Status of Hawaii Agriculture & the Sustainable and Organic Agriculture Program

J. Sugano, T. Radovich S. Motomura and J. Uyeda
University of Hawaii at Manoa
College of Tropical Agriculture and Human Resources
August 1, 2018

SUSTAINABLE AND ORGANIC AGRICULTURE PROGRAM
COOPERATIVE EXTENSION, UNIVERSITY OF HAWAI'I AT MĀNOA
COLLEGE OF TROPICAL AGRICULTURE AND HUMAN RESOURCES


Island state
© NASA


Hawai`i population (2017): 1,427,538
12.20.17 S/H DBED, Hawaii State Data Center, US Census Bureau


Import 80-90 % of our food supply


Vulnerable


8:08
Saturday, January 13
EMERGENCY ALERTS
now
Emergency Alert
BALLISTIC MISSILE THREAT INBOUND TO HAWAII. SEEK IMMEDIATE SHELTER. THIS IS NOT A DRILL.

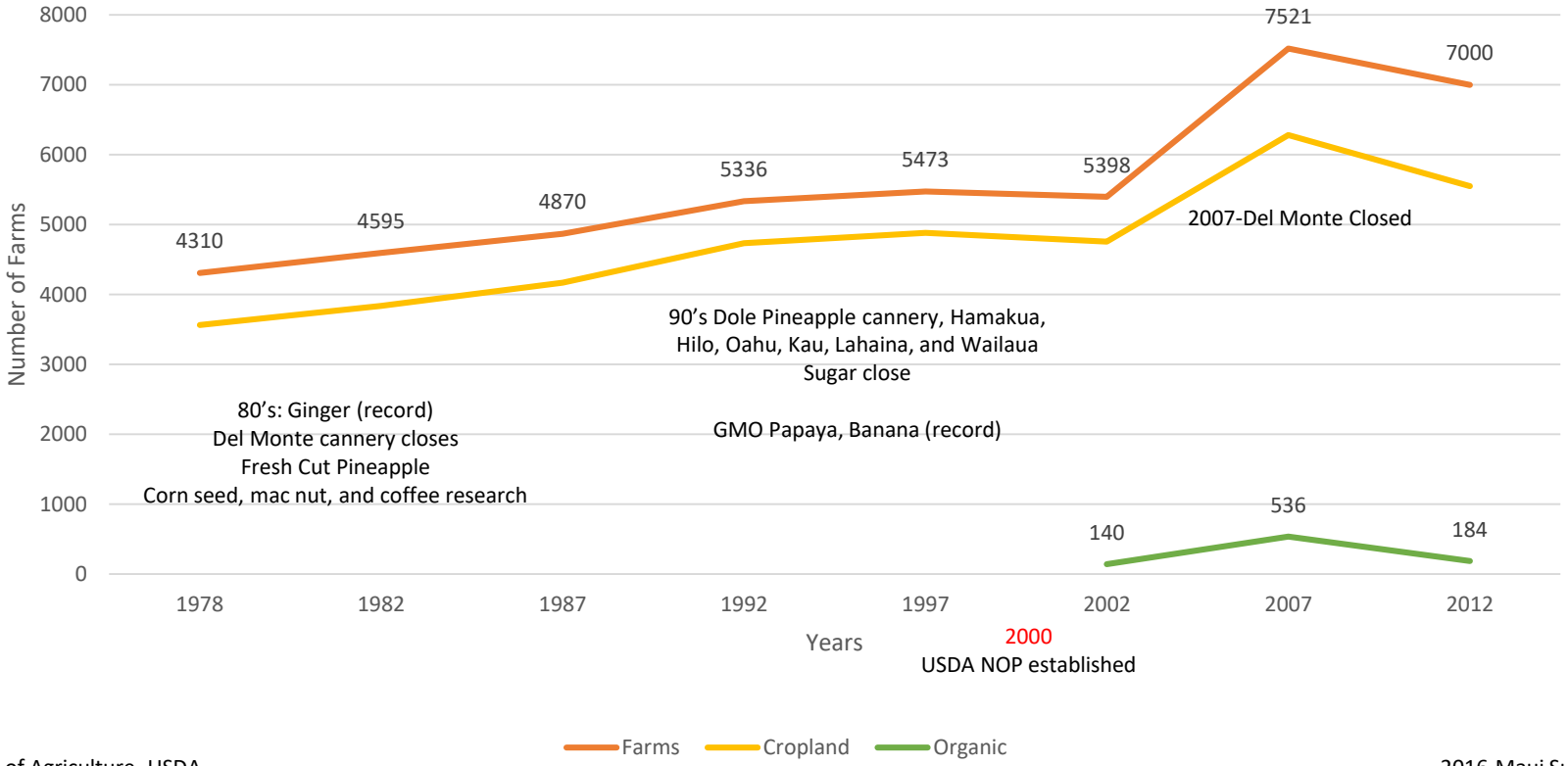
Sustainable Hawaii Initiative Goal: Double Our Food Supply


Sugar-1700’s
Canoe plant


Moringa 2015


Pineapple-1880’s

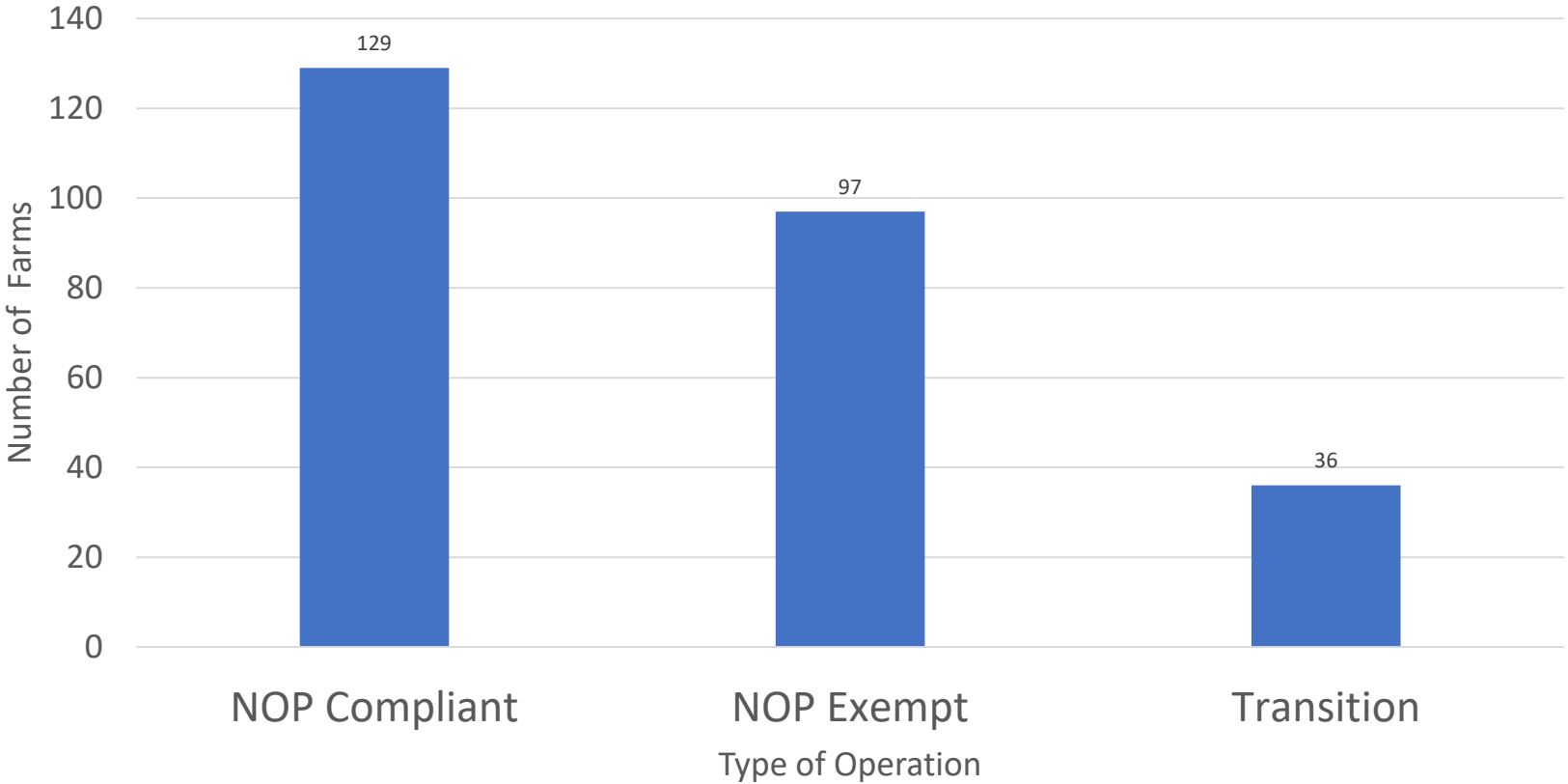
Total Farms, Cropland and Organic Agriculture



Census of Agriculture, USDA
2014: Organic farms = 166 (certified and exempt)

