CTAHR Research News

January 2009
Volume 5, Issue 1 (35)

Our inaugural sustain-ability issue!

Ted Radovich extracts soil water under perennial peanut at the CTAHR Poamoho experiment station.

Growing CTAHR's sustain-abilities

A cornucopia of sustainability efforts

CTAHR releases annual impact report

In this issue

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From the Associate Dean and Associate Director for Research

As we will celebrate the beginning of the Year of the Ox on January 26, *Kung Hee Fat Choy* to everyone is in order. It is also fitting that the Year of the Rat is ending soon. The rat is considered cunning and calculating, while the ox is considered hardworking and industrious. We will have to hunker down for the time being, and work our way toward a recovery. There is no better symbol than a hard charging bull leading us out of our current economic recession!

We have selected "sustainability" as the theme for our first issue in 2009. Food and energy security were two items mentioned a great deal by the state government and the local press in 2008. What role is CTAHR playing in this critical area? To answer this question, we have decided to expand the coverage for this month: in addition to our cover story, we are presenting six other stories dealing with sustainable issues that are important to agriculture and environment in Hawaii. Our cover story this month features Dr. Ted Radovich of the Department of Tropical Plant and Soil Sciences (TPSS) and his sustainable farming system group. Sustainable/organic agriculture is one of the four areas identified during our strategic planning processes as a CTAHR priority for investment. Dr. Radovich was hired as a non-tenure track, fixed term faculty in 2006 to help jumpstart our sustainable farm systems program. Ted has also spearheaded the effort of an industry analysis of Hawaii's organic agriculture, and has been instrumental in establishing the CTAHR student organic farming club. Dr. Koon-Hui Wang of PEPS, another non-tenure track fixed term faculty member who is supported by her own grants, introduces her work on nematodes; Dr. Dick Bowen of NREM and Ken Love discuss their tropical fruit project; Dr. Anne Alvarez of PEPS describes her work combating the bacterial wilt disease in gingers; Dr. Ali Fares of NREM discusses his work on water and nutrient management; and Dr. Kent Kobayashi of TPSS and his colleagues describe their ornamental crop production project. Finally, Dr. Mark Wright of PEPS updates us on the Varroa mites attack on our honeybees. These are just some of the examples of CTAHR faculty members who are working hard to find solutions to ensure the success of sustainable agriculture efforts in Hawaii.

We started publishing *CRN* in the fall of 2005 and adopted the current format since the January issue of 2006. A total of 34 issues of *CRN* have been published. We believe it is appropriate now to conduct a readers' survey to help guide us forward into the future. Please take a few minutes to complete the survey - it should take no more than 5-10 minutes of your time. The survey is completely anonymous, is entirely voluntary, and will only be used to provide feedback to the CTAHR Office of Research for the *CTAHR Research News (CRN)* magazine. To complete the survey, either click on the link below or if that doesn't work, copy the link and paste it into your web browser.
http://www.surveymonkey.com/s.aspx?sm=_2f1r98hl8kRGqui9rkM69sg_3d_3d

Welcome back to a new semester in a new year. Have a successful and productive year!

C.Y. Hu
Associate Dean and Associate Director for Research

Building CTAHR's capacity to support sustainable farming systems

By Ted Radovich
Assistant Researcher
Department of Tropical Plant and Soil Sciences

High school students from Kamehameha schools Na Pua Noe'au program plant bananas at the organic plots at the Waimanalo experiment station. Ted Radovich is in the back middle in the pink shirt.

People are talking about sustainability everywhere we turn. It's easy and appropriate to get excited about sustainability. After all, who wants to be ***unsustainable***? But what exactly does it mean to be sustainable in agriculture? There's no answer that will satisfy everybody, but generally sustainable farming systems meet food and fiber needs and are profitable in the short term without degrading the natural and human resources that will ensure production stability in the long term. There is no single model for agricultural sustainability. Most systems attempting sustainability integrate judicious use of recent advances in chemical and genetic technology with increased reliance on biological cycles. Others, including certified organic systems interpret the principle of sustainability to the exclusion of genetically engineered crops, most synthetic agrochemicals and other inputs. Whatever the model, achieving sustainability requires the integration of many tools and approaches. As a result, management of sustainable agricultural systems is knowledge intensive and requires strong research support.

