Road to Sustainability: Value Added AG Products Class Showcase

Student Creations

The hallways of the College of Agriculture Forestry and Natural Resources Management building was bustling with displays of incredible creations by the students of Value Added Ag Products (Ag205) on April 21, 2016. Eleven students under the direction of Professor Lorna Tsutsumi spent a semester-long journey of learning the principles and practices of developing agriculture-based products that have practical uses for anyone in the household or farm as food, gadget or a tool. The student projects also aim to support local products and local sustainability. This year marked the 5th time that students in the class display their products for the public to see and obtain ideas of how a simple agriculture products can be transformed into a very healthy snack food item or a nutrient-rich organic fertilizer.

Continued on page 13
Sustainable Food and Cropping Systems: Assessing the Need for capacity building in CAFNRM

By Melanie Willich

What is Sustainable Agriculture?

The word "sustainable" is derived from the Latin, *sustinere*, meaning to keep in existence, implying permanence or long-term support (Rigby and Cáceres, 2001). In the context of agriculture, sustainability implies concepts of both resilience - the capacity of systems to buffer shocks and stresses - and persistence - the capacity of systems to continue over long periods - and addresses many wider economic, social, and environmental outcomes (Pretty, 2008). Due to the complex interactions between agricultural production and the natural environment, no operational definition of sustainable agriculture exists at present. However, some key principles for agricultural sustainability are to:

i. integrate biological and ecological processes, such as nutrient cycling, nitrogen fixation, soil regeneration, allelopathy, competition, predation, and parasitism into food production processes,

ii. minimize the use of non-renewable inputs that cause harm to the environment or to the health of farmers and consumers,

iii. make productive use of the knowledge and skills of farmers, thus improving their self-reliance and substituting human capital for costly external inputs, and

iv. make productive use of people's collective capacities to work together to solve common agricultural and natural resource problems, such as for pest, watershed, irrigation, forest, and credit management (Pretty and Bharucha, 2014; Pretty, 2008).

Agricultural systems emphasizing these principles do not only produce food, but also contribute to ecosystem services and public goods, such as biodiversity, carbon sequestration, groundwater protection and recharge, and scenic value of the landscape (Dobbs and Pretty, 2004).

With a projected global population of 9 billion people by 2050 and an asserted need for 70-100% more food, agricultural production is facing the major challenge of linking agricultural intensification with biodiversity conservation and hunger reduction (Foley et al., 2011; Godfray et al., 2010; Scherr and McNeely, 2008; Tilman et al., 2002; Tscharntke et al., 2012). As many researchers suggest, productivity of existing agricultural lands must be increased through sustainable intensification which is defined as a process or system where agricultural yields are increased without adverse environmental impact and without the conversion of additional non-agricultural land (Pretty and Bharucha, 2014). A major focus for agricultural intensification will be on soil quality restoration and improvement of existing agricultural lands in the tropics and sub-tropics, where crop yields are low and productivity must be increased to meet the food demands of the growing population (Lal, 2006). As climate change and food security are pointed out as the twin grand challenges for humanity in the 21st century, sustainable agricultural practices and food systems hold most promise to achieve food security and sovereignty (Godfray et al., 2011; Smith and El-Swaify, 2006).

As climate change and food security are pointed out as the twin grand challenges for humanity in the 21st century, sustainable agricultural practices and food systems hold most promise to achieve food security and sovereignty (Godfray et al., 2011; Smith and El-Swaify, 2006).

Food System and Agricultural Trends in Hawai‘i

The remoteness of the Hawaiian Archipelago makes it vulnerable to dependencies on external inputs such as fuel and fertilizers, and to stresses such as climate change or invasive pest organisms. At present however, an estimated 85% of consumed food in the state of Hawai‘i are imported (Leung and Loke, 2008). This raises concerns about the ability of Hawai‘i's agricultural industry to compete against cheaper imports from the Mainland and abroad, and the state's vulnerability to food shortages (Leung and Loke, 2008). Against this background, a greater awareness in the general public is emerging together with the political will to bring forward strategies to improve food security and food self-sufficiency in Hawai‘i (Office of Planning Department of Business Economic Development & Tourism, 2010).

