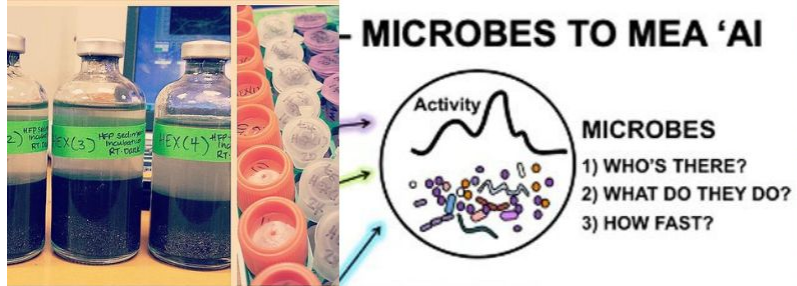


# Accelerating the Adoption of Soil Health Practices by Farms in Hawai'i through Cohort-based Training

An initiative by Oahu Resource Conservation & Development Council (Oahu RC&D) funded by USDA-NRCS Cooperative Agreement NR2192510002C002.



## STORIES OF REGENERATING 'ĀINA & CARING FOR THE MICROBIAL REALM

Join us in a lively talk story with farmers from across the islands on ways to deepen our understanding and management of the microbial realm. "Ginger John" with Sweet Cane Farm will kick-us off, sharing his process for regenerating his farmland and how his practices have evolved over time. Next, Dr. Kiana Frank will share her work, using place-based, traditional knowledge and her lab to explore how microbes mediate the biogeochemical cycling of elements such as carbon, nitrogen, oxygen, iron, phosphorus and sulfur and their overall functional capacity to cultivate 'āina momona. We'll all come together at the end in an exploratory dialog around to share the processes and practices we've used and refined to help us better understand, relate, and improve our farms.



**Dr. Kiana Frank,**  
Frank Laboratories  
Pacific Biosciences  
Research Center



**John Caverly,**  
Sweet Cane  
Farm

**What:** Soil Health Farmer Cohort Webinar Series (All Islands)

**When:** Wednesday, December 13, 2023, 5–6:30pm

Register in advance for this webinar at:

[https://us06web.zoom.us/webinar/register/WN\\_L0Mpti\\_NR26PQ-kmf\\_3Ytg](https://us06web.zoom.us/webinar/register/WN_L0Mpti_NR26PQ-kmf_3Ytg)



# Agenda

- Welcome & Intro to the cohorts;
- *Regeneration Stories* with Ginger John and Shawn Pila;
- *Deepening our Understanding and Care for the Microbial Realm* with Dr. Kiana Frank;
- Group Q & A with our speakers and cohort participants;
- Next Steps & Opportunities



# Project Milestones

Project duration: 2.5 years (30 months).



55 farms (originally targeted 40)



8 week cohort-based soil health training held in 4 geographic regions.



On-farm demonstrations of soil carbon amendments and summary of local availability and costs.



Soil health lab test will be submitted for each cohort member.



12 Soil Health Plans developed for a spectrum of ag. operations.

# Honoring & Highlighting the Hana of the People





# Kaua'i Cohort



**Kaua'i  
Cohort**

# Kaua'i Cohort







# Kau‘i Cohort



# Kaua'i Cohort



# Kaua'i Cohort

MAKA ĀINANA O MAKANA

Endless  
SUMMER  
GARDEN SUPPLY

# Kaua'i Cohort



# Kaua'i Cohort





# Kaua'i Cohort

A photograph of two women at a food table. The woman on the left is wearing a light blue patterned button-down shirt and glasses, smiling while holding a plastic bag of green vegetables. The woman on the right is wearing a white t-shirt with a name tag that says 'Hello, Amy' and purple patterned pants, smiling while holding a white plate with a piece of corn. The table in front of them is filled with various food items, including a large bowl of green salad, a bowl of corn, and other dishes. The background is dark, suggesting an indoor setting at night.