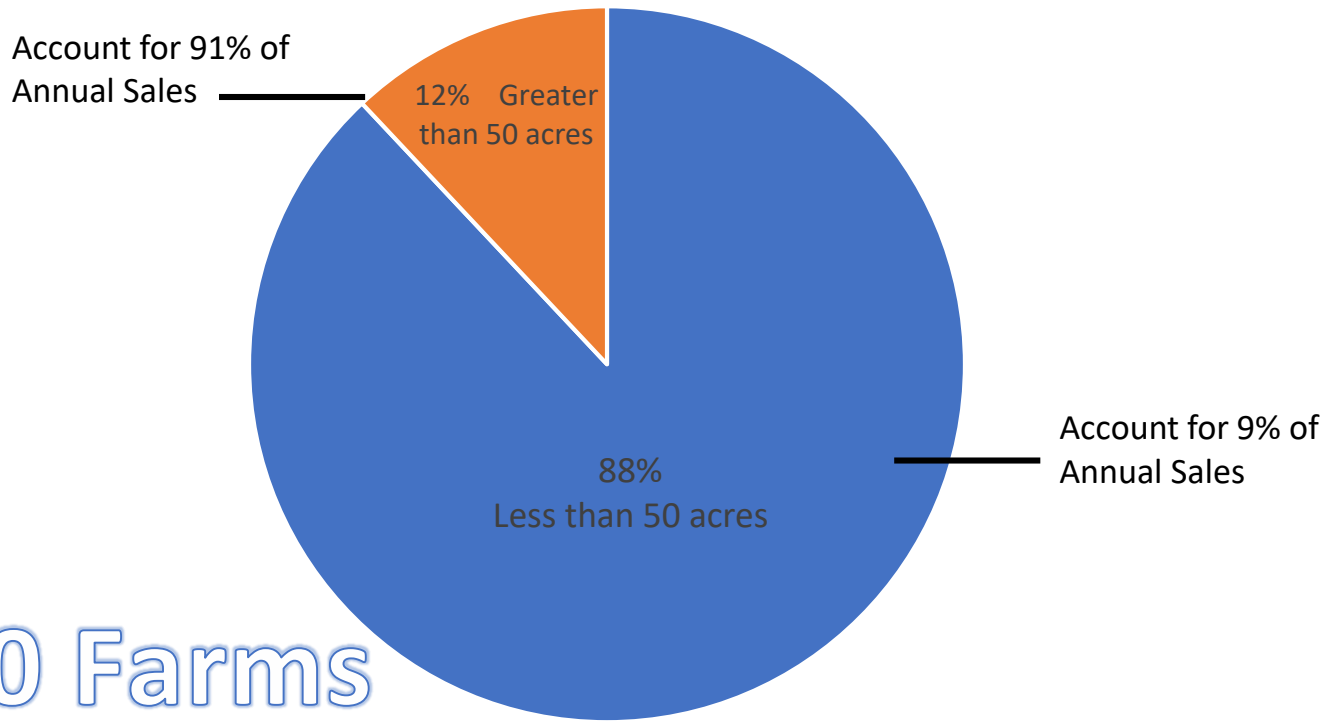
2016-Maui Sugar closes

Type of Organic Production



Based on 2012 U.S. Census of Agriculture data provided by the National Agricultural Statistics Service (NASS) for the National Association of State Departments of Agriculture (NASDA)

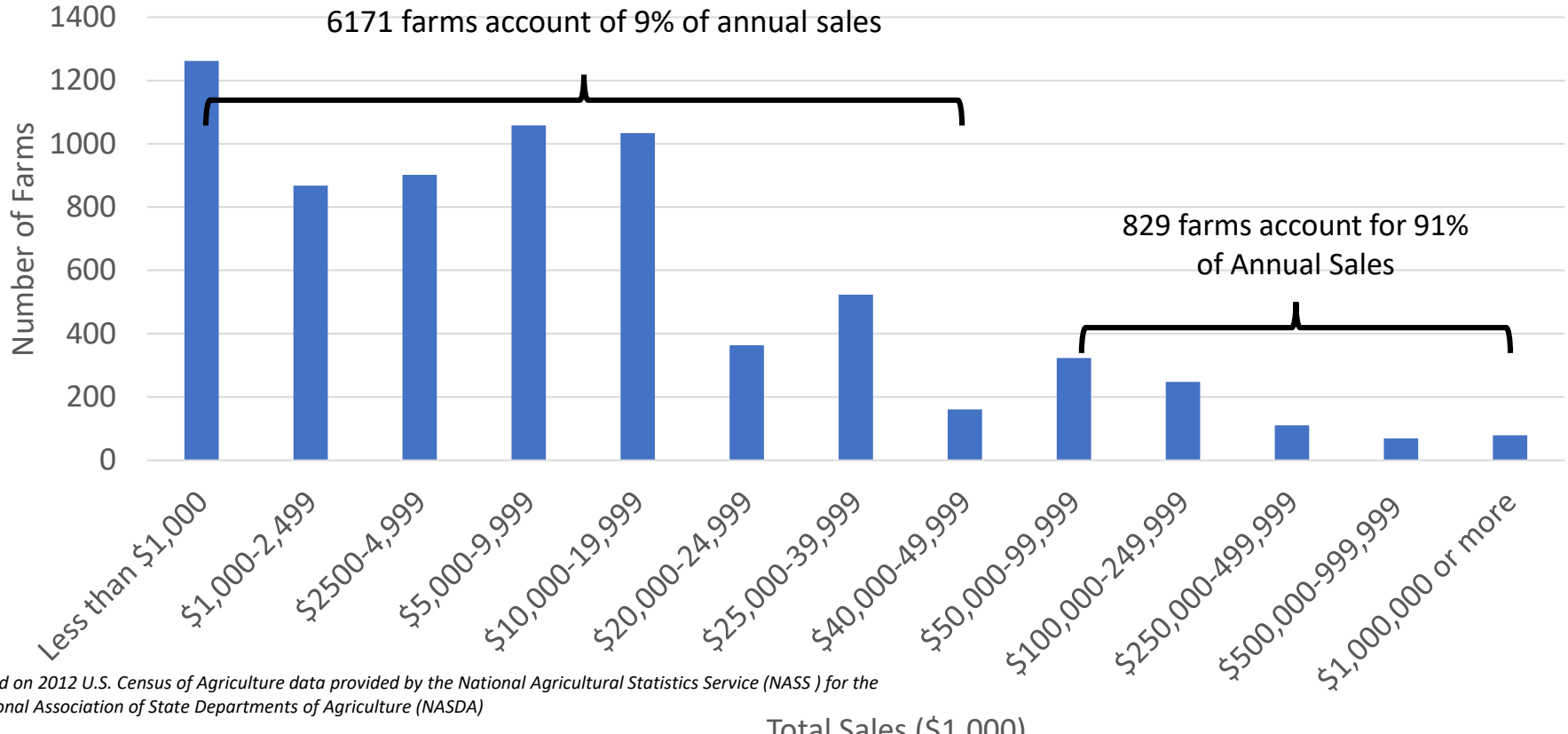
Average Size of Hawaii Farms



7,000 Farms

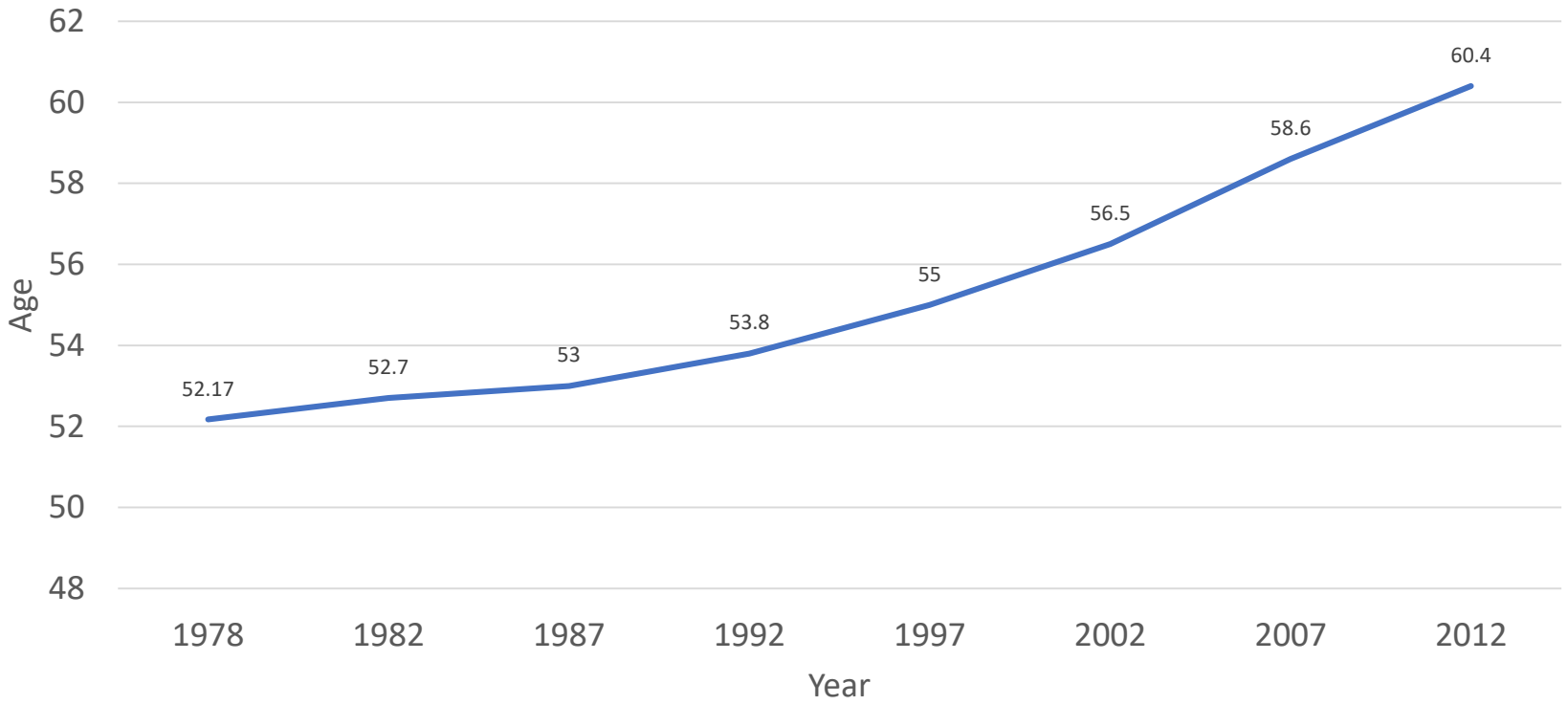
Based on 2012 U.S. Census of Agriculture data provided by the National Agricultural Statistics Service (NASS) for the National Association of State Departments of Agriculture (NASDA)