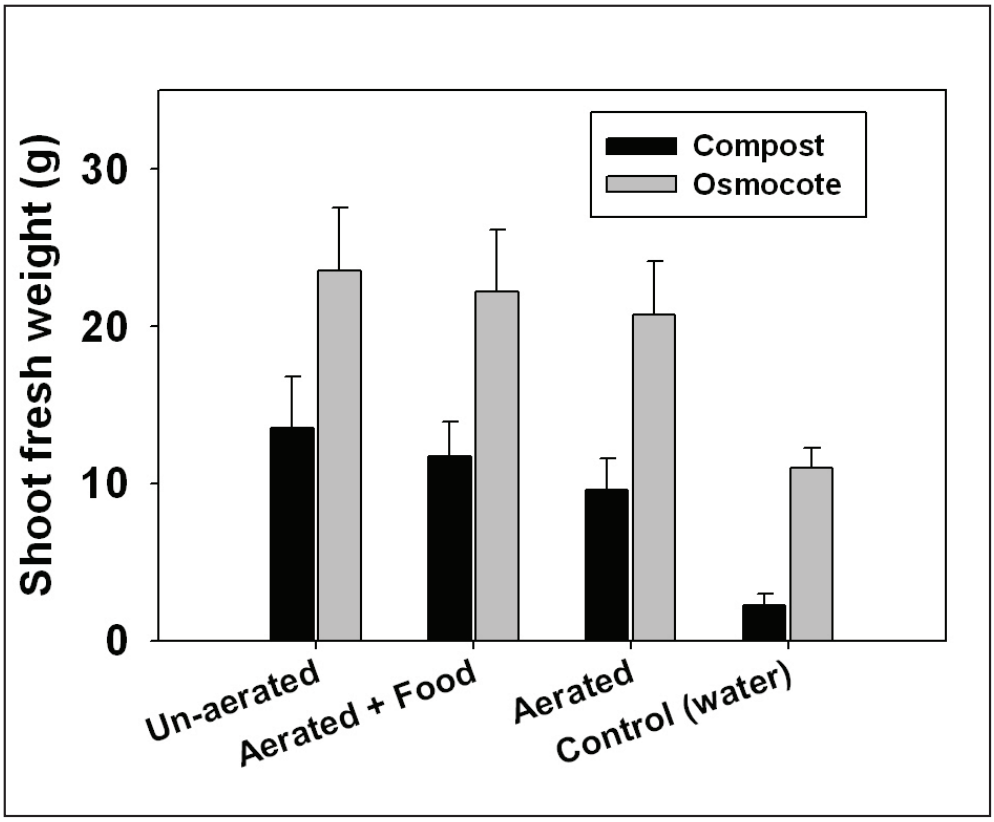
Archana Pant evaluates aqueous extracts of compost in the lab.

A worker applies compost tea at Adaptations farm in Honaunau, Hawai'i.

I joined the Sustainable Farming Systems laboratory at its inception two years ago to support the development and dissemination of evidence-based information relevant to sustainable agriculture in Hawai'i. As a horticulturist and crop ecologist, I view farms as intensively managed ecosystems that are centered on the crop and its interactions with environmental factors both above and below ground. My primary research focus is on crop management strategies that maximize quality and yield. Along with many CTAHR colleagues, I have participated in surveys and meetings with conventional and organic growers, distributors and other stakeholders to determine research needs, including the Organic Industry Analysis coordinated by **Dr. Linda Cox** (NREM), **Jim Hollyer** (ADAP), **Jody Smith** (NREM), cooperative extension in all counties, and I with the help of a large advisory group (see CRN Volume 3, p.17). In response to stakeholder feedback, my students, collaborators and I have focused primarily on the cost-effective use of biological tools and strategies including compost, cover cropping, and crop varieties adapted to stressful environments.

