Ambrosia Beetles are attracted to injured or sickly 'Ōhi'a Lehua Trees. RCD is either blown in by wind to the injured tissue of the trees, or Beetles that have picked up infected spores from infected plants. In June they transfer to the new 'Ōhi'a Lehua Tree hosts. The beetles bore into a tree and then to the sapwood of the 'Ōhi'a Lehua Trees and create a fine dust, which gets mixed with *Ceratocystis* fungal spores. The spores are generally carried by the wind, or the transport of the 'Ōhi'a Lehua wood, or the feet of four legged animals (rodent-like animals) such as pigs or goats or even on the bottom of the shoes of a person.

'Ōhi'a Lehua Trees are endemic to Hawaii and they are the dominant species of native forests where they provide food and shelter to other native organisms and at the same time slow erosion and filter water in the watershed. Kaiser, B. N. et al. (1990) estimated the value of Oahu's Kōriaka forests at \$4 billion. Rapid 'Ōhi'a Death, is spreading at an unprecedented rate on the Hawaiian Islands. It is easily dispersed in whitebark Beetle Traps, and it has the potential to wipe out Hawaii's 'Ōhi'a Lehua Trees. Without the 'Ōhi'a Lehua Trees the forest the watershed will be devastated. The loss of 'Ōhi'a Trees will diminish the forest canopy creating openings in the forest and opportunities for soil erosion and introduced invasive plants and trees may gain a foothold in the pristine native forests. Our Hawaii will lose an important native habitat for our flora and fauna.

According to Dr. Friday there are 180,000 acres of infected 'Ōhi'a Lehua Trees. More than 1 million trees have been killed by the disease so far. And it is estimated to cost \$30,000 to \$40,000 per acre to remove the forest.

Naine Thrips were first discovered on Hawaii's island in 2009 and they have rare found their way to O'ahu in 2018. They are very tiny insects that have asymmetrical mouth parts used to rasp and suck plant juices. They have wings resembling leeches. The Naine plant can be found on coastal dry forest areas up to mid forest elevation areas. They may have arrived to Hawaii from California or Australia.

million people, 25% to 60% of the European population.

HERE IN HAWAII

The Bubonic Plague caused devastation right here in our own Chinatown around 1899. The devastated and flimsy wooden structures plagued by poor sanitation, periodic flooding, dense living conditions, and rat infestations described Hawaii's Chinatown.

<http://www.hawaiihistory.org/index>
Rats carrying fleas infected with *Yersinia pestis* bacterium was the cause of the Bubonic Plague. Quarantine stations were opened in Kaka'ia by the Board of Health to isolate the infected people. A law was drawn that no one infected could cross. Controlled fires were set, buildings demolished, garbage burned, and carpools

filled. On January 20, 1900 a fire was set on Bernersia Street between Nuuanu and the old Kaunakapili Church. On this windy day the fire escaped and spread to the wharf. The fire burned for 7 days, burning 18 acres and 4,000 homes of mostly Chinese and Japanese people. Mass controlled fires were set and after four months Honolulu was free of the plague.

Ambrosia Beetles are the cause of the spreading of the *Ceratocystis* fungal disease to the 'Ōhi'a Lehua Trees, *Mitrospiderium polynesiense*. This devastation to our valuable native Hawaiian Tree is known as the Rapid 'Ōhi'a Death or RCD, because the 'Ōhi'a Lehua Trees die very quickly. Dr. Friday, Estimation Forester, reported at the CCHRE Invasive Species Conference held in Hilo, Hawaii,

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XI March / April 2020. "In 1899, the Bubonic Plague caused devastation to Honolulu's Chinatown. This old Kaunakapili Church was destroyed during the controlled fires to rid Chinatown of the Plague." Historical vintage photo provided by: Vince Sortino

world's treasured parks, garden spaces, and open spaces have been designed and grew out of the tragedies of major destructive pandemics."

PART XIII September / October 2020 "As Desmond Tutu said, "Do your little bit of good where you are. It's those little bits of good put together that overwhelm the world. So, the message is to get out there and share your talents and skills and have fun with kind-minded volunteers who share the gifts of giving. Let us all help to keep them active and exciting by participating and volunteering."

PART XIV January / February 2021. "Here is the fantastic story of a plant that brought two countries together." Pollinating the Double Coconut.

All the articles included photos that were personally taken by the author, and the historical photos were obtained with the help of the Historical Society of Hawai'i and historical collectors of photography.

Chapter I - Parts I, II, and III were recipi-

ents of an ASLA Award of Honor in 2018. Chapter II - Part IV to Part XVI continuing a need to share these historical stories, thirteen issues have followed. These stories were the start of this journey to pursue remembrances from long ago, research of historical places, stories of our prominent landscape architects, and to include photographs of our treasured Hawai'i. Landscape Architectural professionals, young landscape designers, students, and our Hawai'i community will be treated to future articles.

These published articles will build more effective communication within our landscape profession, encouraging the sharing of interesting untold stories, and inspiring stimulating dialog about the past as it affects our future. The sharing of the articles will help to advance the body of knowledge for our profession. And ultimately, it is important to record and make accessible our history and share this knowledge for our *keiki*, community, and future generations.

Ua Mau ke Ea o ka 'Āina i ka Pono, King

Kamehameha III spoke these words to the Kingdom of Hawai'i in 1843. "The life of the land is perpetuated in righteousness." We try to uphold and put forward our best planning and design work so that it will last, can be shared in stories, and perpetuate the life of the land, for its people, and their cultures.