Total Sales by Size of Farm



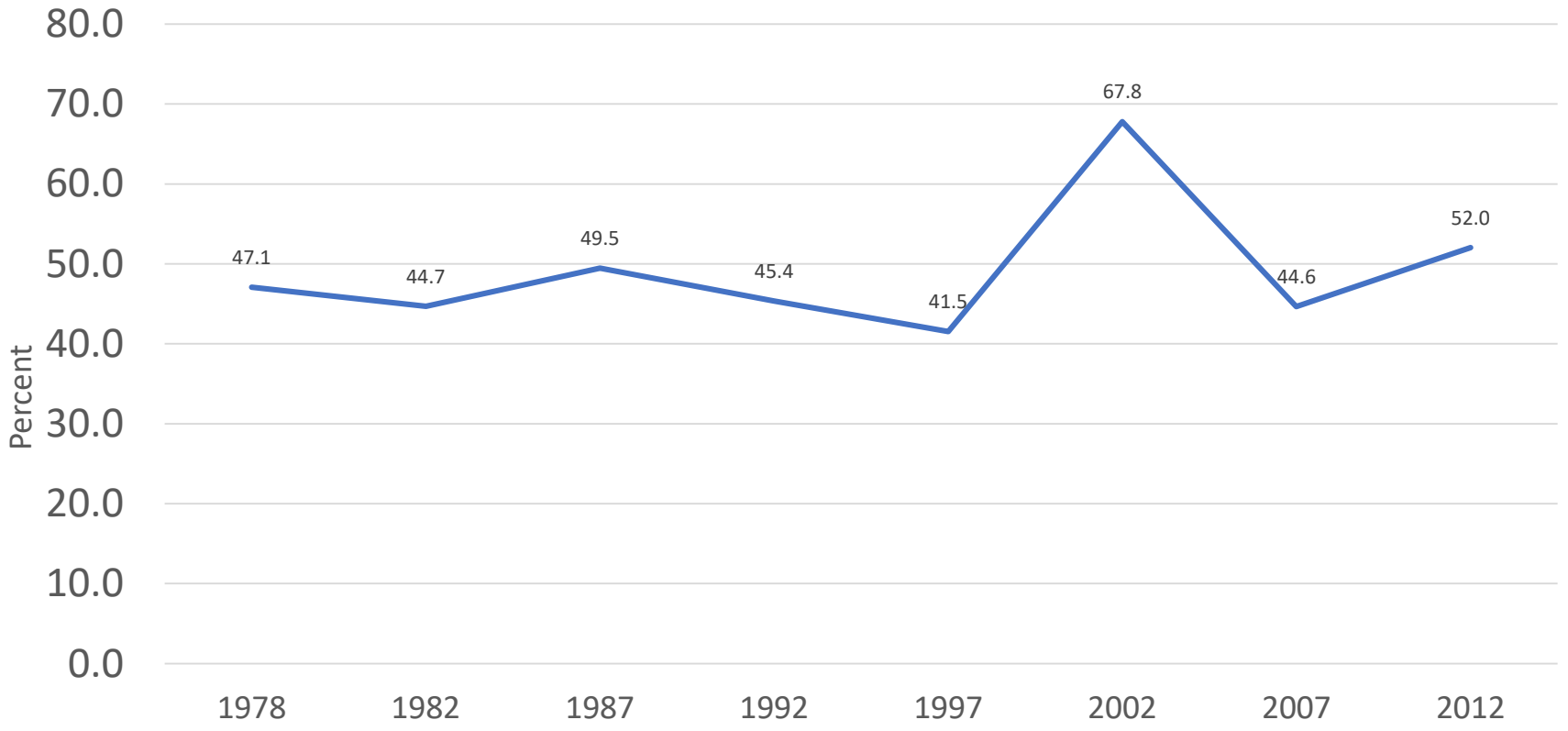
Based on 2012 U.S. Census of Agriculture data provided by the National Agricultural Statistics Service (NASS) for the National Association of State Departments of Agriculture (NASDA)

Average Age of Hawaii's Farmers



Based on 2012 U.S. Census of Agriculture data provided by the National Agricultural Statistics Service (NASS) for the National Association of State Departments of Agriculture (NASDA)

Farming as a Primary Occupation



Based on 2012 U.S. Census of Agriculture data provided by the National Agricultural Statistics Service (NASS) for the National Association of State Departments of Agriculture (NASDA)

Women Operators in HI & USA

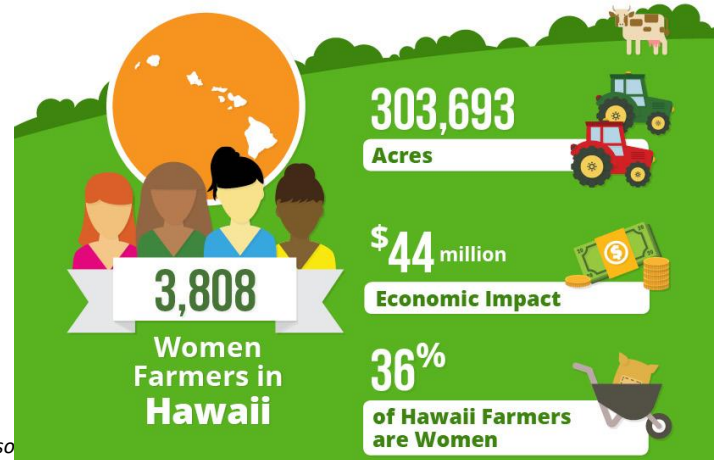
- Nationally, women operate 30% of US farmland.
- They control 7% of US farmland.
- Account for 3% of national sales
- Principal (women) operators typically have smaller farms and acreage

Based on 2012 U.S. Census of Agriculture data provided by the National Agricultural Statistics Service (NASS) for the National Asso

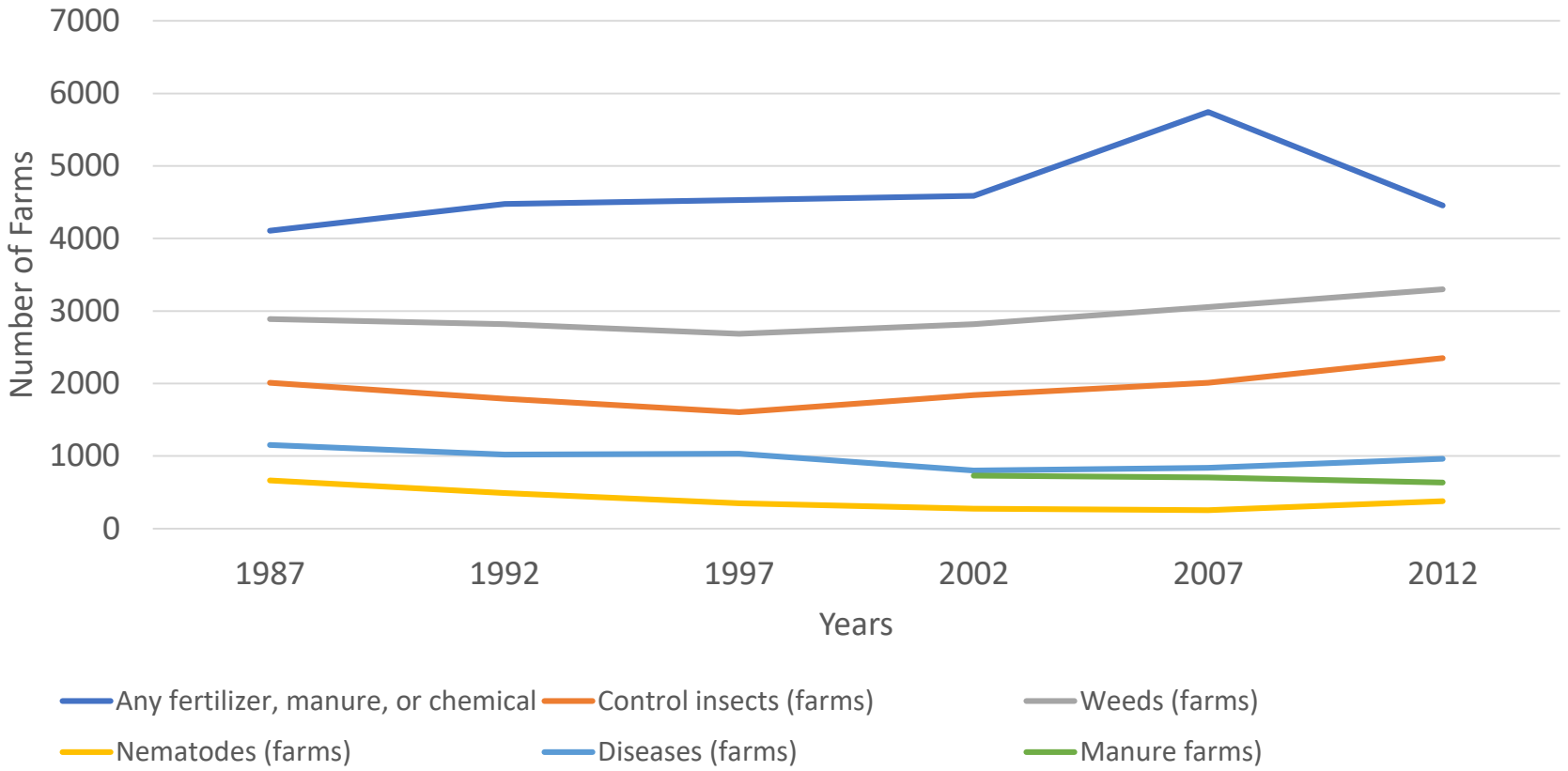
USDA United States Department of Agriculture