One type of farming system that improves sustainability is organic cropping systems (National Research Council, 2010). According to a CTAHR publication, (i) organic agricultural production in Hawai‘i reflects the national and international increasing trends (Fig. 1; from Radovich et al., 2009) and (ii) most certified organic food crop systems in the state are located on the island of Hawai‘i, followed by Maui, Kauai, Molokai, and Oahu (Fig. 2; from Radovich et al., 2009).
Crop of the Month: Awa/Kava (Piper methysticum)

By Addison Ako

Awa or Kava the more common name, is part of the pepper family and was one of the plants the early Polynesian settlers brought on their voyage when they first discovered Hawaii. It now grows wild across the pacific island chain and is cultivated extensively for various medicinal uses and ceremonial practices in Hawaiian culture. As a medicinal aid the roots, leaves, stem and bark are used for general debility, weary muscles, chills, colds, headaches lung and other respiratory diseases. The main reason why Awa is cultivated is because it produces an intoxicating drink when ingested. Also used for sedative measures, a sacred plant for prayer, and appreciated as a pleasure inducer for most pacific islanders.

Awa grows best in low elevation levels where there is more constant moisture and partial sun. A typical Awa plant can grow up to 12 feet tall with large smooth hearted shaped leaves and green or black rooted stems. The black rooted stem is the more rare variety out of the two. It needs to grow for at least 2 to 3 years to achieve usable potency. To prepare an Awa drink is real simple and easy. First the root is the part of the plant that contains the potency effects. So the root is prepared fresh or sometimes dried, washed clean chopped into small pieces and then pounded. Mix the root in with equal parts of water and make sure to use a strainer when pouring out the mixed

Awa plant’s typical leaves (above) and stem (below).
https://en.wikipedia.org/wiki/Kava
http://floridata.com/tracks/hawaii/Piperaceae35.html

Student Concerns Address at Meet the Dean Monday
by Aleysia Rae Kaha

What’s the scoop?
As the school year comes to an end, CAFNRM students were able to look at their experiences with the college. To talk about the good, the bad, and the improved. The event, Meet the Dean Monday, provided an opportunity for students to comfortably talk with Bruce Mathews and speak about their experiences and their concerns.

Through out the week, students were able to stop by the CAB breezeway tables and fill out question cards, that Bruce Mathews would later answer during the Monday event.

During Meet the Dean Monday, students went around and introduced themselves, their specialty, and their reason for attending. As the conversation continued, more students joined in.

What was discussed?
CAFNRM facilities
Improving student and faculty involvement
Curriculum improvement

CAFNRM facilities: Students agreed that CAFNRM needs to build a presence on campus. At the very foundation, we should at least have components of each specialty showcased throughout the College of Agriculture building. 1. Animal Science: Animals on campus (chickens, piggery, etc.) but there are regulation challenges; 2. Aquaculture: Fish tank in the hallways but clear exit clear path requirement won’t allow; 3. Tropical Horticulture: Labels for the gardens; 4. Tropical Plant Science and Agroecology: Student-Research posters in hallways.

Continued on page 11
The Nutrient Management Challenge of Hilo Coast Upland Soils (Acrudoxic Hydudands)

By: Dr. Bruce Mathews

If former Hilo Coast (Wainaku north to Laupahoehoe) sugarcane (interspecific hybrids of *Saccharum* spp.) production lands (sea level to 2000 ft elevation) on the Island of Hawai‘i (see map below) that are either now being fallowed or used for grazing of volunteer grasses are to be adapted for intensive production of annual crops it will require substantial inputs of increasingly expensive fertilizer and limestone (CaCO₃). This is no different than was the case during the sugarcane era of the 1900s and is because the upland (nongulch) soils of the region are Acrudoxic Hydudands. These soils are naturally acidic, have low effective cation exchange capacity (ECEC), and strongly bind large quantities of phosphorus (P) due to their high concentrations of short-range-order/nanocrystalline iron and aluminum minerals. The residual value of this strongly bound P added through fertilizers is generally much less than desired (slow release rate relative to the kinetics of crop P demand) and this challenge is particularly apparent in poor annual crop yields several years after P fertilization is discontinued (Roy et al., 2016). The low ECEC results in a poor capacity to retain the cations calcium (Ca), magnesium (Mg), and potassium (K) against leaching and the reserves of K-bearing minerals are low (Mahilum et al., 1970; Qafoku et al., 2004). This means that K depletion can readily occur under intensive cropping if K removed in harvested biomass is not replaced through inputs (Bower, 1977; Mathews and Thurkins, 2006).

