Students learn about sustainable agriculture through gardening

By Aleysia Kaha

“It’s like a blank canvas and you have the paint," says Jon Bissell about the garden that he and his classmates are making in Dr. Norman Arancon’s AG 230 "Sustainable Agriculture" class. Dr. Arancon has each student create their own garden using organic methods. Students are expected to take initiative in designing and growing their gardens based on some sustainability principles, but Dr. Arancon welcomes questions. This is all part of the learning process and sometimes the best way to learn is just to try it out and see if it works.

Students in the class learn the importance of creating a flow within the garden where everything, from the soil to plants and even the location of pathways, works together. Jon, for example, uses a "dead zone", a muddy area between the garden bed and the pathway, to keep weeds from growing over the garden bed.

At the beginning of the se-

From classroom to farm: How one CAFNRM student puts knowledge into practice

By Seeseei Toa

General Agriculture senior Laura Rieber is all about living sustainably. She and her boyfriend Jesse Fujimoto live in Umauma, where they put together an aquaponic system and garden. The 96 square foot off-grid aquaponic system produces tilapia and lettuce. Rieber says the lettuce is popular and easy to sell or barter. In their garden, they grow a variety of vegetables such as kale, squash, chard, and green onion using natural farming methods. They also maintain a perennial Hawaiian herb garden. She takes care of her garden by mulching, co-planting, and composting. One of the fertilizers she uses is a chicken manure mix she learned about from one of Dr. Sakai’s horticulture classes.

“Natural food tastes better

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Chicken coop coming to campus

By Kim Kido

An integrated system that combines a chicken coop with a vermicompost bin designed by TCBES graduate student James Rushing will produce eggs, meat, and compost while diverting food scraps from the waste stream. The 6 x 6 x 7 foot tall coop, sized for six chickens, will sit over a compost bin twice this long on a track so that it can slide from side to side. Manure will fall into a two-compartment compost bin, where worms will break down the material into a nutrient rich soil amendment. Rushing estimates the unit will produce 1400 pounds of compost a year, which could be sold at three dollars a pound. Because the chickens will produce manure faster than the worms can transform it into compost, the coop is designed to use alternate compartments of the compost bin. The chickens will be fed food scraps, and supplemented with oyster shells and ten pounds of feed a month. To maintain a hospitable worm environment, the compost bins will be periodically watered to leach nitrates. The unit design requires only readily available and inexpensive building materials like wood, chicken wire, and sheet metal, and could even be constructed with reclaimed materials. Once funding is secured, the unit will be located behind the CAB building on campus. Rushing estimates construction will take 36 hours.

Prior to coming to Hilo, Rushing studied Tropical Plant and Soil Sciences at UH Mānoa. While at Mānoa, he constructed an earlier iteration of his design and donated it to Mānoa’s Sustainable and Organic Farm Training program. Rushing received his undergraduate degree earlier this year, and moved to Hilo for graduate studies because of the growing popularity of Korean natural farming on the island. Rushing owns the research and consulting firm Kupono Mah, which specializes in Korean natural farming and designing products like this integrated chicken coop-compost bin.

Gardens

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mester, the plots were full of weeds. The students started a compost pile with the weeds that were removed, and use it in their gardens and in this way it comes full circle.

Students have learned that the best way to deal with weeds is to maintain healthy planting beds, use mulch in pathways to suppress weeds, and use cover crops to out-compete weeds and provide nutrients to the other plants. Learning how to network and communicate with neighbors is an integral part of being an Agriculture student. Construction workers nearby used their machinery to push back the weeds and move soil, and even offered the class materials. As it is said in Hawaiian, Malama kekahi i kekahi—take care of each other, the land, and the environment. The gardens create a comfortable setting to center oneself and learn from the environment.

Rieber

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and it makes you feel better,” says Rieber. The desire to meet her own food needs is what initially motivated her to grow produce. They found a landlord willing to let them farm on the property, and worked out an agreement to maintain the property in exchange for rent.

Upon graduation Rieber plans to expand her aquaponic system. She also wants to start making her own natural fertilizers, and integrate chickens for their eggs and rabbits into her farm. Eventually she wants to accept volunteers through organizations like WWOOF, an international non-profit that connects farmers with people interested in learning more about organic farming.

Senior Laura Rieber and boyfriend Jesse Fujimoto plant lettuce in their aquaponic system. Photo credit: Laura Rieber.
In 2009, some Big Island nurseries exporting ornamentals to places like California, Guam, and Japan had their shipments rejected because of coqui frog infestation. Dr. Marcel Tsang was part of a team that developed a mobile hot water shower treatment system that eradicates coqui frogs and other quarantine pests on flowers and foliage. The system has become an industry standard, and the team was recognized with a 2010 Governor’s Team of the Year Award for their work. “A lot of research ends up sitting on a shelf,” says Tsang, “It’s nice to see it being used to help people.”