#WomenInAg

From the classroom to the farm to the boardroom, women in agriculture are helping to pave the way for a better future. As leaders, it is our responsibility to make sure the next generation of women are educated, encouraged and empowered to take on the challenges of meeting the world's growing food, fuel and fiber needs. To help women in Hawaii connect with other women leaders in agriculture all across the country, the U.S. Department of Agriculture has established a women in ag mentoring network. Join the conversation by emailing AgWomenLead@usda.gov or check out #womeninag on Twitter.



Fertilizer and Chemical Use Over Time



Based on 2012 U.S. Census of Agriculture data provided by the National Agricultural Statistics Service (NASS) for the National Association of State Departments of Agriculture (NASDA)

Summary of Hawaii's Agriculture Industry

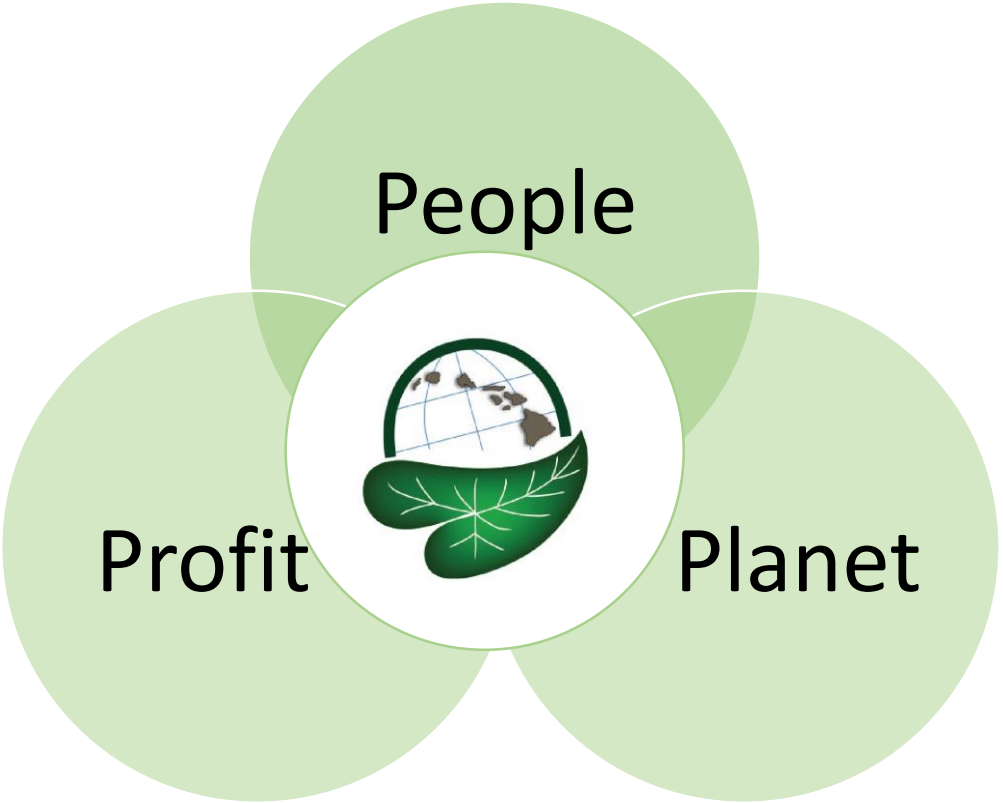
- Large producers account for majority of the annual sales
- Small producers are abundant but contribute less in annual sales
- Average age of the local farmer is 60
- Fifty two percent of our farmers are fill time operators
- We have more women farmers than the national average
- Fertilizer and chemical use (all types) are increasing

How Can CTAHR Help?

- Support the larger producers
  - Regulations such as food safety, worker protection, etc.
  - Address the cost and issues associated with pest control and nutritional inputs
- Scale up the smaller producers
  - Educational programming for programs like GoFarm Hawaii and others
  - Increase their annual sales > full time farmers
- Encourage and recruit young professionals into agriculture
  - Undergraduate, graduate and high school involvement

Sustainable and Organic Agriculture Program (SOAP)

- Established in 2008
- Certified organic research plots starting in 2009
- Statewide program focuses on:
  - Increasing farm income
  - Promoting environmental stewardship
  - Supporting prosperous farm families and communities



Advancing Sustainable Agriculture with SARE

- 92 grant projects funded since 1988
  - 5.5 million dollars in funding into Hawaii
- Sustainable and organic agriculture impacts
  - 1032 farms conducted no till practices
  - 385 farms implemented conservation tillage
  - 365 farms implemented cover cropping systems
  - 53% of producers using a new technique after reading a SARE publication
  - 79% improved soil quality through SARE project
  - 64% of producers said their project helped them reach higher sales

Based on 2012 U.S. Census of Agriculture data provided by the National Agricultural Statistics Service (NASS) for the National Association of State Departments of Agriculture (NASDA)

What is SARE?

Since 1988, the Sustainable Agriculture Research & Education (SARE) program has been the go-to USDA grants and outreach program for farmers, ranchers, researchers and educators who want to develop innovations that improve farm profitability, protect water and land, and revitalize communities. To date, SARE has awarded over $251 million to more than 6,300 initiatives.

SARE is grassroots with far-reaching impact

Four regional councils of expert practitioners set priorities and make grants in every state and island protectorate.

SARE communicates results

SARE shares project results by requiring grantees to conduct outreach and grower engagement; and by maintaining the SARE Learning Center—a library of practical publications, grantee-produced information products and other educational materials.

SARE
Sustainable Agriculture Research & Education

www.sare.org

SARE: Advancing the Frontier of Sustainable Agriculture in...

Hawaii

Project Highlight: *Finding Success with Local Fertilizers*

Because they rely on imported food, Hawaii and the other Pacific Islands face food insecurity issues. Pacific Island farmers also rely on expensive imported fertilizers with prices that continue to increase substantially. The issue is so important that participants in a 2008 Western SARE listening session in Hawaii ranked replacing imported fertilizers with local resources as the highest research, education and development priority. Local organic sources of nutrients have promise—including compost, tankage (rendered animal products), biochar and seaweeds—but more research is needed on their use.

Three SARE-funded projects on locally produced organic fertilizers are taking a step in that direction. One project evaluated quality, maturity, nitrogen-release pattern and crop growth for 10 composts through a series of lab, greenhouse and on-farm trials. It led to an increased demand for locally produced tankage and a reported increase in taro and sweet potato yields and quality when using invasive algae as a fertilizer.

The second project followed up on the promise of tankage but using it as a solution for fertigation. There was some benefit from using this recipe compared to imported liquid organic fertilizer. The third project is continuing the momentum by evaluating biochar combined with compost.

For more information on these projects, see www.sare.org/projects, and search for project numbers SW11-055, SW14-026 and SW16-021.

SARE in Hawaii
www.westernsare.org/hawaii

$5.5 million in total funding

92 grant projects

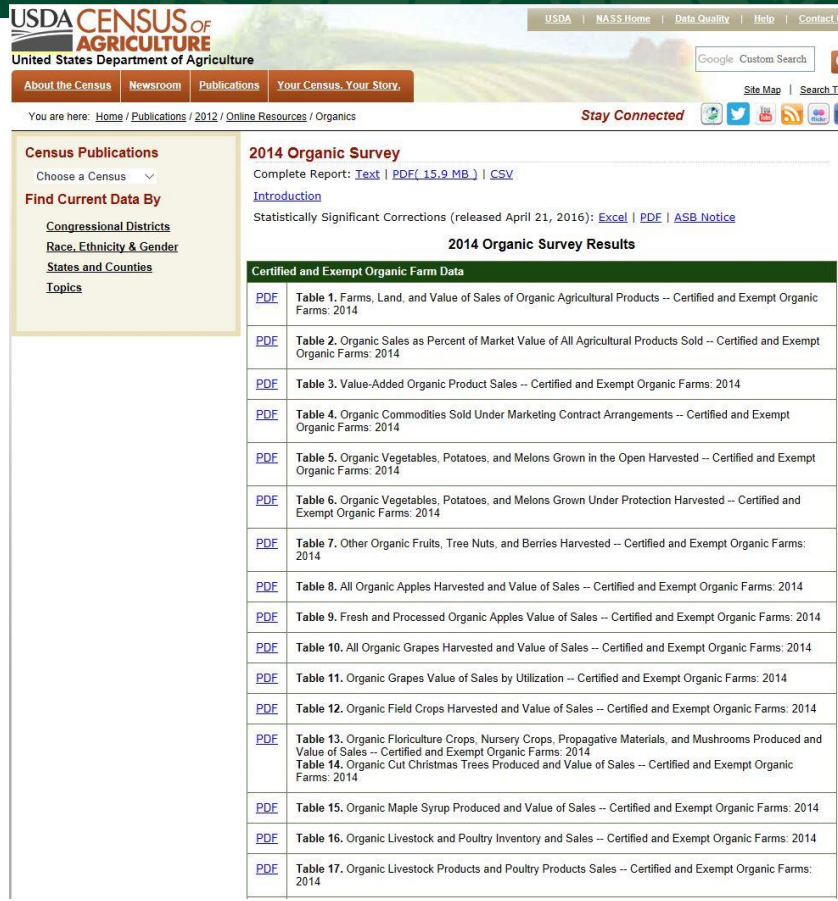
(since 1988)

For a complete list of grant projects state by state, go to www.sare.org/state-summaries

SARE's four regional programs and outreach office work to advance sustainable innovations to the whole of American agriculture.