# Kaua'i Cohort



# O'ahu Cohort





# O'ahu Cohort



# O'ahu Cohort



# O'ahu Cohort



O'ahu  
Cohort

# O'ahu Cohort





# O'ahu Cohort



# Maui Cohort





# Maui Cohort





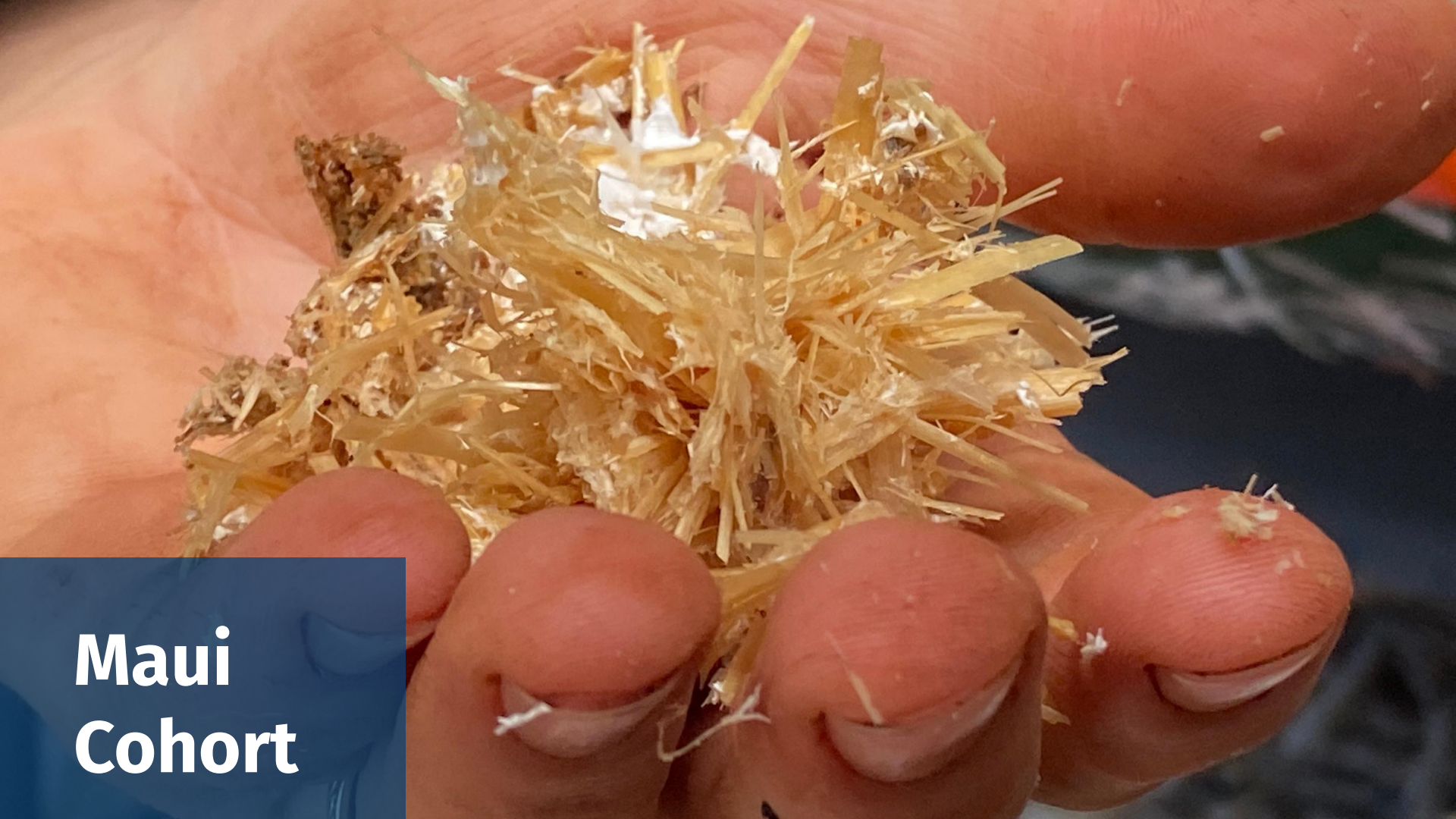
# Maui Cohort



**Maui  
Cohort**



# Maui Cohort



**Maui  
Cohort**



**Maui  
Cohort**



# Maui Cohort



# Maui Cohort



# Hawai'i Cohort





# Hawai'i Cohort



# Hawai'i Cohort



# Hawai'i Cohort

A group of approximately ten people are gathered in a grassy field, likely for a field trip or training session. The group is diverse in age and appearance. In the foreground, a man in a light-colored jacket and a baseball cap is looking towards the center. A woman with a blue backpack is also visible. In the background, a man in a red shirt and a woman in a black shirt are engaged in conversation. A man in a dark shirt and a wide-brimmed hat is holding a shovel. The field is surrounded by lush greenery and trees under a cloudy sky.