Local resources

The price of chemical fertilizer has tripled from approximately $300 a ton to $1000 a ton in less than 2 years. Composts are locally available, renewable resources that contain mineral nutrients, organic acids, microbes and microbial products that can enhance plant growth, but are prohibitively expensive to use as soil-applied fertilizers because of their bulkiness and low nitrogen content. Growers have found that extracting compost with water and applying the resulting "tea" to crops can extend the benefits of a small amount of compost over a larger area, but there are few scientific studies investigating the influence of compost quality, extraction method and others factors affecting plant response to compost tea. Our lab has been funded by USDA WSARE to evaluate compost tea effects on plant quality, nutrient content and yield. The project was developed in consultation with the Hawaii Organic Farmers Association and commercial growers statewide. Extension agent **Jari Sugano** (PEPS), **Dr. Nguyen Hue** (TPSS), Dr. Norman Arancon (UHH), Dr. Stephen Talcott (Dept Nutrition Food Science, Texas A&M) and three commercial growers are project collaborators. Numerous other CTAHR faculty are cooperating on the project. Work led by Ph.D. student **Archana Pant** (TPSS) in the lab and greenhouse has demonstrated the potential for compost tea to promote plant growth with both organic and synthetic fertilizers. Her results are particularly exciting because compost tea not only positively influenced yields but also affected the concentrations of phenolics and carotenoids in plant tissues. These compounds can impact the sensory and nutritive quality of vegetables. Her data also suggests that aeration equipment and additives ("food") to



Compost tea applications increased pak choi yield in the greenhouse under organic (black bars) and synthetic (grey bars) fertilization compared to a water control. Aeration equipment and additives to enhance microbial activity may not be required for growth promotion, potentially saving growers money. Each value is the mean of 10 replications. Error bars represent mean standard error.

enhance microbial activity may not be required for the growth promoting effect of compost tea, thus potentially saving growers money. Trials to confirm these observations under field conditions and multiple soil types are underway. We are also evaluating compost as a peat substitute for vegetable seedling production as another cost effective use of this resource. We are pleased with the interest generated by our compost tea and related work, which has been presented at national meetings, featured on local T.V. and is expected to be published soon.

Under cover

Cover-crops are an important tool in the sustainable farmer's tool box. They build organic matter, support beneficial soil biology, and provide additional benefits including erosion control, weed suppression and promoting natural enemy populations. Input from Hawaii Farm Bureau (HFBF) members, the Hawaii Fruit Tree Growers Association and other growers, made it clear that there was a need for cover-crop research in Hawaii's orchards. Growers state-wide have expressed particular interest in perennial peanut (*Arachis pintoi*) because it is a well adapted ground cover in Hawaii and it has been used successfully elsewhere as a living mulch in orchards. Supported by HFBF and the Department of Agriculture, I worked with **Jari Sugano**

Ted and Rebecca Mitschele (Missouri) install lysimeters to collect soil water under perennial peanut at a commercial orchard in Waialua.

Ted talks about *Moringa* with field day attendees at the Poamoho research station. (photo: J. Sugano)

(TPSS), graduate student **Rebecca Mitschele** (NREM, M.Sc. Fall 2007), **Dr. Ali Fares** (NREM), **Dr. Mike Robotham** (USDA-NRCS), **Dr. Brent Sipes** (PEPS), **Dr. Travis Idol** (NREM) the Waimanalo and Poamoho Station staff and two commercial orchards to evaluate the short and long term effects of peanut on soil and fruit tree characteristics. Short-term benefits observed include significantly greater moisture retention and soil CO_2 evolution (an indicator of total microbial activity) compared to a black weed mat control, although competition between the fruit trees and the peanut was also apparent. We calculated cost of establishment and held field days for growers to discuss recommendations we developed to establish peanut quickly and cost effectively while minimizing competition with the fruit trees. We are hopeful that our continued investigation of living mulch effects on soil microbial activity, nutrient cycling, fruit tree growth and other factors will benefit the profitability and production stability of Hawaii's orchards.

The right stuff

Selecting crop varieties that are well-adapted to their production environment is critical to ensure high quality and yield. Reducing chemical input use is a frequent goal of those interested in sustainability. This can promote beneficial biological cycles in the long term, but can result in challenges including low N availability and greater pest incidence in the short term.

Identifying germplasm with superior quality and production stability across diverse production environments, is one goal of our organic variety trials of eggplant, sweet corn and other vegetables with the assistance of extension agents **Jari Sugano** (PEPS), **Steve Fukuda** (TPSS), farm managers **Roger Corrales** (Waimanalo), **Susan Migita** (Poamoho) and **Drs. Jim Brewbaker** and **Hector Valenzuela** (TPSS) who have been evaluating these crops under conventional conditions. It is our hope that this work will assist growers in selecting appropriate varieties for their systems.