Organic Agriculture Impacts in Hawaii

- 166 organic farms in 2014
  - Certified or exempt
- 7 farms in transition
- ~13 million in annuals sales
- ~$1.8 million in value added
- 59% increase in organic produce
- 100% increase in vegetables



USDA CENSUS OF AGRICULTURE
United States Department of Agriculture

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States and Counties
Topics

2014 Organic Survey

Complete Report: Text | PDF(15.9 MB) | CSV

Introduction

Statistically Significant Corrections (released April 21, 2016): Excel | PDF | ASB Notice

2014 Organic Survey Results

Certified and Exempt Organic Farm Data	
PDF	**Table 1.** Farms, Land, and Value of Sales of Organic Agricultural Products -- Certified and Exempt Organic Farms: 2014
PDF	**Table 2.** Organic Sales as Percent of Market Value of All Agricultural Products Sold -- Certified and Exempt Organic Farms: 2014
PDF	**Table 3.** Value-Added Organic Product Sales -- Certified and Exempt Organic Farms: 2014
PDF	**Table 4.** Organic Commodities Sold Under Marketing Contract Arrangements -- Certified and Exempt Organic Farms: 2014
PDF	**Table 5.** Organic Vegetables, Potatoes, and Melons Grown in the Open Harvested -- Certified and Exempt Organic Farms: 2014
PDF	**Table 6.** Organic Vegetables, Potatoes, and Melons Grown Under Protection Harvested -- Certified and Exempt Organic Farms: 2014
PDF	**Table 7.** Other Organic Fruits, Tree Nuts, and Berries Harvested -- Certified and Exempt Organic Farms: 2014
PDF	**Table 8.** All Organic Apples Harvested and Value of Sales -- Certified and Exempt Organic Farms: 2014
PDF	**Table 9.** Fresh and Processed Organic Apples Value of Sales -- Certified and Exempt Organic Farms: 2014
PDF	**Table 10.** All Organic Grapes Harvested and Value of Sales -- Certified and Exempt Organic Farms: 2014
PDF	**Table 11.** Organic Grapes Value of Sales by Utilization -- Certified and Exempt Organic Farms: 2014
PDF	**Table 12.** Organic Field Crops Harvested and Value of Sales -- Certified and Exempt Organic Farms: 2014
PDF	**Table 13.** Organic Floriculture Crops, Nursery Crops, Propagative Materials, and Mushrooms Produced and Value of Sales -- Certified and Exempt Organic Farms: 2014 **Table 14.** Organic Cut Christmas Trees Produced and Value of Sales -- Certified and Exempt Organic Farms: 2014
PDF	**Table 15.** Organic Maple Syrup Produced and Value of Sales -- Certified and Exempt Organic Farms: 2014
PDF	**Table 16.** Organic Livestock and Poultry Inventory and Sales -- Certified and Exempt Organic Farms: 2014
PDF	**Table 17.** Organic Livestock Products and Poultry Products Sales -- Certified and Exempt Organic Farms: 2014

Summary courtesy Nancy King, based on 2014 USDA Organic Survey
https://www.agcensus.usda.gov/Publications/2012/Online_Resources/Organics/

Statewide SOAP Program

- Ag Professional Trainings (annual)
- Applied Research
- Soap Learning Centers
- Organic certified plots
- Outreach materials and events
  - Workshops, field days, traveling team, etc.
- Website Information
- Online Quarterly Newsletter
  - Topic Leaders
- Social Media Awareness Campaigns
- Testimony to increase awareness
- Go Farm & Master Gardener instruction and field support
- Student organic farm training (SOFT)

Simply Sustainable

Grants and Education to Advance Innovations in Sustainable Agriculture

WESTERN SARE Sustainable Agriculture Research & Education

June 2017 | The Western SARE Semi-Annual Newsletter | Volume 11, Issue 1

IN THIS ISSUE:

Western SARE:
Rhonda Miller, Coordinator
Utah State University
4865 Old Main Hill
Logan, Utah 84322-4865

Hawaii Professional Development Program Supports Priority Areas

Through effective use of workshops, social media, and publications, the Hawaii Professional Development Program (PDP) successfully disseminated in 2016 research-based information to support three priority areas, identified by Hawaii's agricultural professionals in the 2015 Hawaii-Western SARE Needs Assessment Survey: 1) pest management, 2) plant / soil nutrition, and 3) food safety.

Through post-event evaluations, the state co-coordinators, Ted Radovich and Jari Sugano, found that one hundred percent of program participants rated the Hawaii PDP program good to excellent based on usefulness of information. One hundred percent of participants indicated that events improved their awareness of sustainable and organic agricultural topics covered and improved their knowledge in new areas.

Tour leaders at the University of Hawaii.

Importantly, expanded partnerships across University of Hawaii – College of Tropical Agriculture and Human Resources (UH-CTAHR) accelerated efforts at adapting sustainable agriculture systems to tropical ecosystems, by crossing departments, linking with community colleges, agricultural NGOs, and local agricultural consultants.

See HAWAII, page 6

Annual Ag Professional Training (WSARE)

Incoming WSARE co-leaders
Sharon Motomura-Wages & Jensen Uyeda

SARE
Sustainable Agriculture
Research & Education

Applied Research

- Local Fertilizers
- Pest Control
- Variety trials
- New crops
- GE/Conventional/Organic

Western SARE is one of the biggest sources of funding for researchers and graduate students developing new tools, techniques and knowledge to improve the sustainability of Western ranching and farming.

Research and Grad Student Projects

Project Develops Local Fertilizer Options for Hawaii

At the Western SARE conference held in Hawaii, stakeholders identified replacing imported fertilizers with local resources as the highest priority.

According to Theodore Radovich at the University of Hawaii, possible inputs include commercial green-waste composts, rendered animal products and invasive algae from coral reef remediation projects. These by-products are readily available, but bottlenecks exist that inhibit use and adoption by growers.

To address these problems, Radovich developed a Western SARE-funded project to conduct a series of greenhouse and on-farm trials in cooperation with university faculty, commercial growers and industry partners. Radovich and his project team evaluated quality, maturity, nitrogen release patterns and crop growth for 10 composts through lab incubation and greenhouse trials. They collected samples of major algae invasive species and of rendered animal products.

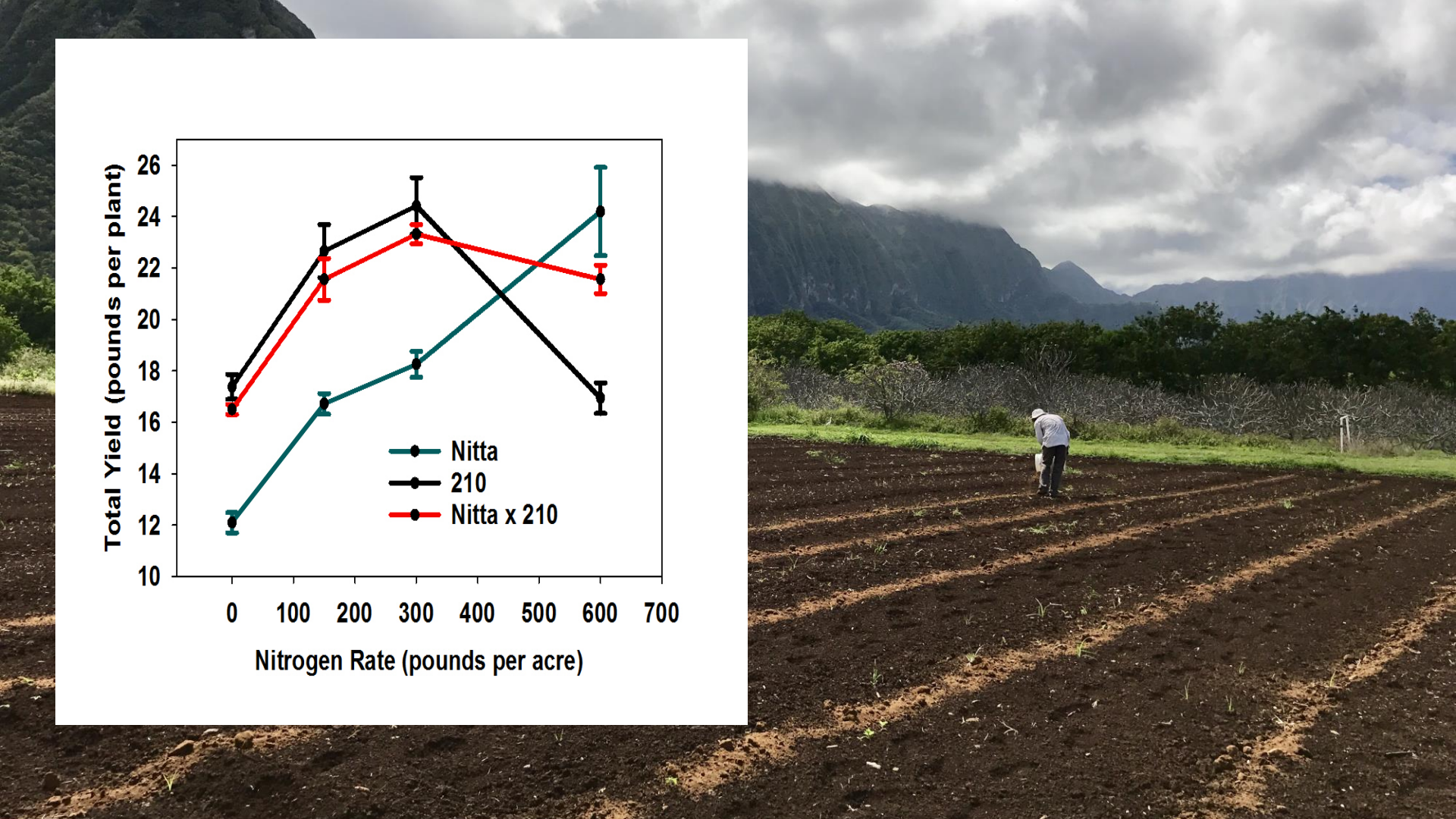
Findings include:

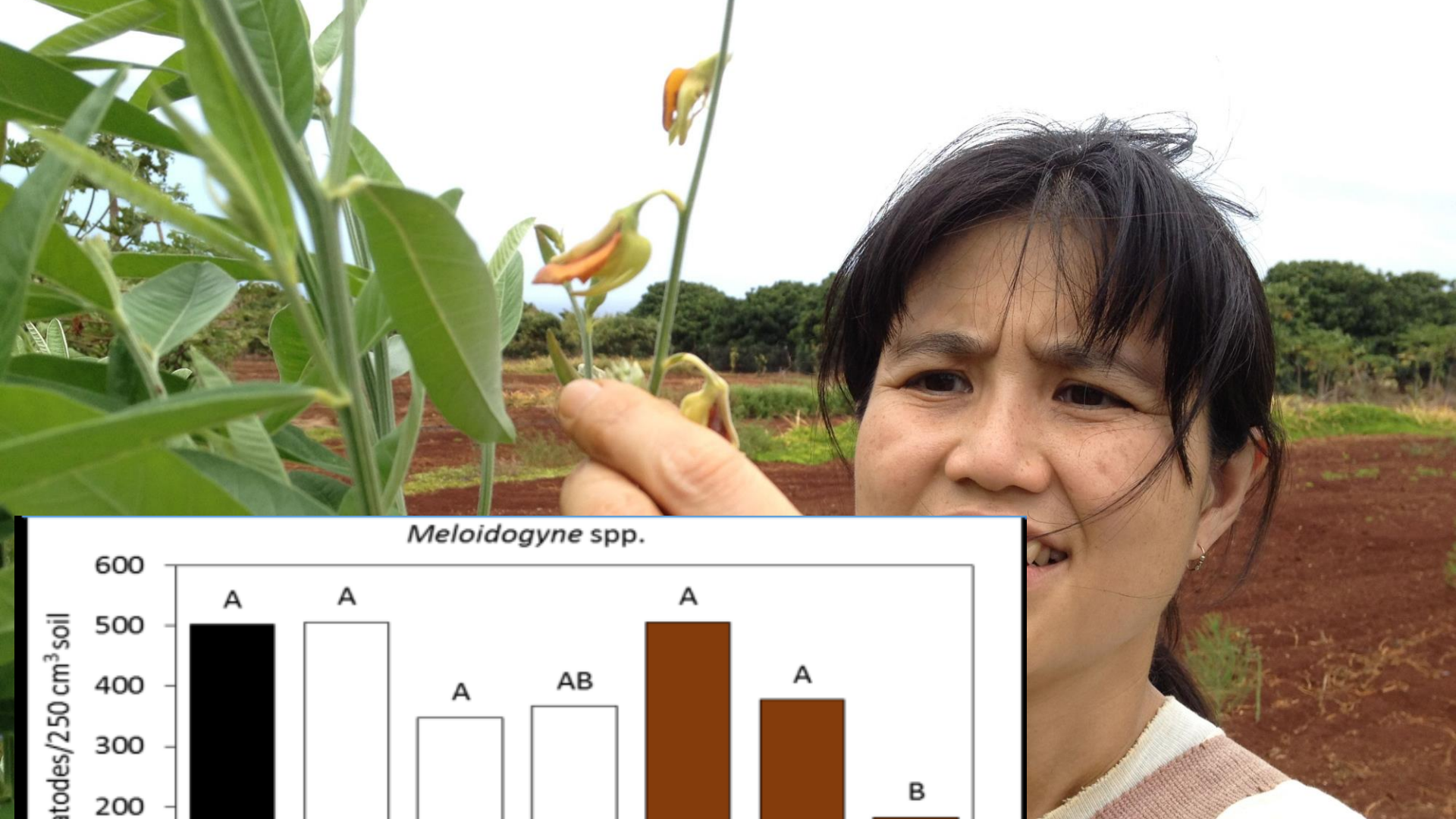
- Bio-security protocols have reduced concerns of algae spread to other areas.
- There is an increased demand for locally produced rendered animal products. The increased reliance on local inputs will reduce the demand for off-state fertilizers.
- Farmers utilizing the invasive algae, mainly taro and sweet potato farmers, are reporting increases in the yield and quality of their crops.
- There is increased incorporation and utilization of locally produced composts among small-farm holders. This may lead to increased net benefits, due to reduction in production cost.

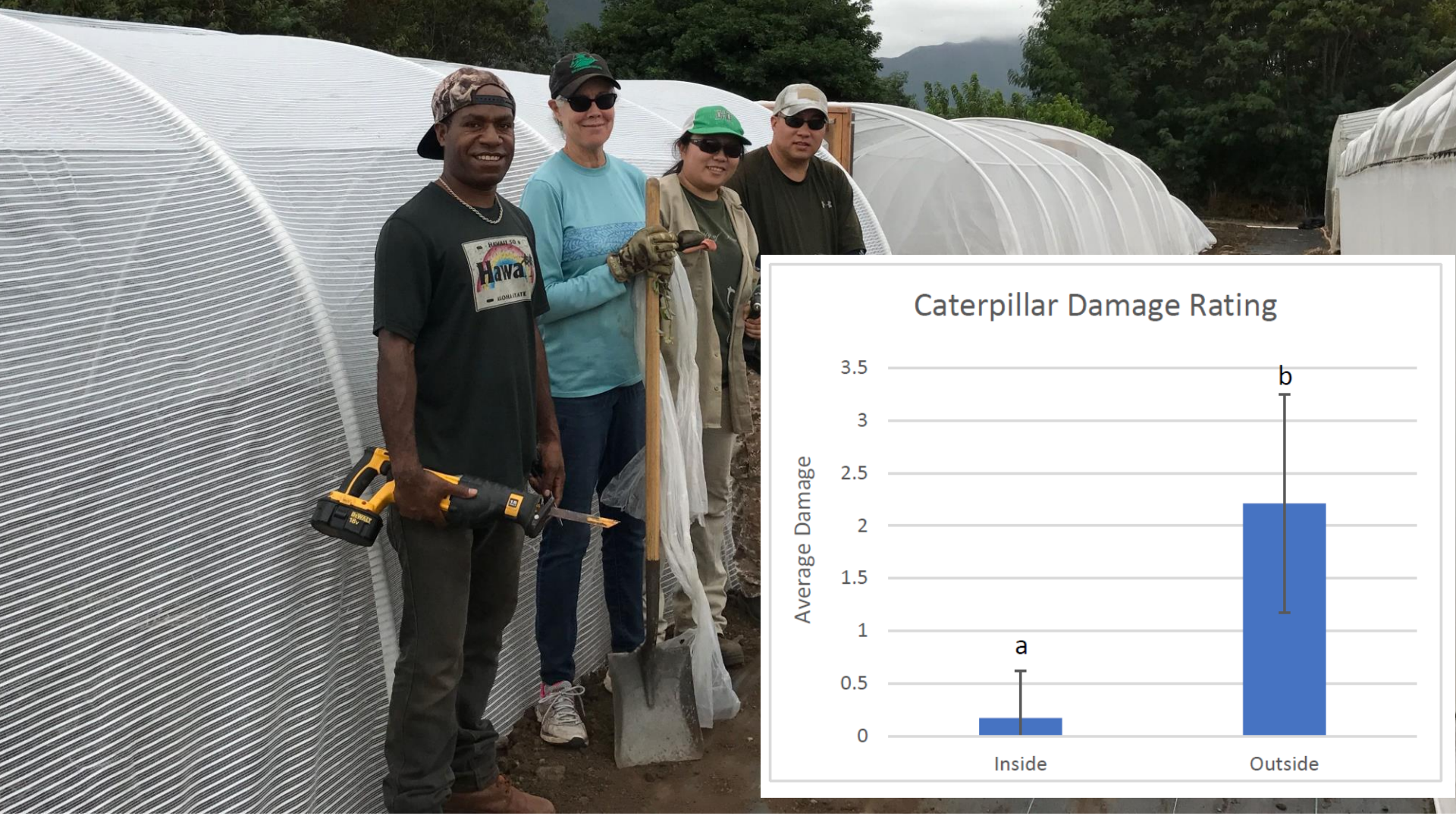
Details are at mysare.sare.org/sare_project/sw11-055/