Increasing soil pH to around 6.0 through liming and building soil organic matter increases variable (pH dependent) charge and hence ECEC, thereby somewhat reducing cation susceptibility to leaching (Mahilum et al., 1970; Qafoku et al., 2004). However, Mahilum et al. (1970) found that 75 to 85% of the Ca added via single limestone applications of 0.5 to 5.0 tons/acre (1120 to 11,200 kg/ha) readily leached from these soils within 5 to 8 years. The variable charge is developed on the amphoteric surfaces of organic soil constituents with carboxyl, phenolic, or amino reactive groups, as well as on surfaces of inorganic soil constituents with hydroxyl reactive groups such as aluminum (Al) and iron (Fe) hydrous oxides, short-range-order aluminosilicates, and 1:1 clays (Qafoku et al., 2004). This being said some of the potential contribution of organic matter to ECEC can be blocked by Al and Fe coatings.

Soil and plant tissue test-based nutrient management is critical for maintaining consistent soil fertility and realizing economically optimal yield targets while minimizing environmental pollution. With-holding fertilizer and soil amendments offers a short-term strategy for reducing some major farm expenditures but the opportunity costs increase with time. Below are the ranges in surface soil (0- to 6-inches depth) pH; organic carbon (C); exchangeable Ca, Mg, K, and sodium (Na); modified-Truog (MT) extractable P, and bulk density typically observed for Hilo Coast Acrudoxic Hydudands above the Kaieie Homestead area (between Papaikou and Pepeekeo Towns) at the closure of the sugarcane operations in 1994-1995 and in 2010 under dominantly tropical grass fallow/volunteer pasture (primarily *Brachiaria*, *Panicum*, and *Paspalum* spp.) without any subsequent nutrient and limestone inputs (Mathews and Niemeyer, unpublished data).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>1994-1995</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH (water)</td>
<td>5.7 ± 0.3</td>
<td>5.3 ± 0.3</td>
</tr>
<tr>
<td>Organic C (%)</td>
<td>8.1 ± 1.3</td>
<td>11.5 ± 2.2</td>
</tr>
<tr>
<td>Exchangeable Ca, ppm</td>
<td>650 ± 301</td>
<td>117 ± 94</td>
</tr>
<tr>
<td>Exchangeable Mg, ppm</td>
<td>193 ± 90</td>
<td>155 ± 111</td>
</tr>
<tr>
<td>Exchangeable K, ppm</td>
<td>102 ± 47</td>
<td>63 ± 29</td>
</tr>
<tr>
<td>Exchangeable Na, ppm</td>
<td>87 ± 60</td>
<td>86 ± 22</td>
</tr>
<tr>
<td>Exchangeable Al, ppm</td>
<td>---------</td>
<td>25 ± 22</td>
</tr>
<tr>
<td>ECEC, mg/100 g or cmol/kg</td>
<td>5.5 ± 2.6</td>
<td>2.7 ± 1.8</td>
</tr>
<tr>
<td>MT extractable P, ppm</td>
<td>27 ± 11</td>
<td>14 ± 8</td>
</tr>
<tr>
<td>Bulk density, g/cm³</td>
<td>0.54 ± 0.08</td>
<td>0.51 ± 0.11</td>
</tr>
</tbody>
</table>

The 2010 values for exchangeable Ca and K, and MT extractable P are approaching the very low concentrations typically found in the Acrudoxic Hydudands in the region that are still under native forest (Mathews and Niemeyer, unpublished data) and the ECEC has dropped in half due to the lower soil pH. The magnitude of these nutrient declines tend to be greater than have been observed for similar soils formerly used for sugarcane production in the Kapaau to Halaula uplands on the northern tip of the island and this may be due in part to greater rainfall in the Hilo area and variations in the mineral composition of the volcanic parent material between the locations (Mathews and Niemeyer, unpublished data). The high P fertilizer requirement for near optimal soil solution P (0.02 µg/ml or ppm) for most annual crops (Fig. 1)
**Food Ethics meets Sustainable Agriculture: Feasting at UH-Hilo**

*By: *Celia Bardwell-Jones*

What would a sustainable feast look like at UH-Hilo? This is what happens when students from different classes come together to share what they have learned. This Spring 2016 semester the topic of food ethics is incorporated in my course PHIL 316 – Science, Technology and Society. The course considers the ethical context that goes into the production and consumption practices surrounding what we eat. Students participated in an applied learning experience, which partnered up with Dr. Norman Arancon’s AG 230 Sustainable Agriculture course. Philosophy students volunteered and worked with the Sustainable Agriculture students in the gardens in front of the library lanai. At the end of the semester, PHIL 316 students created a dish that was produced using ingredients within a 10-mile radius of where they lived. They delivered oral presentations to the class and finally shared their meal with AG 230 students by the gardens underneath the library lanai.