In similar work, TPSS graduate student **Gabriel Ortega** (TPSS, M.Sc. Spring 2008), worked with **Dr. James Leary** (PEPS/NREM), **Dr. Kent Kobayashi** (TPSS), and I to investigate weed tolerance in vegetable crops. Working with broccoli in the greenhouse and field, Gabriel observed that varieties with the shortest times to maturity were most tolerant to the presence of weeds. Gabriel's work is the first step in our efforts to determine the physiological mechanisms underlying high performance in low input environments to help growers save money through reduced input costs.

We are also working with **Dr. Robert Paull** (TPSS) and **Dr. Mitiku Habte** (TPSS) to evaluate the production capacity and mycorrhyzal dependency of *Moringa* germplasm from around the world. *Moringa* leaves are good source of protein, the pods are an important vegetable and the seeds yield a high-value oil that has potential culinary, cosmetic and biofuel applications. Also known as *Malunggay*, this tree is adapted to low input environments, and has tremendous potential to help enhance food security and income generation in the State.

Building Capacity

The unwillingness of young people to work on the farm, low consumer support for local produce, and policy issues related to land and water are daunting issues Hawai'i faces. To address these issues in the long term, advocates for Hawai'i agriculture must engage not only farmers but also policymakers, gardeners, and consumers. My students and I frequently attend events such as "Ag in the City", the Hawai'i State Farm Fair and the statewide CTAHR Centennial Celebration events. We work with **Miles Hakoda** (OCS) to promote the "Buy Fresh Buy Local" campaign and with extension agents **Jamie Grzebik** (TPSS), **Andrew Kawabata** (TPSS) and others to train Master Gardeners to deal with questions related to sustainable and organic agriculture. I work with **Jody Smith** (NREM), **Dr. Johnathan Deenik** (TPSS) undergraduate **Christina Theocharis** (HNFAS), **Dr. Mark Wright** (PEPS) and others to develop web-based content on vermicompost, bio-control and other subjects. **Kathy Lu** (OCS), Jody Smith, **Dr. Hector Valenzuela** (TPSS) and I developed the CTAHR Organic Website to distribute Hawaii-

Gabriel Ortega (California) evaluates broccoli cultivars.

Rommel Corrales, Jaunito Garces, Hector Valenzuela and Ronald Lunning evaluate eggplant varieties in the organic plots at the Waimanalo Experiment Station.

Students in the Organic Food Crop Production class harvest kalo in Waiahole valley. (photo: unknown)

relevant, evidence-based information on ecological farming practices.

The next generation

Our students are the next generation of food producers, consumers, policy makers and voters. Through their education, we have the opportunity to profoundly shape the future of agriculture. In my courses and other instructional activities, I combine lectures, guest speakers, projects and farm visits arranged by extension agents to expose our students to both science-based theory and hands-on practicum. **Dr. Doug Vincent**, **Dr. Linda Cox** (NREM), **Dr. James Leary** (PEPS/NREM) and I advise the Sustainable and Organic Farm Training program (SOFT) coordinated by undergraduates **Jensen Uyeda**, **Brooke Moreno** and a group of student volunteers. We also make an effort to build the agricultural education capacity of public schools by training of High School Ag Teachers, assisting in the development of science-based agriculture curriculum and establishing composting bins at elementary and high schools.

In developing a new program in Sustainable Farming Systems, our approach has been to work with CTAHR colleagues and stakeholders to determine research needs and initiate novel, collaborative programs that are relevant to those needs. The breadth of our research reflects the need of our stakeholders, and our ability to investigate these issues in depth is testimony to the strong expertise and capabilities of the CTAHR faculty, staff and students we collaborate with. After two years, we have generated much information that we are continuing to publish and we are excited about opportunities to deepen our investigations of physiological, biological and chemical interactions that are fundamental to sustaining agriculture in Hawai‘i.

Ted Radovich

Hometown: Waimānalo, Hawai‘i

Joined CTAHR: 2006

Educational History: Ph.D., Horticulture and Crop Science, The Ohio State University; M.Sc. Horticulture, UH Manoa; B.Sc., Horticulture, UH Manoa.

Specialization: Horticulture, ecology and quality of vegetables and other high value crops.

Current Work: Optimizing crop quality and yield in agricultural systems that rely heavily on ecological farming practices. Current focus includes innovative use of compost to enhance crop phytonutrient content and yield; and identifying vegetable varieties and new crops for high quality and yield stability in sustainable agricultural systems.

Languages Spoken: English, Gambian Mandinka.

