

2 0 1 5
IMPACT REPORT
Q3

THIRD QUARTER



People,
Place,
Promise



COLLEGE OF TROPICAL AGRICULTURE
AND HUMAN RESOURCES
UNIVERSITY OF HAWAII AT MĀNOA

*The founding college of the
University of Hawai'i, established 1907*

The University of Hawai'i is an equal opportunity, affirmative action institution.

1907

THIRD QUARTER

Q3

College of Tropical Agriculture and Human Resources
People, Place, Promise

Local



“Locally grown and produced foods are better for our economy, for the environment, and for food security.”

Eating local has become a common, even commonplace, concept and goal. We all understand that locally grown and produced foods are better for our economy, better for the environment, and better for food security. Often they taste better, as well. But a host of issues surrounds eating local, from discovering what crops can be produced in a given area to making sure that their production is practically and financially feasible. CTAHR faculty, students, and staff are addressing the many concerns that go into facilitating the locavore lifestyle. Molokaʻi Extension agent Alton Arakaki is coordinating a statewide variety trial of peaches specially adapted to Hawaiʻi’s warmer climate, while Agent Jari Sugano is helping to keep a more established, and lucrative, crop safe and healthy by teaching growers how to follow the changing regulations surrounding pesticide use on basil. Graduate student Jessie Chen is investigating what factors make growing and selling oysters economically viable for Island producers. And the UH Honeybee Project is focusing on the pollinators that keep so many of Hawaiʻi’s crops pollinated and producing. All the stories in this quarter’s issue go to show that for those who want to buy local, CTAHR matters.

Aloha,

Maria Gallo

Maria Gallo, Ph.D.

Dean and Director for Research and Cooperative Extension

www.ctahr.hawaii.edu

www.facebook.com/uhctahr

twitter.com/ctahrnews

instagram.com/ctahr

Bee Local

A little-known fact is that one of Hawai‘i’s most lucrative agricultural exports is queen bees. The Islands’ favorable climate and absence of many pests and diseases of bees make them a natural place to nurture bee queens, which sell for up to \$25 each on the Mainland and internationally. However, due to quarantine laws, *importing* bees to the Islands is not possible. This makes it even more crucial to safeguard the bees already here, which is where CTAHR comes in.

Honeybees pollinate many tropical fruits and nuts and are key pollinators for vegetable crops, including cucurbits such as melons, squash, and cucumbers—\$200 million worth of crops statewide. However, large colony losses experienced recently on O‘ahu and the Big Island have awakened concern for the preservation of honeybee populations and the sustainability of bee-dependent fruit, nut, and vegetable production in Hawai‘i.

The UH Honeybee Project researches honeybee colony health and pest-management strategies, crop-pollination needs, and the development of “pollinator-friendly” farms. It provides information to beekeepers and farmers about sustainable methods for pest control, encourages newcomers to beekeeping, provides advice to growers who require bees for their crops, and is developing a pilot pollinator curriculum for elementary school children. The group’s goal is to teach beekeepers and growers how to keep bees using organic methods, find alternative farming practices that reduce pesticide input, and promote pollinator-friendly agroecosystems.

Research conducted by the Honeybee Project has helped to develop a new formic acid-based miticide that has successfully reduced the spread and effects of the Varroa mite, a devastating parasite of the honeybee pest. CTAHR’s bee team evaluated the efficacy of this new bio-pesticide in collaboration with local beekeepers, the manufacturer, and HDOA. Hawai‘i’s beekeepers are now leading the way at a national level in the use of non-synthetic chemicals to control the destructive mite.

Most recently, the Honeybee Project has been focusing on the health of the pollinator community as a whole. While diseases and pests can be mitigated in managed bees, they have decimated feral honeybees, which historically pollinated the majority of crops in Hawai‘i, and the Bee Project’s researchers are now working to protect native pollinators as well.



Graduate student Scott Nikaido and Dr. Ethel Villalobos suit up to check honeycombs in a research hive.