Agriculture students can take PHIL 316 Science, Technology and Society and PHIL 412 Philosophy of Nature as electives in order to learn more about the intersections of human societies, values and agriculture.

*Students of Food Ethics and Sustainable Agriculture class sharing food at the UH Hilo Library lanai.*

*Photo: Celia Bardwell-Jones*

*Dr. Celia Bardwell-Jones, Associate Professor of Philosophy Contact Dr. Celia Bardwell-Jones at celia@hawaii.edu if you have further questions about these courses*

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**Sustainable food …**

However, as Radovich and colleagues from CTAHR report, the general lack of technical knowledge of principles and practices of organic production, which has its origin in Europe, a lack of a supporting market infrastructure, and the inability to capture economies of scale, are major challenges for Hawai‘i’s farmers (Radovich et al., 2009). In 2008, Western SARE’s third subregional conference was held in Kona to discuss the key issues related to future agriculture in Hawai‘i: (i) keeping agricultural lands productive and affordable, (ii) facilitating education about benefits of local food production for human and environmental health and the local economy, and (iii) political commitment in support of Hawai‘i’s agriculture were identified as the top priorities for creating a stronger local food system. In order to address those key points, CAFNRM needs to develop strategies together with the major landowners in Hawai‘i to create economically-feasible incentives for farmers and ranchers such as reduced lease rates in the first years of farm establishment, allowances for the construction of residence and operational buildings, and financial-support options for including direct marketing, processing, and on-farm restaurant setup.

*Continued next page*
Sustainable food...

The US Census Bureau poverty report for the year 2009 revealed that Hawai’i suffered the nation’s largest percentage drop in median income and the biggest percentage spike in poverty rate. (DeNavas-Walt et al., 2010). Such alarming statistics show the need to strengthen life quality and job market for the local community. We may have to look beyond our island to learn from other regions’ innovative strategies that have proven successful under similar difficult circumstances, namely economic disadvantages, high living costs, and little job opportunities. A good example for integrating people and nature for sustainable development is the UNESCO World Network of Biosphere Reserves. Research is needed to investigate economic feasibility and practicality of regional production and marketing channels. Most definitely, any economic strategies to strengthen the island should be built on the respect for cultural values and peoples’ livelihoods. Here, research and education in Sustainable Food and Cropping Systems at CAFNRM could provide great stimuli. Another hurdle for local small-scale producers may be food safety concerns, therefore strengthening the farmer-consumer connections should be emphasized through research and educational outreach, where CAFNRM could play a greater role in the future through a program on Sustainable Food and Cropping Systems. Collecting data around our food system may also stimulate research in the areas of supply chain interruptions and waste stream management, bringing forth research opportunities and collaborations for CAFNRM faculty and PBARC staff in the bioenergy field.

For example, research suggests that coffee waste may be used in anaerobic digesters to produce biogas for the generation of electricity (Beyene et al., 2014). In our major coffee growing area, the Kona belt, farmers hesitate to use coffee pulp as fertilizer due to the potential spread of the Coffee Berry Borer, Hypothenemus hampei, and thus this valuable resource is oftentimes not properly utilized. To address such issues, more research that is geared toward the practical challenges farmers are facing is urgently needed. Given the traditions in sustainable agriculture and land stewardship that are deeply rooted in Hawaiian culture and mythology, a program in Sustainable Food and Cropping Systems could highlight CAFNRM’s commitment to integrate traditional knowledge into contemporary agricultural science in order to guide our island ecosystem toward a more sustainable future.