Conventional Applied Field Research

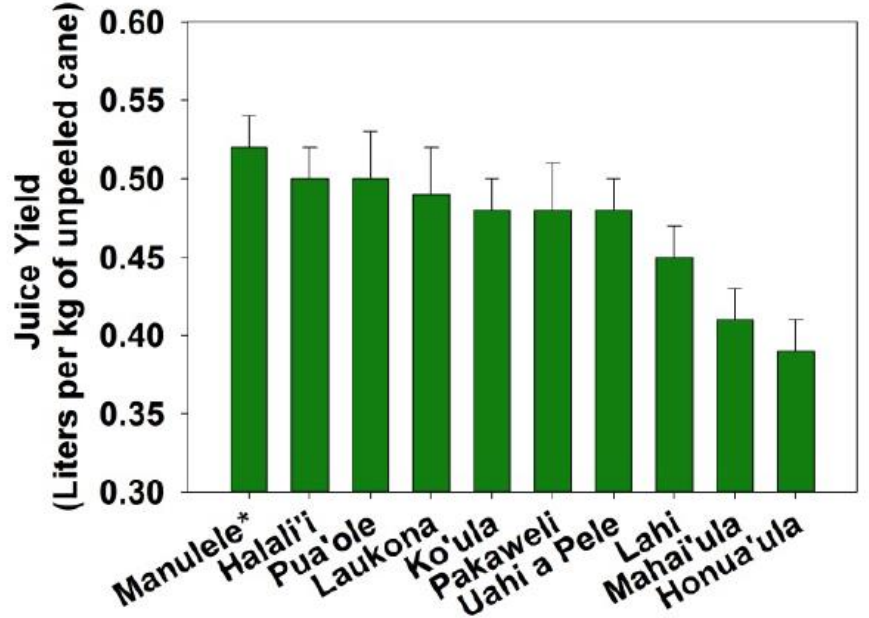

Certified Organic Research (2009)
USDA
ORGANIC


Total Yield (pounds per plant)
26
24
22
20
18
16
14
12
10
0
100
200
300
400
500
600
700
Nitrogen Rate (pounds per acre)
Nitta
210
Nitta x 210


Meloidogyne spp.
600
500
400
300
200
A
A
A
AB
A
A
B
todes/250 cm3 soil


Caterpillar Damage Rating
Average Damage
3.5
3
2.5
2
1.5
1
0.5
0
a
b
Inside
Outside

Research Conducted on Organic Plots




Statewide Extension Activities
20 / year


Hands-on demonstrations


UNIVERSITY OF HAWAI'I
MASTER GARDENER

Hands-on opportunities

Connection to community

x contacts/ year

CTAHR NEWS

Search

Current Year's Articles

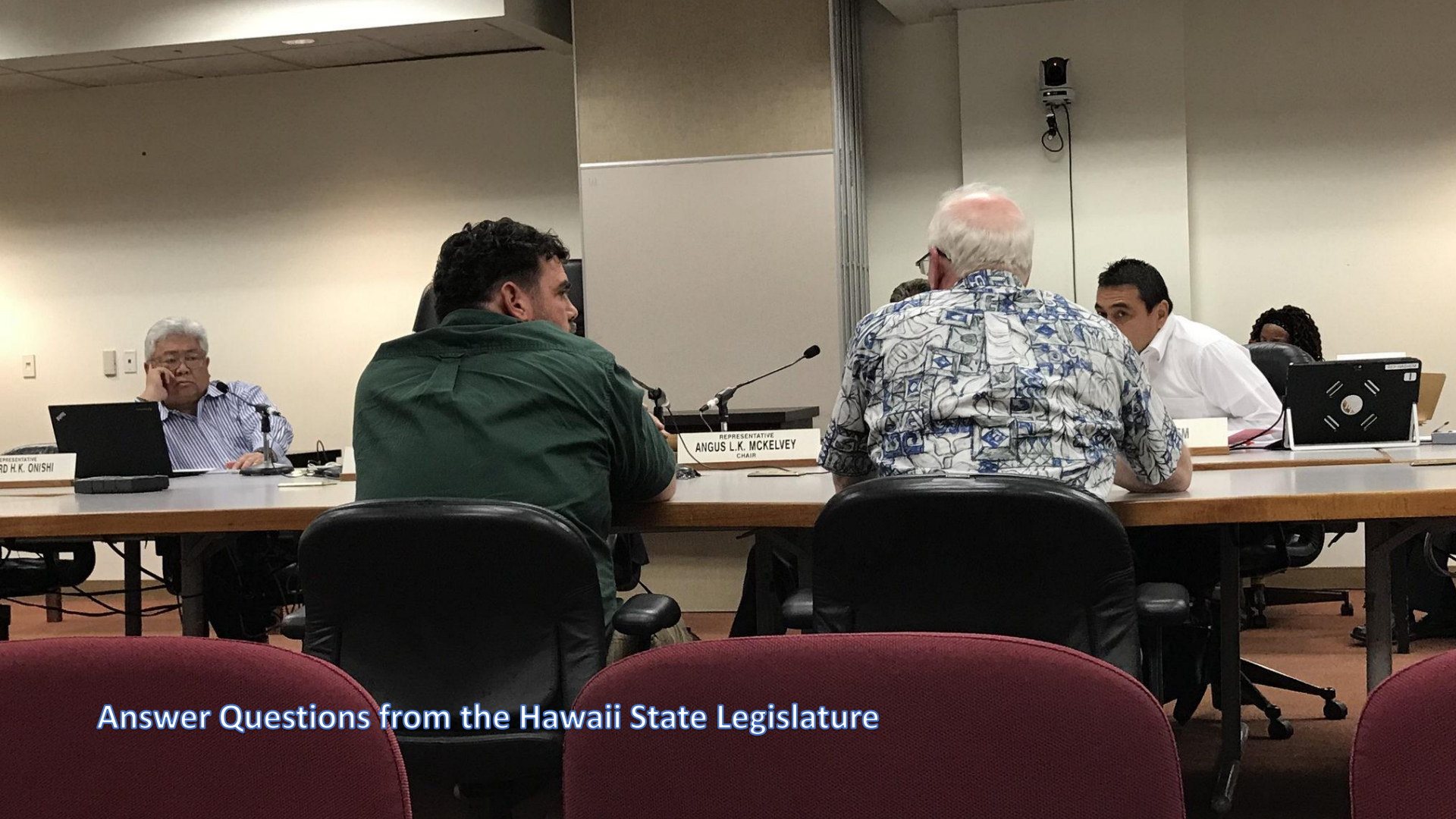
Aquaponics and Health

21 December 2017 | Author: Cheryl | Number of views: 195 | 0 Comments

Community coordinator Ilima Ho-Lastimosa is featured in a UH News video about the Ola HAWAI'I Specialized Research Center, a multidisciplinary group that's been granted $23M over the next five years to address disparities in health experienced by native Hawaiians and other disadvantaged populations. Ho-Lastimosa and Ted Radovich, both from Tropical Plant and Soil Sciences, are co-principal investigators on one of the six pilot projects of the Center—"Backyard Aquaponics: Promoting Healthy Eating among Native Hawaiian Families." Along with principal investigator Jane Chung-Do of UH Manoa's Office of Public Health Studies, they are helping families in the Waimanalo homestead lands establish home

Deployment of SOAP Traveling Team

Education & Awareness
Ag at the Capitol (Annual)



Answer Questions from the Hawaii State Legislature

Education & Awareness
Farm Fair (Annual)

Certified organic seeds


Molokai Mix 1.15/2.9

Sustainable and Organic Agriculture Program

Over 1,000x contacts

E Komo Mai

The Sustainable and Organic Agriculture Program (SOAP), of the University of Hawai'i at Mānoa, College of Tropical Agriculture and Human Resources

Sustainable and Organic Agriculture

Across Hawaii, farmers and ranchers are experimenting with different ways of producing agricultural products, novel approaches which aspire to bring social, economic and environmental well-being to both farm families and to the rural communities in which they live.

Our Commitment to Sustainable Agriculture

Hawai'i has a centuries-old tradition of sustainable food production. Pre-contact Hawaiian agricultural systems were closely linked to the natural environment to ensure long-term productivity and support hundreds of

Our Partners

To maximize the impact of our limited resources and address the breadth of training needs across our island chain, we continue to collaborate with other programs within UHM & CTAHR to finance and provide relevant training programs for CES agents and specialists, USDA

Sign Up Now

Providing science-based information to serve Hawaii's Farming Community

Hānai'Ai

Over 1,000 Subscribers

The Food Provider | **March | April | May 2018**

Sustainable and Organic Agriculture Program

College of Tropical Agriculture and Human Resources

Aloha,

Welcome to the Winter 2017/2018 issue of Hānai'Ai, the sustainable agriculture newsletter of the College of Tropical Agriculture and Human Resources (CTAHR) at the University of Hawai'i. To visit the SOAP website, click here. Mahalo to the Hawai'i Department of Agriculture for their continuing support of the website, Hānai'Ai, and other SOAP activities to serve Hawaii's growers. To visit the website, click here. Mahalo to the Hawai'i Department of Agriculture for their continuing support of the website, Hana'Ai, and other SOAP activities to serve Hawaii's growers.