Recent extramurally funded projects (PI):
Enhancing Phyto-nutrient Content, Yield and Quality of Vegetables with Compost Tea in the Tropics. USDA Western SARE Chapter One Research and Education Grant, Project No: SW07-073. 2007-2010. Funding awarded: $160,500.

Enhancing Soil Quality and Fruit Tree Growth with *Arachis pintoi* Cover Crops in Hawai‘i Orchards. HFBF. 2007-2008, Funding awarded: $38,751.

Selected Publications

Radovich, T.J.K. 2009. Cabbage Flavor. Chapter 11 in: Handbook of Vegetable Flavors: Commodities, Products, Spices and Edible Oils. *John Wiley and Sons*, New York.

Barber, S.G., C. Chan-Halbrendt, J. Krishnakumar, T.J.K. Radovich and K. Love. 2008. Hawai‘i Avocado Industry Analysis II: Buyer Preferences. *College of Tropical Agriculture and Human Resources*. EI-15.

Radovich, T.J.K., M.D. Kleinhenz, J.G. Streeter. 2005. Irrigation Timing Relative to Head Development Influences Yield Components, Sugar Levels, and Glucosinolate Concentrations in Cabbage. *Journal of the American Society for Horticultural Science* 130:943-949.

All photos: Ted Radovich, unless otherwise noted.

The research calabash

By Doug Vincent
Special Program Director for Grants and Contracts

Seeking your input on the CTAHR Research News

Since September 2005, the CTAHR Office of Research has put out a monthly newsletter "CTAHR Research News" or "CRN." CRN has grown since we started it and all along we've attempted to provide newsworthy and timely information about, primarily, the research activities in CTAHR. After 34 issues and as we embark on the 5th volume of CRN, we are seeking stakeholder input about CRN. We have provided a link to a Survey Monkey survey about the CTAHR Research News and we seek your advice on how we might improve or make changes to the newsletter. Please take a few minutes to complete the survey – it should take no more than 5-10 minutes of your time. The survey is completely anonymous, is completely voluntary and will only be used to provide feedback to the CTAHR Office of Research on the CTAHR Research News. If you have any questions or concerns about the survey, please contact **Doug Vincent** at 808-956-8157 or by e-mail at vincent@hawaii.edu. To complete the survey click on the link below or if that doesn't work, copy the link and paste it into your web browser.
http://www.surveymonkey.com/s.aspx?sm=_2f1r98hl8kRGqui9rkM69sg_3d_3d

The survey will be open until **Friday, January 30, 2009.**

CTAHR Research Portfolio Available for Download

The CTAHR Office of Research has produced a **2009 CTAHR Research Portfolio.** Over the last year, **Associate Director C.Y. Hu** requested "one-pagers" outlining the research expertise of the CTAHR Faculty with research appointments. Originally, these were prepared to share with Chinese institutions with interests in sending students to CTAHR. The "one-pagers" have been compiled into the **2009 CTAHR Research Portfolio**. This 123 page .pdf file is sorted by Department and each one pager has contact information, research interests and recent publications of CTAHR faculty with research appointments. If you have any questions about the portfolio or need to update information, contact Dr. Hu at 956-8131.

Still no Federal Budget for FY 2009

We are still anticipating passage of the FY 2009 Federal Appropriations legislations for the Departments of Energy and Agriculture. Even though we are well into the FY 2009 federal fiscal year, we are still waiting for passage of the budget. While we remain hopeful for continued funding for our programs, we won't know what programs have funding until the budget is passed. Given the economic crisis in the country, we must wait to see when the Congress will pass the legislation. We are currently operating under a Continuing Resolution until March 6, 2009 – but sources closer to Washington indicate that we may have a budget some time in January or early February. Stay tuned.

Federal Floriculture Research Grant Request for Proposals

In anticipation of the passage of the FY 2009 federal budget, we are seeking proposals for the USDA CSREES Special Research Grant "**Federal Floriculture Research Grant**." If our budget remains at FY 2008 levels, we will have limited funds for new projects. Download the RFP. The deadline for new proposals is **4:30 pm, Friday, March 6, 2009**. A memo with further explanation will be sent out soon. If you have questions, contact **Doug Vincent** at vincent@hawaii.edu.

THERE ARE STILL OUTSTANDING AD-421 Reports DUE!!