Joining Forces: Working Together for the Common Goal

As a small agricultural college in a region with comparably high living costs and little public infrastructure, we need to highlight our strengths in order to attract students. Thus, offering a combination of excellent teaching quality and outstanding learning opportunities, including "real-life" field experiences is crucial, especially for the many students without agricultural background. Within the state of Hawai’i, we have unique opportunities on the island of Hawai’i to achieve these goals. Apart from the favorable agricultural setting described earlier, we have an island-wide network of UH campuses with modern classroom facilities (UH Hilo, NHERC Honoka’a, Hawai’i Community College Palamanui) available. Those are conveniently located in some of the "Core Crop Lands", as identified in the Hawai’i County Food Self-Sufficiency Baseline 2012 (Melrose and Delparte, 2012) of the island, and could be used for joint student workshops. Demonstrations of selected practices that are imperative for sustainable agriculture and its intensification could be easily facilitated on the island of Hawai’i, including crop variety trials in key agricultural staples, integrated pest management, management-intensive rotational grazing systems and silvopastoralism, conservation agriculture, agroforestry systems, and patch intensification (Pretty and Bharucha, 2014). A holistic curriculum in agricultural sciences must also include "hands-on" learning through farm internships and practica that count toward degree-required credits. In order to establish such programs, commercial farmers should get identified who would be willing to host one or more students over an extended period of time (e.g. summer program) to participate in the daily farming business. Further, opportunities should be explored into facilitating student research for example at CTAHR's research stations, Kohala Center, Kohala Institute, Kohala Mountain Education Farm, or at commercial farms. Financial support of students may be realized through scholarships from local organizations or corporates such as the Kohala Center, the Dorrance Family Foundation, the Ulupono Initiative, Mokulele Airlines, or Hawaiian Airlines (Team Kokua Giving Program).
Sustainable food...

How a program in Sustainable Food and Cropping Systems could "fit in"

A program on Sustainable Food and Cropping Systems may benefit from the established capacity of CAFNRM and integrate already existing courses, such as:

AG 205 Value Added Ag Products
AG 230 Sustainable Agriculture
AGBU 320 Agribusiness Management
AGEC 201 Agricultural Economics
AGEC 330 Farm Management
AGEN 231 Introduction to Agricultural Mechanization
ANSC 141 Introduction to Animal Science
ENTO 304 General Entomology
HORT 262 Principles of Horticulture
HORT 264 Plant Propagation
HORT 398 Hydroponics & Vegetable Crop Production
HORT 481 Weed Science
PPHY 301 Plant Growth and Development
PPTH 301 Tropical Plant Pathology
SOIL 304 Tropical Soils

However, the competition for students in the national context is fierce and the number of undergraduate programs focused on sustainable agriculture and agroecology is increasing. CAFNRM needs to develop a solid strategy for ensuring future student enrollment in the College’s agricultural programs. Therefore, a program in Sustainable Food and Cropping Systems may prove vital in achieving this goal. Below are ideas listed for courses that could be developed to strengthen the curriculum toward a system-oriented understanding of Sustainable Food and Cropping Systems:

SUSTAINABLE FOOD SYSTEMS FOCUS:
Issues in Global Food Systems: Obesity, Hunger, Food Insecurity, and Poverty
Indigenous and Traditional Food Systems
Agricultural Supply Chain Management
Farm Business and Marketing Diversification Strategies
Economics of Agricultural Development
Agricultural Development Policy
Consumer Studies and Consumer Ethics
Introduction to Plant Sciences and Crop Quality

SUSTAINABLE CROPPING SYSTEMS FOCUS:
Ecosystem Biogeochemistry
Soil Biology and Plant Nutrition
Agrobiodiversity and Ecosystem Services
Tropical Agroecosystem Functioning
Integrated Pest Management in Tropical Cropping Systems
Introduction to Bioenergy Cropping Systems
Introduction to Agroforestry and Tree-Crop Interactions

Deans’ Corner...

and the typically low exchangeable K concentrations (< 100 ppm or < 0.25 meq/100 g, Fig. 2) in Hilo Coast soils are exemplified by the maps below of Fox and Yost (1980) and Yost (1981). Also see Yost et al. (1982) for details of the mapping procedures.

The costly nutrient challenges of crop production on many humid tropical uplands are not unique to Hawai‘i and undoubtedly, a blend of improved crop management and biotechnological-genetic advances will be deployed in the future to enhance yields and nutrient use efficiency (Gaxiola et al., 2011; Roberts and Johnston, 2015). Without advances our local agriculture will not be economically competitive nor will it contribute much towards improved food self-sufficiency/food security. For a variety of reasons we can’t return to the shifting slash-burn-mulch systems with short-term cropping and long-term fallows as practiced by Native Hawaiians on the Hilo Coast uplands (Vitousek et al., 2014).
Map of Hawaii

Fig 1. A map of fertilizer phosphorus requirement for the Island of Hawaii. The legend refers to the estimated quantity of P required as µg P per gram soil to provide 0.02 µg P per ml soil solution.