# Hawai'i Cohort

A photograph showing two women in an agricultural field. The woman in the foreground, wearing glasses and a grey t-shirt, is holding a clear plastic jar containing a soil sample. The woman in the background, wearing a blue cap with 'NRC'S' and 'Natural Resources Conservation Service' on it, and a floral shirt, is looking at the jar. The field has rows of plants covered with black plastic mulch, and a forest of tall, thin trees is in the background.

# Hawai'i Cohort

A group of people are gathered outdoors in a grassy field. In the foreground, a woman wearing a blue baseball cap with 'PCS' written on it and sunglasses is holding a small amount of dark soil in her hands. She is looking down at a spiral-bound notebook with a color calibration chart on the cover. Another woman with long brown hair and a green jacket is looking at the notebook. In the background, a man in a red t-shirt and sunglasses is looking on, and another person in a grey jacket is partially visible. The scene suggests a field study or environmental assessment.

# Hawai'i Cohort

# Hawai'i Cohort



# Online resources: learn.oahurcd.org



Training Sessions

Soil Health Practices

Login



Soil Health Farmer Training P

Crustacean Meal and Mustard Biofumigation
Compost-in-Place System
Fertigation with Liquid Tankage and Compost Tea
Compost Tea Fertigation and Foliar Spray
Using Biochar to Increase Soil Health and Microbiology
Windbreaks, Strip-tilling, and More
Maui Soil Health Innovator: Lā Kāhea Community Farm
Kauai Soil Health Innovator: Moloa'a Organica'a



## About the Farmer Soil Health Program

This program is funded through a cooperative agreement with the Natural Resource Conservation Service Pacific Islands Area (NRCS PIA) and is entitled to the following description of Soil Health Practices by Farms in Hawai'i through Cohort-based Training.

This cohort training program supports commercial farmers by providing them with resources, skills, and motivation to understand and operationalize the link between soil health, soil fertility, and production issues. Farmers participating in the cohort will receive a complimentary soil health lab test and support to design and trial a soil health practice on their farm. Recognizing that each operation is unique and goals for soil improvement will vary for each cohort participant, this training program emphasizes working directly with each farmer to produce customized, sensible designs for their farms. Using a service-oriented approach to support the farmer's design process, Oahu RC&D will arrange consultation and design review with Hawai'i's leading soil health experts and help work through barriers to implementing the design. After completing this program, farmers will feel confident routinely testing and assessing indicators for soil health and will develop a strategy for trialing and monitoring improvements in their soil properties over time.

## Course Outcomes

At the end of the program participants will:

- Understand how to use best available information to observe and assess soil health on their farm, starting with traditional Native Hawaiian understandings and practices

Features on soil health practices

Features on farms & contributors

Farmer-to-farmer blog/comments

Resources for local inputs



# Courses

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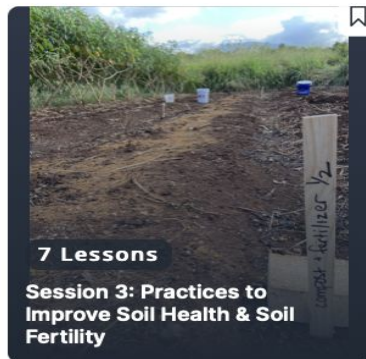
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Videos, slides, publications, trials.

Soil Health Foundations

Resources for Observing, Monitoring & Increasing Understanding of On-Farm Soil Health

Practices to Improve Soil Health & Fertility

Soil Health Plans & Costing



# SWEET CANE FARMS

STORIES OF REGENERATION

# BEGINNING

- Starting conditions;
- Observing & prioritizing;
- Taking the first steps;
- Early learning lessons.