A Pearl of Hawai‘i Aquaculture

After a hiatus of more than three decades, oysters are starting to be grown commercially in Hawai‘i. Global warming-induced changes such as seawater acidification have made oyster production in parts of the Mainland problematic, and so far Hawai‘i is less affected by this trend. The state’s warm and nutrient-rich waters are ideal for the bivalves, allowing them to mature faster, and the growing trend towards eating local is driving a burgeoning market for Island-grown oysters. In an acknowledgement of Hawai‘i’s native cultural methods of food production, the oysters are being grown in loko i‘a, or traditional fishponds.

Conditions, both environmental and economic, seem ideal for this new product. But things may not be so simple. Jessie Chen, a master’s student in the department of Natural Resources and Environmental Management, undertook a study of the possible costs and benefits of such an industry under advisor PingSun Leung and collaborators at UH-Hilo’s Pacific Aquaculture and Coastal Resources Center and the University of Alaska. She points out that such an analysis has never been done and is necessary due to the unique aspects of growing oysters in this Pacific island state.

The recent creation of a long-needed water quality-monitoring program required to classify shellfish-growing areas is crucial, Ms. Chen explains. However, other food-safety considerations can raise the cost of raising oysters considerably. For example, the Hawai‘i State Department of Health may require that they undergo a 48-hour cleansing process using artificial seawater before they are sold, depending on water quality. This treatment, she discovered, which most growers will likely have to incorporate, can amount to a large percentage of a producer’s operational costs. Complex permitting processes involving restoration of the loko i‘a, and high labor costs for the necessary hand-harvesting of the shellfish are other potential hurdles.

Using data collected from a small-scale local oyster grower, Ms. Chen developed a spreadsheet model for analyzing the economic viability of such an operation. Her results showed that net return is near the break-even point and is highly dependent on the optimal levels of key variables, including oyster mortality rate and market price. But armed with this knowledge, growers now know what they have to do to succeed...and make Hawai‘i-grown oysters the sought-after commodity they deserve to be.



Hawai‘i’s warm, nutrient-rich waters are producing delicious oysters, more quickly than on the Mainland.



Pretty Peachy

Peaches aren't a new crop in Hawai'i...but good peaches just might be. The tasty and popular fruit hasn't previously done well in the Islands. A CTAHR publication from 1973 discourages growing peaches in the Islands, explaining that fruit flies would damage the crop too severely and there were few varieties not requiring chilling temperatures rarely found here. A "Hawaiian" variety of peach is described as "poor quality, unattractive, low yielding," in the *USDA Handbook of Peaches and Nectarines*. But Moloka'i Extension Agent Alton Arakaki is hoping to change all that. CTAHR's extensive fruit fly-management program has helped to solve the first problem, and when low-chill peaches were developed in other warm parts of the world, Mr. Arakaki and his team swung into action.

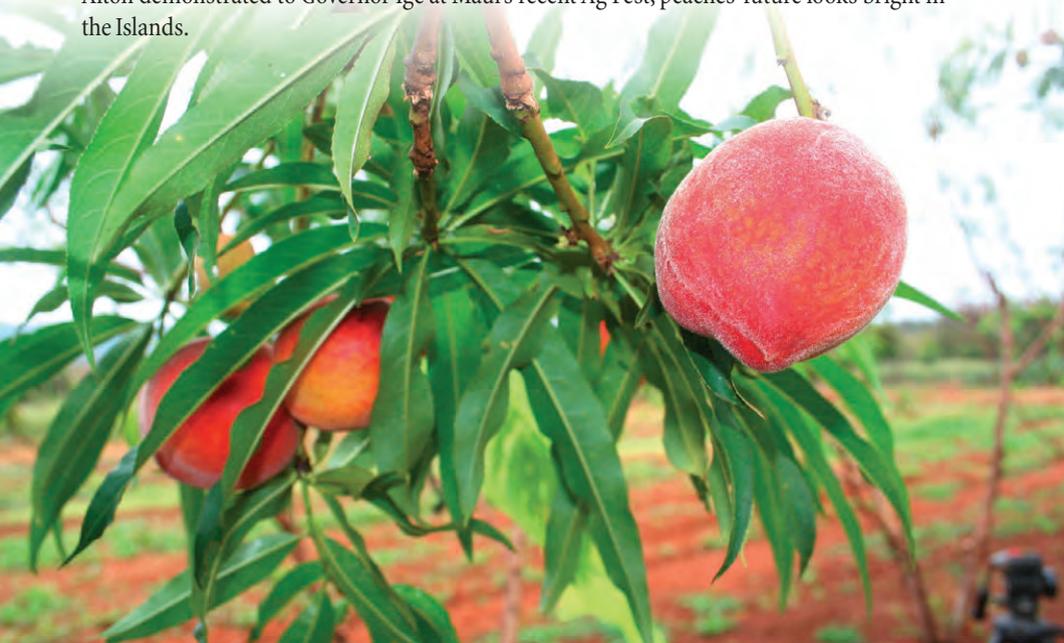
In 2010, with the guidance of peach experts from Texas and California, a low-chill peach variety trial was installed at CTAHR's Moloka'i Applied Research and Demonstration Farm. In 2012 and 2013 the trees fruited, having had no period of chill below 45°F. Now CTAHR has begun a statewide low-chill peach variety trial with four varieties: Tropic Snow, Tropic Beauty, Tropic Prince, and Tropic Sweet, all publicly available, at 50 cooperator and CTAHR sites. Because Hawai'i has many growing microclimates, it's very possible they will find locations that are ideal for growing peaches. The sight of a peach orchard in full, scented bloom or heavy with velvety fruits is an unfamiliar but welcome sight in these areas.