Adapted from Fox and Yost (1980).
Fig. 2. A map of exchangeable potassium (K) for the Island of Hawaii. Note: a meq K/100g equals 391 ppm of K. Adapted from Yost, (1981).

References


In 2013, many residents of Hawai'i, predominantly the windward or eastern portion of the island, began noticing individual, seemingly healthy, older Ohi'a trees (Metrosideros polymorpha) evidently dying almost overnight. It was not limited to the Hilo district, but started becoming apparent in huge swaths of densely packed Ohi'a forests throughout the Puna district. Aerial photographs, depicting patches of dead Ohi'a trees concluded that this was not an isolated or singular problem.

Fast forward to 2015 and we have collectively witnessed significant action on behalf of the state and county of Hawai'i. Resident, county, as well as state and federal awareness is at an all time high; ensuring focus is on the fundamental issues. While incorporating multiple outreach programs geared at awareness, identification, and after – action response being spread throughout the island chain and additional policies in place that limit the distribution of Ohi'a trees and wood in place, it appears that we are one step closer to minimizing the overall impact. Recently the Hawai'i Invasive Species Council (HISC) honored three scientists for their work regarding the Rapid Ohi'a Death. J j and j received awards stating “Through their work, the cause and possible transmission vectors have been identified, the locations of infected trees have been mapped and preventative treatments, genetic resistance, possible insect vectors and many other aspects are being tested in an effort to save the Ohi’a. Their proposal to the Hawai'i Department of Agriculture to quarantine Ohi’a wood moving off the Big Island has led to the prevention of infected logs being shipped to other islands.” The honorees were J.B. Friday of the University of Hawai'i at Manoa College of Tropical Agriculture and Human Resources (CTAHR), Flint Hughes of the United States Department of Agriculture (USDA) Forest Service Institute of Pacific Islands Forestry, and Lisa Keith. “One of our next steps is get crews of people from other islands over here to do on-the-ground training, so they know what to look for,” explains Friday. He is extremely hopeful concerning the studies being conducted that demonstrate the role insects may or may not have in the distribution of Rapid Ohi’a Death. Additionally, the Lyon Arboretum of the University of Hawai'i at Manoa has initiated a concerted effort to save and preserve the many varieties of the Ohi’a tree for future reforestation programs, as required by establishing a seed conservation lab. To date the approximate Ohi’a tree death toll is in the hundreds of thousands.

Helpful reference can be found at the following sites:

https://manoa.hawaii.edu/lyonarboretum/
http://www.botany.hawaii.edu/faculty/cw_smith/cli_hir.htm
http://www2.ctahr.hawaii.edu/forestry/disease/ohia_wilt.html

Happy gardening.
Meet the Dean...

Other student suggestions:

- Paid positions for garden maintenance.
- Better lounge area than the breezeway.
- More animals to work with at the experimental farm.
- Have Senior Seminar and Directed Work Experience students have a monthly work day for facility maintenance.

Student and Faculty Involvement

It was made clear that in order for our college to receive more funds, more supplies, more of any resource, we would need to increase student and faculty engagement. It proved that having a strong-standing club, supported by involved faculty would create a holistic and exciting learning environment for current and potential agriculture students.

What the Club could do:

- More frequent newsletter.
- Organize workdays at the CAB facility.
- Continue Market Mondays
  - Have a Juice stand from the fruits grown at the UHH experimental farm.
  - Sell products from the UHH farm and other classes.
- Plan outdoor activities: dirt-biking, beekeeping and surfing.
- Engage in Cultural practices: throw-net, poi, lei.
- Work with professors to do things outside of the classroom like, (Beekeeping, microbiology, etc.)
- Mini events throughout the school year to socialize.
  - Pizza Party!!
  - Coffee!!
- Mini conferences about plant technology/bio-tech and natural practices.

Student and Faculty Involvement

In small ways, the College of Agriculture has been able to address some of the student concerns in terms of student appreciation, engagement, and communication. Students asked for:

- The computer room to be opened when class is not in session.
- Small events.
- Information on job opportunities.

