On the Defense

One of the good things about Kaua‘i is what it doesn’t have: a number of invasive pests found on other islands. And Roshan Manandhar is helping to make sure it stays that way.

Dr. Manandhar, in the department of Plant and Environmental Protection Sciences, was recently called to Kaua‘i farms to diagnose two pests—both, as it turned out, false alarms. A grower suspected his avocado trees were infected by laurel wilt, a fungal disease spread by the redbay ambrosia beetle. But this disease was ruled out since the beetles collected from the tree turned out to be granulate ambrosia beetles instead, which don’t spread the disease. At the same time, some papaya trees at another farm were suspected of harboring papaya ringspot virus (PRSV), but laboratory diagnoses of leaf samples from the trees were negative.

Kaua‘i thus remains apparently free from both PRSV and laurel wilt—good news, since laurel wilt can cause significant damage to avocado trees when it takes hold, as it has in Florida and other states. And growers who don’t have to contend with PRSV have the options of growing a wider variety of papaya and of growing it more easily using organic methods.

More pests found on other islands but not Kaua‘i include the coffee berry borer, coconut rhinoceros beetle, and a longhorned beetle, Acalolepta aesthetica, recently discovered on the Big Island. Kaua‘i’s east side, like Maui and Moloka‘i, lacks the varroa mite that is such a devastating pest of honeybees on O‘ahu and Hawai‘i Island.

However, on the same Kaua‘i papaya farm Dr. Manandhar recently identified a problematic insect, the oriental yellow scale (Aonidiella orientalis). First detected on, and eradicated from, a single plant in a nursery on O‘ahu in 2009, it had not been reported again in the state until this recent, and much more extensive, infestation.

The oriental yellow scale can be a serious pest of many tropical fruit crops and ornamentals. It affects papaya elsewhere, and if not controlled, could harm production here. However, right now the insect is confined to this single farm and is being eliminated there. Dr. Manandhar instructed the grower to dispose of infested fruits and spray petroleum oil weekly on affected trees. Early detection allowed agents to alert growers, stakeholders, and state agencies fast. Now efforts are aimed at limiting the within-farm spread and surveying neighboring farms to make sure it’s not there.

“I believe detection and interception of an invasive species is the first line of defense. If a pest is detected or intercepted early, the eradication program will be much easier,” Dr. Manandhar explains. And so far, these efforts are working.
The Language of Support

When Emilie Kirk came to Kaua‘i to take a position as a junior Extension agent in edible crops, she didn’t realize how much of her workday would be spent speaking Thai. Luckily, multilingual outreach is no problem for this well-traveled faculty member.

On Kaua‘i, Thai farmers represent an increasing segment of the agricultural community, most growing diversified vegetables and fruit trees on the south and east sides of the island. Ms. Kirk, who is fluent in Thai and Lao, began by introducing herself to them in Thai at the farmers’ markets, explaining what CTAHR is and how it can support them. Many had never interacted with or even heard of Cooperative Extension before and were pleasantly surprised to hear her speak their language.

In high school Ms. Kirk studied as an exchange student for a year in Laos, a rural northeastern region of Thailand that coincidentally is where many of Hawai‘i’s local Thai farmers come from. She also worked extensively in Thailand and Laos before starting her current position with CTAHR.

Besides one-on-one outreach at farmers’ markets, her work includes field visits to address production challenges and informal talk-story sessions about common pests, like the diamondback moth that attacks cruciferous vegetables. While the primary challenges have been pest and disease issues, she’s also helped with marketing, discussing access to credit and land, sourcing seeds and fruit trees, variety selection, and fertilizer recommendations. The next event scheduled is a field day on banana macropropagation and banana bunchy top virus management.

CTAHR’s partner organizations and agencies have been eager to collaborate in reaching this historically underserved population. Ms. Kirk has worked with local USDA-NRCS and conservation district staff to conduct bilingual farm visits and a workshop on conservation technologies such as high tunnels, efficient irrigation systems, and windbreaks, as well as presenting information on financial support for farmers. Trainings on pesticide safety and worker protection standards in collaboration with the Departments of Health and Agriculture are planned for the near future.

On O‘ahu, the Hawai‘i Agricultural Foundation contacted Ms. Kirk and Extension agent Jensen Uyeda to provide bilingual Good Agricultural Practices training for Thai farmers leasing land in Kunia on important issues such as the biology of major pathogen types, sanitation, post-harvest preservation district staff to conduct bilingual farm visits and a workshop on conservation technologies such as high tunnels, efficient irrigation systems, and windbreaks, as well as presenting information on financial support for farmers. Trainings on pesticide safety and worker protection standards in collaboration with the Departments of Health and Agriculture are planned for the near future.

On O‘ahu, the Hawai‘i Agricultural Foundation contacted Ms. Kirk and Extension agent Jensen Uyeda to provide bilingual Good Agricultural Practices training for Thai farmers leasing land in Kunia on important issues such as the biology of major pathogen types, sanitation, post-harvest preservation.