In this 'Olena the Hawaiian word for Turmeric (*Curcuma longa*), is a prominent focus. This crop has recently attained worldwide interest for its medicinal qualities, and is gaining popularity in production as a high valued crop in Hawaii as demonstrated by our Feature Farmer Kevin Flanagan. Additionally, we continue to highlight recent research in effectively using screen houses in sustainable growing.

We hope you find this issue of Hānai'Ai useful, and welcome your input.

In this Issue

Featured Farmer
SeaSons: Waimanalo, O'ahu

Area under production: 4 acres.

Years farming in Hawai'i: 5 years

Crops grown: Multiple turmeric varieties such as Black, Hawaiian Red, Mango ginger, and Indria yellow. Also, mangos,

Sustainable & Organic Research & Outreach News

News from Hawai'i's Researchers and Extension

Use of Resistant Varieties in Combination with Screen Systems

Sugano, J., L. Okumura, J. Silva, J. Uyeda, T. Radovich, S. Motomura-Wages, R. Corrales and K.H Wang
University of Hawai'i at Mānoa, CTAHR

ARCHIVES

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Curcuminoid Content of Tumeric Grown in Hawaii

J. Calpito, A. Huang, T. Radovich, and JP. Bingham,
University of Hawai'i at Mānoa, CTAHR

Turmeric is historically important throughout the tropical Asia-Pacific region, including Hawai'i where it is known as 'olena. 'Olena has recently re-emerged as an high value crop in Hawai'i, due in part to increased demand world wide for its medicinal value. The anti-inflammatory effects and other observed health benefits of turmeric are attributed in part to compounds called Curcuminoids. Six (6) varieties of turmeric and 5 related species were field-grown in Waimanalo, O'ahu from May 2017-January 2018 and analyzed for their Curcuminoid content. Curcuminoid content of turmeric ranged from ~1-9% (13-94 mg/g) on a dry weight basis with the highest concentrations (9%) observed in 'BKK'. See poster **here**

Sources for Hawaiian-grown turmeric:

AlohaTurmeric

Biker Dude

FMI: Theodore Radovitch, Email: theodore@hawaii.edu

UH CTAHR Macnut Variety Trial: Preliminary Data

Elihu Isele and Alyssa Cho
University of Hawai'i at Mānoa, CTAHR

Hawaii has historically been the leader in the world for macadamia research and selecting commercial varieties. Many of the varieties currently produced are from the selection done in the 1930s. This **preliminary data** was collected from an assortment of mac nut varieties, originally planted by Dr. Mike Nagao in 2001, and were chosen for their high kernel quality and tree shapes.

Social Media

Each Year:

- Almost 1 million potential reach (re-posts)
- ~150,000 impressions (direct messages to followers)
- Almost 1,000 on-line engagements (clicks/comments etc.)

Tweets 1,772 | Following 2,613 | Followers 2,119 | Likes 46

CTAHR Sustainable Ag
@SOAPHawaii

University of Hawaii at Manoa
ctahr.hawaii.edu/sustainag/
Joined February 2013
1,129 Photos and videos

Tweets | Tweets & replies | Media

CTAHR Sustainable Ag @SOAPHawaii · Jul 28
CTAHR's Rachel Novotny presents on efforts to grow agriculture programs in public schools at the Sustainable Agriculture Education Association (SAEA) Conference

CTAHR Sustainable Ag @SOAPHawaii · Jul 27
Some of the beautiful proteas at the Kula Agricultural Reseach Station on Maui. The bees were happy.

4 | 15

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O'ahu RC& @OahuRC&
HEEA @HiEEA
UH DURP @UH_DUR
Kupu @kupuhaw

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The docu-series pre 10/9c on @Paramo
Promoted by Parar
#DeusSalveORei 61.6K Tweets
#yks2018 104K Tweets
#LoveIsland 244K Tweets
#TemptationIsland 113K Tweets
ماهي_اسباب_الطلاق 62.7K Tweets
Lance Lynn 3,427 Tweets
Roberto Osuna 8,508 Tweets
Tirei 5% 3,658 Tweets
MoviePass 22.9K Tweets

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Sustainable and Organic Program at CTAHR
@SustainAgCTAHR

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Manage Promotions

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+ Add a Button

Write a post... | Photo Album | Live Video

Write a post...

Photo/Video | Feeling/Activ... | Write Note | ···

Continually Reach More People
Get more clicks each month with an ongoing promotion

Get More Page Likes
Help people find and like your Page

Photos

Education

Our Story
+ Tell people about your business

0% response rate, day or more to respond
Respond faster to turn on the badge

762 likes 0 this week
Joni Kamiya and 27 other friends

763 follows

See Pages Feed
Posts from Pages you've liked as your Page

2 post reach this week

762 people like this and 763 people follow th
Joni Kamiya and 27 other friends

Community See A

Sharon Wages and 27 other friends like this

Invite Friends

762 people like this

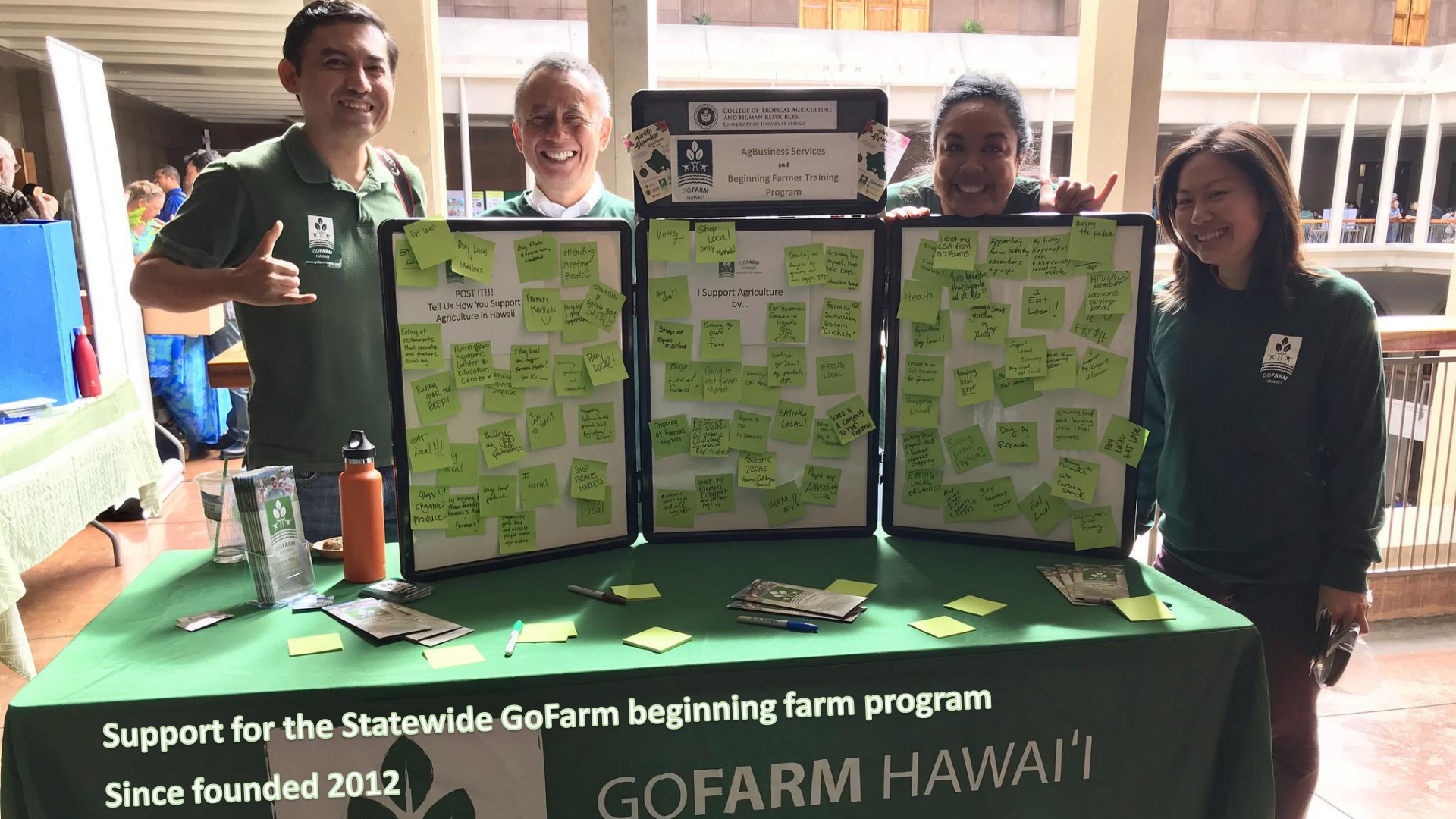
763 people follow this

0255/photos/452051424886845/

Connecting stakeholders with statewide research stations

Support for the Statewide Master Gardener Program

Urban and backyard gardening program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UNIVERSITY OF HAWAI'I AT MĀNOA
AgBusiness Services
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COLLEGE OF TROPICAL AGRICULTURE AND HUMAN RESOURCES

Experiential Learning from Seed to Sale

Co-curricular activities (e.g. SOFT) and formal classes provide opportunities for hands-on learning.

Examples of S.T.E.M. Skill Development

CTAHR's Student Organic Farm Training (SOFT) participants teach first graders plant science through growing vegetables that the students eat at the end of the semester.

Every year CTAHR scientists mentor high school students for science fair and internships.

For More Information

https://cms.ctahr.hawaii.edu/soap/