What the faculty could do:

- Have value added products involved in more classes.
- Have Business development involved in more classes.
- Have faculty emphasize internships, community service projects, and job opportunities in their classes.
- Merge plants and animal agriculture and practice into more modern sustainable agricultural techniques.
- Expose students to opportunities for research development with support from lab equipment and designated space.

- Perhaps, just as the students are assessed at the end of each quarter, so should the professors. As an opportunity for classes to be improved on and for professors to gauge their impact in classes.

Q&A

Q: Why was I accepted under a specialty, “Coastal Resource Management,” when it was no longer offered? It stayed on the website, there was no clear answers when I was accepted.

A: When enrollment in classes specializations are low, the classes can no longer be offered. This has a lot to do with budget. In terms of our CAFNRM website, we are being more conscious of ensuring the Registrar’s office updates the specialties and certificates offered. If you were accepted under a specialty that is no longer offered, you are still eligible to graduate with that specialty by having related classes substitute for field requirements no longer offered.

Q: How can we better integrate research and hands-on approaches at the experimental farm?

A: I am currently working on creating classes that will support that integrated approach. The classes would be called, “Directed Ranch Experience”, and “Advanced Food System Resilience.”

Q: How can we use more farm products?

A: In the past the Agriculture club worked with the experimental farm to harvest and sell farm produce. You would need to make a farm proposal, keep an inventory and return pertinent farm investment cost.

Q: How can we get our student body more involved with our local farmers?

A: We could get more involved with our extension services who work directly with farmers and give classes the opportunity to trouble-shoot local farm issues throughout the semester.

Q: How can we have longer labs?

A: We could have one day a month where several related classes have a voluntary lab together for a longer period of time. This would allow students show and tell, for classes to integrate and help each other.
Meet the Dean…

Q: Why is it that classes that take place in Keaukaha do not have transportation provided.
A: There is nothing that mandates that faculty have to provide transportation to their labs. When a facility is within the Hilo vicinity like PACRC in Keaukaha or the Ag Eng’g shop at HawCC, it is still considered an extension of the campus and therefore transportation does not need to be provided.
Q: Why do we provide internships to Monsanto?
A: Anyone is free to post agriculture related opportunities at the college and we do not have the right to discriminate nor are we promoting Monsanto. This college is a place to share, learn, and provide opportunity for agricultural practices.
Q: Why is there no poultry production class?
A: We had professor when I was a student in the 80’s, however we do not have the a faculty member who presently specializes in poultry production. I think it would be a great opportunity and it is up to the initiative of the farm animal faculty, and students to create a partnership for the course to be offered again.
Q: Is there a possibility for a new specialist to teach plant physiology and soil science?
A: With the reduction in funding for lecturers existing faculty with low enrolled areas were asked to cover those classes. It is fiscal a challenge, but we can try to reinstate lecturers with more expertise and or have more outside resources involved in sharing with our classes to improve practical applications..

*Looking at the university as a whole. They are hearing the concerns raised with declining budgets from the administrative level. Agriculture is not necessarily put at the forefront. We sometimes get more lip service but not so much action. I am working on raising your concerns, working with our faculty, and the faculty is doing the same to make the students feel supported.

MAHALO!

It was a great opportunity to put together this event, to allow the students to share amongst themselves, to be heard by their Dean, and to find positive solutions to problems that we all face at the CAFNRM. To make our experience meaningful at the college and within the university, I believe we should take as much opportunity to work together and to find very tangible ways to make a difference. Sometimes, agriculture can be disregarded as “just farming,” but I’ve learned from the College of Agriculture and its professors that there are many facets to this college that are foundational in supporting our university and our community.
Road to sustainability...

Some of the student products included “Pale Makika”: a car freshener and mosquito repellent; watercolor pigments made from natural ingredients like honey bees; vortex vermicompost tea brewer; honey comb candies; pioneer glue made out of beeswax, pine and resin; eye brow colors, and of course everybody’s favorite the honey barbeque sliders and honey-spearmint-lishimui cold drink.