Our Stories of the History of Landscape Architecture in Hawai'i articles:

- I. March / April 2018
Richard Tongg / George Walters
- II. May / June 2018
Kapi'olani Park / Ala Moana Park
- III. July / August 2018 Aloha Tower and Irwin Park / Diamond Head Monument
- IV. September / October 2018
Juli Kimura Walters / Raymond Cain
- V. November / December 2018
East West Center Gardens / Nichiren Mission

Our Stories of the History of Landscape Architecture in Hawai'i articles (continued):

- VI. January / February 2019
Honolulu Botanical Gardens / Paul Weissich
- VII. March / April 2019
List of Spectacular, Magnificent, Stupendous, Exquisite Trees
- VIII. May / June 2019
Sculptures in Landscapes Grand Hyatt and Four Seasons, The Whitcomb Residence, Elvis at NBC, Mayor's Office of Culture and the Arts
- IX. September / October 2019
Food Glorious Food from the Early Taro, Pineapple, Makahiki's, and Luau's
- X. November / December 2019
Honolulu Museum of Art, Spalding House, Shangri-La
- XI. March / April 2020
Bubonic Plague, Native Hawaiian 'Ōhi'a Lehua Trees, Early Detection of Invasive Insect Pest Species

- XII. July / August 2020
Gigasiphon microsiphon, Pritchardia lowreyana, Pandemics
- XIII. September / October 2020
Volunteering
- XIV. January / February 2021
Double Coconut Palm / Honolulu Botanical Gardens
- XV. March / April 2021
Parks and Pandemics
- XVI. July / August 2021
Invasive Species, Sugar Cane, and Pineapple

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By Dana Anne Yee, FASLA, LEED AP, ISA Certified Arborist, RA, UH Master Gardener, City Planner from the firm of Dana Anne Yee, Landscape Architect, LLC. 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.danayfoundation.org, is a 501(C)(3) non-profit corporation. The board of directors and members will continue in their commitment to serve and 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.

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Earn CEUs and Protect Hawaii: Sign up for a free Pest Prevention Training Session

By Pest Prevention Training Team

Finding pests as early as possible, or avoiding them in the first place, are the best ways to protect your business and our islands. As the first line of defense, it is important for nursery staff and managers to be familiar with current plant pests and diseases, and the Invasive Species (ISCs) in each county are organizing a new --and free-- Pest Prevention Training to help.

This project is funded through a USDA Plant Protection Act 7721 Plant Pest and Disease Management and Disaster Prevention Program grant to the University of Hawaii Pacific Cooperative Studies Unit, which oversees the ISCs and the Coordinating Group on Alien Pest Species (CGAPS).

The training will feature information about the identification, reporting, and best management practices for some high-risk pests that are not known to occur in Hawaii, not known to occur in the United States, and some pests that are present but are high priority for containment like the coconut rhinoceros beetle. CGAPS and the county-based ISCs are developing the training in consultation with the State and Federal Departments of Agriculture

and University of Hawaii – CTAHR, and approval for Continuing Education Units (CEUs) will be sought for the training. Participating nurseries will receive supporting material for reference afterwards.

The trainings will be offered in the spring and summer of 2022 by the local ISC outreach staff on each island as 1.5 hour virtual workshops, or when possible and requested, in-person workshop sessions in compliance with all state and county health and safety laws, rules, and regulations, and those of the University of Hawaii and Pacific Cooperative Studies Unit.

“We wanted to connect or reconnect with our local nurseries and provide everyone with the latest information because they are so important in the early detection and reporting of pests,” said CGAPS program manager Christy Martin. “The pests and diseases we are focusing on tend to travel on or in tropical ornamental plant materials, including fruit trees and palms, but if nurseries have the necessary information, maybe we can prevent them from becoming established and spreading locally.”

If you would like more information about the program and to request or schedule a training, visit: www.PlantPono.org

and click on Pest Prevention Training, or use the QR code at the end of this article.

Though affiliated with Plant Pono, the course is offered to all nurseries statewide, regardless of current participation in the Pono Endorsed Nursery Program offered on Hawaii Island and Kauai.



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LICH
Landscape Industry Council of Hawaii

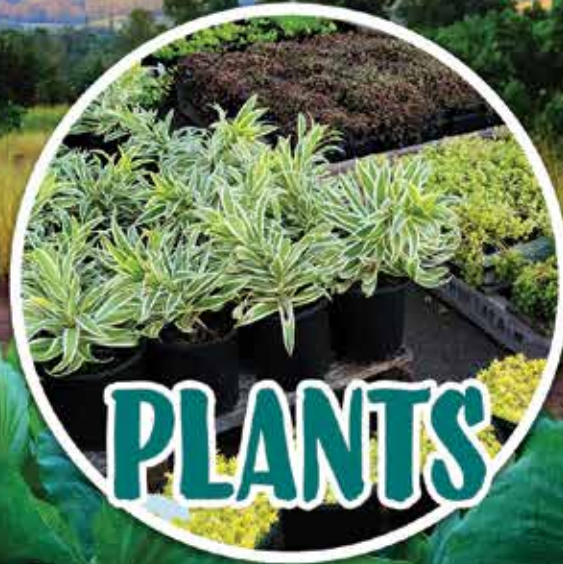
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