Alright, enough already!! ALL USDA AD-421 Annual (progress) or Final (termination) reports **must be completed by January 30, 2009.**

There are several outstanding reports still to be completed. **They were due by November 14, 2008.** This information is necessary for CTAHR to complete our annual report to USDA. If you **have a USDA grant**, including TSTAR or other USDA Special grants (your HAW project ends with **"G"**, your annual accomplishment report will be due within 90 days of the anniversary date. If your grant is ending the final (termination) report is due 90 days of the termination date. You should receive notification from CSREES about these reports. Or you can view them at the USDA CRIS entry point here. Information on how to complete the USDA CRIS AD 421 report can be found here. Contact **Doug Vincent** at vincent@hawaii.edu if you have questions.

Seeking nominations for CTAHR Awards
The **CTAHR Awards Banquet** will be **Thursday, April 30, 2009** at our usual venue, the Hilton Hawaiian Village. But what good would an Awards Banquet be without "awardees"? We need your nominations for the following awards:

- 2009 CTAHR Dean's Award for Excellence in Extension
- 2009 CTAHR Dean's Award for Excellence in Research
- 2009 CTAHR Dean's Award for Outstanding Civil Service
- 2009 CTAHR Dean's Award for Outstanding Service by an Administrative, Professional, and Technical Employee
- 2009 Hoku Award

Nominations will be accepted electronically at events@ctahr.hawaii.edu or deliver them to the CTAHR Office of Communication Services, Gilmore 119 by **Thursday, January 29, 2009**. The criteria for these awards can be downloaded.

Plan for the 21st Annual CTAHR Student Research Symposium
The 21st Annual CTAHR Student Research Symposium will take place on April 3-4, 2009 in the Agricultural Sciences Building. The Symposium is open to graduate and undergraduate students conducting scholarly work under the supervision of faculty in UH Manoa's College of Tropical Agriculture and Human Resources and UH Hilo's College of Agriculture, Forestry and Natural Resource Management. Plan now for a call for abstracts and a new web site out soon. Abstracts will be due in early March 2009.

UH Office of Research Services January 2009 Newsletter
See the January 2009 issue of the UH Office of Research Services Newsletter for information about a variety of changes implemented recently. Included among the stories is one about the Spring, 2009 ORS Grant and Contract Certification Program. This is an educational program that covers many of the logistics of grant submission and management. The course meets on **Thursdays from 10:00 am – 1:00 pm.** To register visit the ORS Web Site for more information. The course is also transmitted via HITS to Kapiolani Community College, Kauai Community College, Maui Community College, Molokai, and UH Hilo, so neighbor island faculty can participate. **The deadline for registration is February 6, 2009** and the course begins **February 26, 2009.** Also in the newsletter is some information about Cost Sharing (or Matching funds). For more about cost sharing see our Cost Sharing FAQs, downloadable from CTAHR eXchange Downloads page.

USDA releases Agriculture and Food Research Initiative Program Announcement
While funding has not been finalized with the FY 2009 federal budget, in anticipation of the budget, USDA CSREES has released a program announcement regarding the **Agriculture and Food Research Initiative** (AFRI). The AFRI replaced the National Research Initiative Competitive Grants Program, which was not reauthorized in the 2008 Farm Bill. Most research programs require letters of intent prior to submission of a proposal and 30% of the funding is set aside for integrated projects. We have prepared a list of the programs with their due

dates, both LOI and proposal, along with USDA CSREES contact information. You can download the information about the **AFRI Deadlines.**

USDA CSREES release RFA for Organic Agriculture Research and Extension Initiative
The **USDA CSREES Organic Research and Extension Initiative** seeks to solve critical organic agriculture issues, priorities, or problems through the integration of research and extension activities. The program will fund projects to enhance the ability of producers and processors who have already adopted organic standards to grow and market high quality organic agricultural products. Priority concerns include biological, physical and social sciences, including economics. OREI is also seeking projects that emphasize research and outreach that assist farmers and ranchers with whole farm planning and ecosystem integration. Go here for **general information** and here to **download the RFA**. The closing date is **March 9, 2009**.