Extension agents and cooperators are monitoring and recording the growth characteristics, productivity, and fruit quality of the varieties. Agents have had to learn many new skills at train-the-trainer workshops in order to initiate and participate in these trials, including variety trial data collection, fruit sizing, tree girdling, fruit thinning, tree pruning, and bird management. They then visit cooperators to advise them on growing and pruning techniques.

Much remains to be done if peaches are to be a viable possibility: after establishing the best varieties for the climate, growers will need to learn harvest and post-harvest techniques. Down the road will come potential value-added products such as jams and chutneys. But as Alton demonstrated to Governor Ige at Maui's recent Ag Fest, peaches' future looks bright in the Islands.



Extension Agent Alton Arakaki shows off the fruits of his labors.



Local Growers and the Law

Growers know it's not just what you grow; it's how you grow it. Basil, especially the Thai and sweet varieties, is integral to much local cooking. The fragrant herb is also one of Hawai'i's most lucrative crops, with a farm-gate value of over \$5 million both in the state and as an export. However, it's host to a number of pests as well, including basil downy mildew. Many growers choose to use pesticides on their crops, but making sure they know how to apply them properly is an important question, one CTAHR is addressing.

The Department of Health, which conducts random sampling of crops for pesticide compliance, recently discovered pesticide residues remaining after an O'ahu farm had used an insecticide inappropriately on Thai basil. The farm was ordered to destroy about 5,000 pounds of the herb and undergo three months of pesticide sampling of all its crops to make sure allowed pesticide levels are not surpassed.

Something similar occurred previously, when an unauthorized pesticide was found on basil from four farms. CTAHR's Local and Immigrant Farmer Education (LIFE) program, Risk Management Hawaii, IR4 Minor Crop Registration program, Food Safety program, and Basil SWAT Team all joined with the USDA and HDOA to address farmers' issues, concerns, and possible confusions. Educational sessions covered common basil pests and diseases, pesticides registered for use on basil in Hawai'i, how to use them safely, and the HDOA pesticide inspection process. Later their "Basil Road Show" demonstrated how to calibrate pesticide sprayers, place crops in groups for maximum efficiency in spraying, and establish field trials to prevent development of chemical-resistant fungi or insects.

None of the farms cited in 2012 was involved in the more recent incident. Now CTAHR is initiating another series of educational events and workshops to ensure that the next generation of growers understands the laws relating to pesticides and the techniques that will keep them in compliance with it. The college also continues working on new ways to manage pests, partnering with collaborators for variety screening, registering new fungicides, and assessing the use of irradiation to kill pathogens post harvest and avoid unnecessary chemicals. The future of growing basil—and other crops—in Hawai'i is strong, but the tools to control pests and diseases must be correctly applied for a vibrant and successful industry.



Extension Agent Jari Sugano (center) is initiating another series of educational events to ensure that growers understand how to best manage fungi and insects.