# BREAK-THROUGHS

- Practices that worked;
- Observing improvements;
- Mentors along the way.



# THE FARM TODAY

- Evolution of management;
- Recommendations to other farmers.





# SHAWN PILA'S FARM

STORIES OF REGENERATION

# Dr. Kiana Frank

Deepening our Understanding and  
Care for the Microbial Realm





# GROUP Q&A



How do mahi'ai tell if the microbes are 'robbing' nutrients from main crops? What tools or kilo skills do they use to determine if more carbon is needed? If different forms of carbon are needed (liquid, dry etc.)? Or if the carbon to nitrogen ratio is too high or low?

What should mahi'ai know about the microbes of the place (microbes in the soil, water, wind)? About the pilina (relationships) between microbes and the mea'ai (types of food) their cultivating?

How do mahi'ai feed and create habitat for specific types of microbes? (bacteria, fungi, other functional groups in the soil food web)?

What indicators do mahi'ai use to tell what types of microbes are present? dominate? In or out of balance?

What are some of the practices farmers are using to influence and manage microbial communities on their 'āina (e.g. practices to build organic matter, increase aeration, encourage more bacteria or fungal dominance or overall diversity of soil biology, manipulate pH etc.)

What was/is the role of mahi'ai in managing microbes (in cultivating mea'ai, maintaining water quality, the nutrient and water cycles etc.). How does this change seasonally?

What role has managing soil biology played in regenerating your 'āina?

What have you learned from mentors or kupuna that influences the way you kilo or mālama? Who are some of these mentors?

What do mahi'ai need to be ma'a about regarding the role and function of the microbial realm?

What are examples of mo'olelo or other traditional or place-based knowledge farmers have used to understand their 'āina?

What are some examples of the ways farmers kilo and monitor microbial activity, diversity and abundance on their 'āina.

# Next Steps & Opportunities



- Visit our online learning platform to view features on innovative farmers and self-paced training materials and resources at: [learn.oahurcd.org](https://learn.oahurcd.org)
- Sign-up for the TSP Information Session, by emailing: [India@oahurcd.org](mailto:India@oahurcd.org)
- Learn more about the Expanding Agroforestry Project (EAP) led by The Nature Conservancy & the 'Ulu Co-op by visiting: [www.ulucoop.org/eap](https://www.ulucoop.org/eap)

# Next Steps & Opportunities

- Hawai'i Climate Smart Commodities (CSC) Phase 2. Visit: [www.climatesmarthawaii.org](http://www.climatesmarthawaii.org)
- Take the survey and/or contact Destiny Apilado to provide your mana'o on improving and prioritizing ag resources for Native Hawaiian farmers and communities, [tinyurl.com/oupform](http://tinyurl.com/oupform)

## Place-Based Equity for Hawai'i's Local Producers

Farmers, Ranchers, Mahi'ai, & Paniolo  
**TAKE THIS SURVEY**  
to improve access to supportive ag resources

Scan the QR code or visit  
[tinyurl.com/oupform](http://tinyurl.com/oupform)  
to take the survey



**Destiny Apilado**  
Ag policy researcher  
aims to make farming  
in Hawai'i practical  
and sustainable.



[destinyapilado.weebly.com/hawaii\\_producers.html](http://destinyapilado.weebly.com/hawaii_producers.html)

### Contact Destiny Apilado

- 🌐 [destinyapilado.weebly.com](http://destinyapilado.weebly.com)
- ✉ [dmapilad@hawaii.edu](mailto:dmapilad@hawaii.edu)
- 📷 [@des.api](https://www.instagram.com/des.api)

THE DEPARTMENT OF  
TROPICAL PLANT & SOIL SCIENCES

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**Mahalo nui**  
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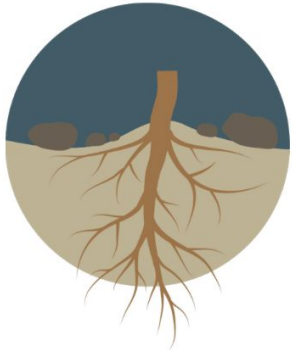
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# Soil Health Management Plans (SHMP) & Decision-Making

## Session 9: Oahu Farmer Soil Health Cohort



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