Need help with making that grant perfect? See CTAHR's Grant Coach.
The CTAHR Office of Research is offering **grant coaching support** for individuals or small groups who are currently writing grants that have indirect cost returns. We are using RTRF funds to pay for this pilot program; therefore, it is important that we invest in opportunities that result in a return to that investment. Indirect cost returns provides CTAHR, college units and PIs (that generate the RTRF) with additional, highly flexible funding that can be used to support and expand research programs. We hope that by increasing our success rates in obtaining competitive grants, we will have greater direct and indirect costs to support our research activities. So if you are currently writing grants (or you plan to write a proposal) and want help developing, polishing and refining your proposal to meet an upcoming deadline, contact CTAHR grants coach, **Sharee Pepper** at 956-8140 or by e-mail at spepper@hawaii.edu.

Former CTAHR Professor Appointed to UH Board of Regents

Dr. Ramon de la Peña, CTAHR Emeritus Professor of Agronomy and Soil Sciences was recently reappointed by **Governor Linda Lingle** to the University of Hawaii Board of Regents, representing the Island of Kauai. Dr. de la Peña retired from CTAHR in 2001 and worked on taro research at the Kauai Experiment Station throughout his career in CTAHR. Dr. de la Peña was first appointed to the Board of Regents in 2004. Dr. de al Peña is featured on the UH-Manoa "Diversity Matters" web site and you can download a short video (QuickTime) about Dr. de la Peña. Dr. de la Peña's appointment must be approved by the Hawaii State Senate. Congratulations to Dr. de la Peña.

Dates and Events – Mark Your Calendars Today

First Saturday at the Kanewai Loʻi – February 7, 2009
Everyone is invited to attend the monthly community clean up event at the Ka Papa Loʻi o Kanewai Cultural Garden. The garden provides experiential learning opportunities to school and community groups in the traditional farming practices and culture of Native Hawaiians. Come dressed to do yard work and get muddy. Light refreshments will be provided but donations of food and drink are always welcome. Contact the garden at 945-1562 or kanewai@hawaii.edu for more information.

BIG PLANT and PRODUCE SALE at the Oahu Urban Garden Center
The "annual" **Plant and Produce Sale** at the Oahu Urban Garden Center will be on **Saturday, February 14, 2009**. This is part of the Oahu Urban Garden Center's Second Saturday at the Garden Center. From 9:00 am – 12:00 noon. In addition to the plant sale, a special Fruit Tree Grafting Demonstration will be held in the UGC classroom at 10:30 am. Also Certified Master

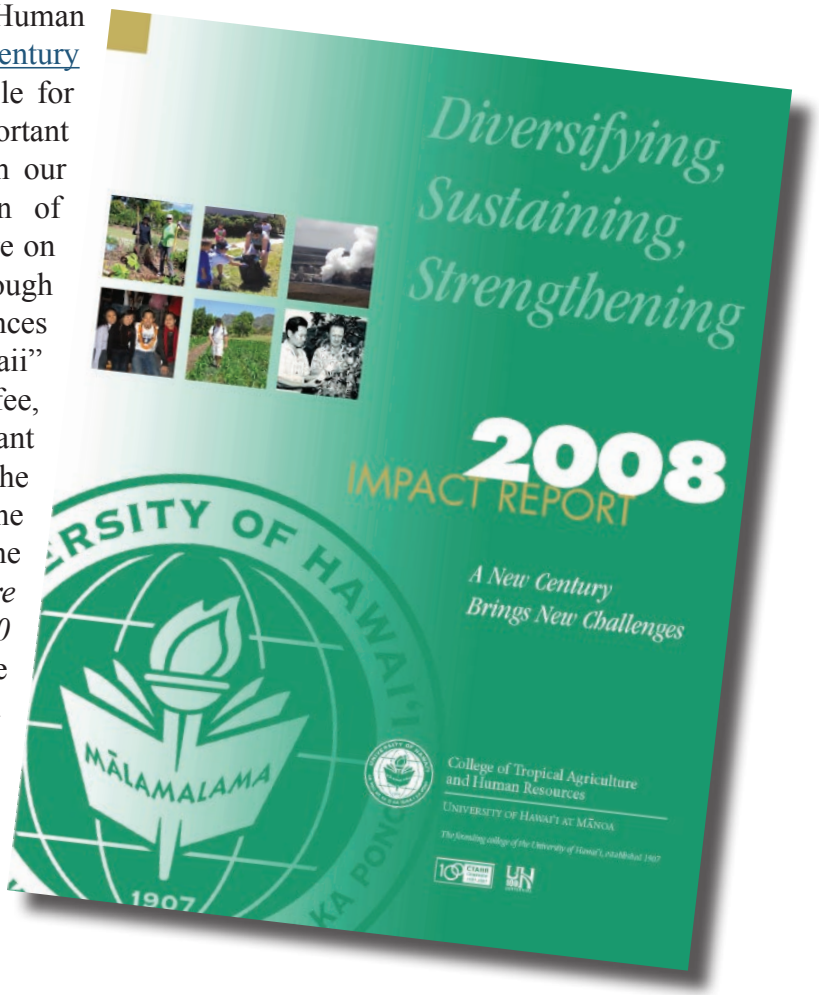
Gardeners will be on hand to answer home gardening questions. Come out and support the Urban Garden Center. See the Oahu Urban Garden web site for more information and directions to the UGC.