Originally focusing on ornamental plants, Tsang has become increasingly interested in food crops. His latest project, a “sustainable greenhouse”, integrates heat treatment with a number of other features. Constructed about two years ago, the structure is fully enclosed with insect screen and is outfitted with heat treatment for pest control, solar-powered fans that control air circulation and temperature, and a 2000 gallon rainwater catchment tank that will provide irrigation water to plants once a pump is installed. A solar-powered media pasteurization unit being built now will recondition used potting media by eradicating pathogens and weed seeds, allowing the cinder-peat media to be reused for subsequent plantings. Tsang also plans to use a photovoltaic system to power grow lights that would extend day length in winter months.

Even with the insect screens, Tsang has found the heat treatment a useful feature as a lot of insects find their way into the greenhouse. Planting began earlier this year and different food crops, including Japanese cucumber, eggplant, bell peppers, tomato, watercress, and taro, are being tested to determine which are best suited to this growing environment. The broader goal is to develop a low-cost, self-contained structure that transforms rocky land with little soil into productive farmland by moving production indoors.

Tsang was born and raised in Mauritius, an island Republic East of Madagascar with roughly the same population and land area as the State of Hawaii. Besides English, Tsang also speaks Mauritian Creole and French. After studying at the University of Mauritius, Tsang worked as a chemist in the sugar cane industry for FUEL Sugar Estate, Mauritius’ largest refinery. Tsang studied agricultural engi-
Dr. Tsang

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neering at Louisiana State University, and moved to Hawaii after receiving his PhD to join the faculty at UH Hilo.

Committed to educating, Tsang teaches several classes including Farm Power (AGEN 301), Introduction to Agricultural Mechanization (AGEN 231), and Microcomputer Applications in Agriculture (AGBU 110).

High cost of importing produce may benefit local farmers

By Daithi K. Martin

As the cost of transportation continues to increase, the issue of self sufficiency in the islands becomes more visible particularly because 80 percent of the goods consumed in the islands are imported from the neighbor islands, California, or foreign countries. This is one of the reasons the islands have notoriously high food prices.

Transportation is a major marketing function most products in Hawaii go through. The proportion of marketing costs spent on transportation depends on whether the products are transported by air or sea, and where the goods come from. Transportation by sea is by far the cheapest mode of shipment but it is much slower than air transport. A product from California goes though a lot more on its way to Honolulu than a product shipped from Hilo.

For this reason, the percentage of the final retail price attributable to transportation of products imported to Honolulu from California is higher than that of Hilo when like modes of transportation are compared. The percentage of the retail price spent on sea transportation for products from California is 11.35 percent on average compared to 1.62 percent for products shipped from Hilo.

Another way to look at this situation is to compare the portion of the retail price that farmers receive. Farmers in California receive 10.38 percent of the retail price on average, while Hawaii farmers receive 36.7 percent. The proportion of marketing costs spent on transportation for lower-value fruits and vegetables is generally higher than that of high-value produce.

These trends are encouraging for young farmers in Hawaii or those in school who are interested in agriculture. With 80 percent of goods originating outside of the Islands, there is ample room to improve Hawaii’s agricultural self sufficiency. There are many other challenges to overcome before self sufficiency becomes a reality, but with a greater understanding of marketing the future looks hopeful.

Calendar of events:

AGClub meets every first and third Thursday of the month at 4 pm at the CAB Breezeway. AGClub events denoted with an asterisk (*).

10/26: Marketing for Small Farmers with Dr. Sabry Shehata
10/29: Natural Farming with Drake Weinert
5th Annual Hamakua Alive! Festival
11/1: SEEDS ESA student research application deadline
11/2-6: Society of American Foresters Annual Convention
11/4: Ag Service Day, 12-4 pm, CAFNRM Breezeway*
11/5: Dairy Goat Milking Demo and Pasture Management
11/7: Market Day*
11/8: Biodynamics with Bobby Grimes
11/12: Marketing Hamakua Produce with John Mood, Ninole Orchard
11/15: Crop Management with Dr. Ted Radovich
Organic Farming Research Foundation grant proposal deadline
11/22: Vermicomposting with Dr. Norman Arancon
Thanksgiving ‘imu at UH Farm*
12/17: Seniors Awards Night*

¹ These events are part of the Practical Agriculture for Hamakua program. For information on future workshops and free farm tours, download a flyer.