The Language of Support

The (Ocean-Friendly) Garden Isle

Literally envisioning Kaua‘i’s coastline brings to mind a garden completely surround- ing the sea. The image makes it clear that whatever goes into that garden will find its way to the water. It’s this understanding that underlies the Surfrider Foundation’s concept of Ocean Friendly Gardens—gardens that are grown and maintained in ways that minimize harmful runoff into the ocean. Now the CTAHR-trained Master Gardener volunteers of Kaua‘i have teamed up with Surfrider to bring that vision to reality on the island.

Kaua‘i’s Ocean Friendly Gardens initiative is led by environmental advocate and Master Gardener Cynthia Welti. Members of the two groups come together to form what Ms. Welti calls a “gardening hui” that is available to consult with homeowners about making their gardens more environmentally conscious. Gardens that meet the criteria as ocean friendly are certified by the program and can serve as models and inspiration for others.

Ocean-friendly criteria include conservation, permeability, and retention, or CPR. Gardeners are encouraged to choose plants that are climate appropriate, at least ten percent of them native, and that need little watering. Any turfgrass, which is discouraged, should be maintained organically and able to be washed through rainfall. Non-rainfall irrigation should be as water-efficient as possible. No pesticides, herbicides, or fungicides should be used, and fertilizers should be restricted to compost, compost tea, or worm castings.

Another consideration is the garden’s “hardscape”—gardener should consider pavers rather than unbroken walkways and gravel rather than sold driveways. Rain should fall on ground that can absorb it or be directed to catchment tanks or topographical features such as bioswales, rather than flowing off the property. A thick layer of mulch over exposed soil also prevents erosion.

These principles are important, again, both for the garden and for the ocean. The garden retains its precious topsoil and soil nutrients, while the ocean is protected from pesticides that kill sea life, soil that smothers reefs, and excess fertilizers that can foster the growth of destructive algal blooms. Absorbent, permeable landscapes also reduce stormwater flooding.

Master Gardeners are helping those who hope to make their yards and gardens ocean friendly by suggesting particular plants that work well within these principles and explaining how to keep them healthy and productive without commercial inputs.

While the hui has been focusing on individuals, they’re also hoping to provide consultation for commercial landscaping, around resorts, shopping centers, and condo complexes. After all, there are many gardens on the Garden Isle, and they all can affect the sea.

On Pasture and in Good Hands

When it comes to separating the sheep from the goats, junior Extension agent Savannah Katulski doesn’t worry about it—she helps those who raise both. Her graduate degree in ruminant nutrition gives her ample expertise to advise the small ruminant producers in Kaua‘i and throughout the state.

That’s not a small group. In 2012 there were 32,000 sheep and 13,000 goats in Hawai‘i, and Ms. Katulski estimates that the next USDA census will show even greater numbers.

Goats are used mainly for dairying and grazing. Goat cheese and milk are highly sought after, and goat dairies on Kaua‘i can find a strong customer base. Many goat producers will rent or lend their animals to homesteaders and ranchers for brush control, though goats aren’t “farmers.” Ms. Katulski clarifies, they typically prefer shrubby or tough-stemmed plants rather than grass. This makes them perfect partners for cattle, since they eat different plants in the same area.

Goats are also used for meat, and sheep on Kaua‘i are primarily raised for that purpose. The market is small but consistent: many producers sell to restaurants, some lamb from larger operations is sold in stores, and much is sold direct to consumers, either processed or live. Relatively few producers raise wool sheep, the sort that are sheared, because the animals would be too uncomfortable in the heat and high humidity. (For meat, they raise “hair” sheep instead.)

There’s a strong demand for education and support for local small ruminant producers, especially on Kaua‘i. Working with sheep and goats can be challenging, particularly in Hawai‘i’s tropical environment. Disease poses multiply in wet areas, and parasites are a continuing problem. Much of Ms. Katulski’s outreach, whether on-farm visits or workshops, concerns internal parasites or grazing management, but she also covers nutrition, mineral supplementation, breeding, and more.

Recently awarded a grant from the County of Kaua‘i for initiating a Small Ruminant Outreach and Extension Program, Ms. Katulski has an eye to future small ruminant producers as well. At the 2018 Kaua‘i Ag Awareness Day, she offered a dairy goat milking demonstration in which over 100 youth participated. She has given 4-H workshops on breeding and grazing and plans for more.

Though she was “100% born and raised a cattle-woman,” Ms. Katulski is embarking on a smaller four-legged clientele. She says, “I’m excited for the future. We have a very passionate group of live stock agents and specialists that will make great strides in the coming years!”

Mr. Kirk (right) is also working with Kaua‘i’s County administrator on ground that can absorb it or be directed to catchment tanks or topographical features such as bioswales, rather than flowing off the property. A thick layer of mulch over exposed soil also prevents erosion.

One of Ms. Katulski’s outreach, whether on-farm visits or workshops, concerns internal parasites or grazing management, but she also covers nutrition, mineral supplementation, breeding, and more.

Sheep, goats, and cattle thrive when kept in the same field.