The event also featured participations of the students from other Ag courses such as Dr. Arancon’s Sustainable Agriculture (Ag 230) students who displayed and gave away vegetables grown in their campus gardens and Dr. Sakai’s Floriculture and Orchid Production (Hort 398) students who displayed and sold ornamentals that they raised during the semester. The Teaching and Research Arthropod Collection (TRAC) lab under the supervision of Dr. Jesse Eiben also opened their doors to display approximately 95,000 curated insect specimens, some of which, have important implications to agricultural productivity. One of the well-visited displays was Dr. Erik Cleveland’s animal production course that showed very docile kids from CAFRNM farm. Dr. Mike Shintaku’s lab also displayed excellent germplasm collections of corn.

The intended audience of the event is primarily the students of CAFNRM and other UH Hilo students who are currently taking Ag courses. “We hope that we will be able to showcase snippets of other other areas of the college” says Dr. Tsutsumi, “and that this event will help students know more about we can offer”, she added.

The event was sponsored by “Adopt-A-Beehive” by Alan Wong program and the Native Alaskan and Hawaiian grant.

CONGRATULATIONS TO OUR GRADUATING SENIORS
CLASS OF 2016

Miguel Bravo Escobor
Megan Fujitake
Colin Hart
Mahealani Hiraoka
Kealaka‘i Matsumoto
Tyrus Moises
Rachel Nishikawa
Rochelle Nowaki
William Trammel
Taite Winthers-Barcelona

Best wishes from your CAFNRM Faculty, Staff, Students, Family and Friends
UHH Agriculture Students Maintain a Legacy of Community Service on the Island of the Hawai‘i

By Damon Adamson

In terms of contributions and generally giving back to the community from which it serves and draws its base student population, the University of Hawai‘i at Hilo (UHH) has a long and distinguished legacy. Be it an annual beach cleanup project, rotated annually for better resource management or the lofty goal of helping support symbiotic relationships among the economy, society and environment in order to foster a sustainable Hawai‘i by hosting the UHH Sustainability Fair, UHH clearly understands the importance of creating a strong and well informed community that is both mutually supportive, as well as individually empowering. In addition to being the campus ‘centrally located lost and found drop-off and pick-up location, the Campus Center gladly houses the Campus and Community Service faculty. This program, whose self-stated mission is to “[Be] a catalyst for leadership, social, cultural, educational and recreational development of the University’s student population through co-curricular programs, activities and services. The Campus Center serves as a laboratory of citizenship by developing socially responsible leaders who become effective forces for change in our communities and a sense of responsibility for active citizenship to perpetuate our democratic society.” Listed within the curriculum and mandatory in order to gain any Baccalaureate Degree is the Global and Community Citizenship Requirement (GCC). Students select one semester course designated “GCC.” This course allows students to apply knowledge gained from their course of study to the global and/or local communities. These courses will provide first-hand awareness of local and global community and environmental issues and encourage interaction with community, business and/or government sectors in order to effect positive change. I was fortunate enough to accompany one such class during their community outreach portion of their curriculum. Principles of Horticulture through the College of Agriculture, Forestry & Natural Resource Management (CAFNRM), instructed by Dr. Norman Q. Arancon. Today the class facilitated the preparation of new gardening areas, maintained the existing garden areas, while planting new edible plants in available locations in the Community gardens of the Malia Puka O Kalani Church located in Hilo Hawai‘i.

Picture 1: UHH students contribute at a community garden in Hilo. Picture by Damon Adamson

Picture 2: Growing beds are prepared for a variety of Taro. Dr. Arancon states that along with other locations, “this particular community garden is closely connected with the church that has the available network to ensure that those most in need get what is available.” A wonderfully diverse group of students doing a whirlwind of activities while ensuring that the community sustains and is able to lean on itself for support. The cheerful atmosphere, having just experienced a light “Hilo” rain, further drove myself to assist with weeding, rock removal, and soil preparation. Well done community.
SNAP SHOTS: “A photograph is worth a thousand words”. This section features some of faculty, staff and students of CAFNRM in the classroom, laboratory and field.

Roger Muller is currently a junior studying horticulture and farming is his passion. Here, he’s teaching the children how to propagate by air layering at the College of the Marshall Islands Cooperative and Research Extension: Photo by Risa Kabua Myazoe

Student shearing a goat in Dr. Cleveland’s Goat and Sheep Production class. Photo by Risa Kabua Myazoe

Dr. Tanabe’s students checking out their rooted Hydrangea cuttings. Photo by Risa Kabua Myazoe

Silver Wase and Randon Jack posing next to their veggie beds. Photo by Risa Kabua Myazoe