CTAHR Research Symposium – April 3, 4, 2009
Plan now to attend the CTAHR Student Research Symposium will be **Friday and Saturday, April 3-4, 2009** in the Agricultural Sciences Bldg. Information about the Symposium and dates for abstract submission will be out in the new year. But plan now for the big event.

CTAHR Awards Banquet – April 30, 2009
This year's big event is, and I'm not referring to President Barack Obama's inauguration, our annual CTAHR Awards Banquet will be held on **Thursday, April 30, 2009** at the Hilton Hawaiian Village Coral Ballrooms. Stay tuned for more information as 2009 unfolds.

2008 CTAHR impact report available now!

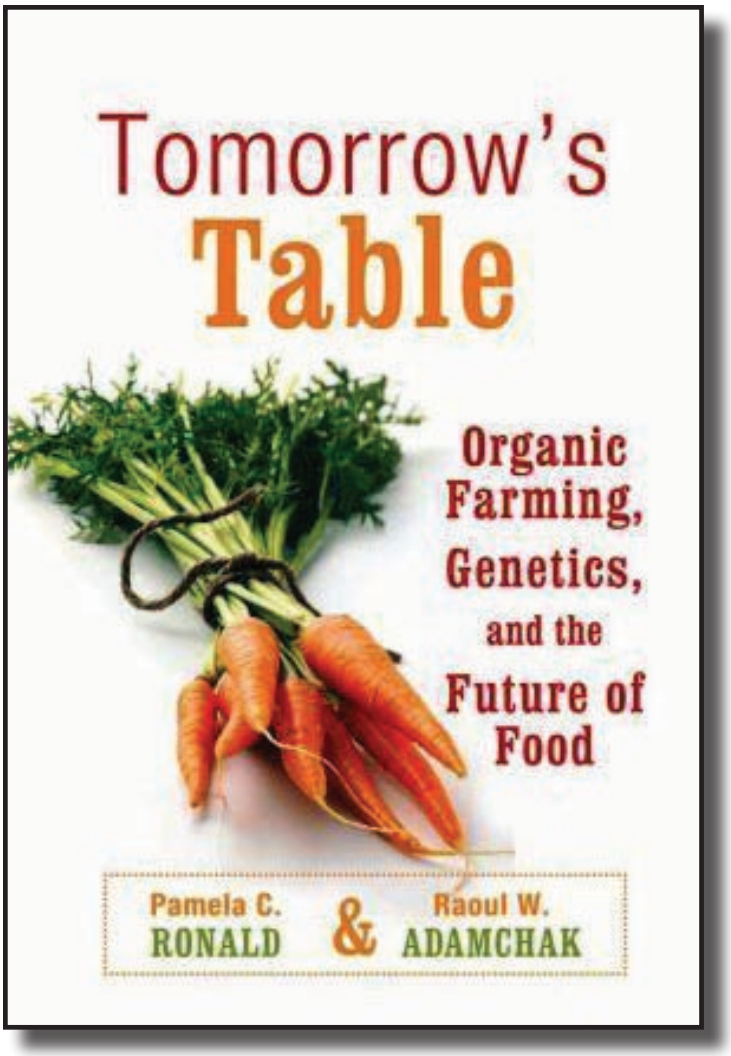
The College of Tropical Agriculture and Human Resources 2008 Impact Report "A New Century Brings New Challenges" is now available for download. This year's report features 13 important stories about all aspects of our College. From our response to the new Halema'uma'u eruption of Kilauea on Hawaii Island, to Organic Agriculture on Oahu, to a course on domestic tranquility through the Department of Family and Consumer Sciences "Family Education Training Center of Hawaii" or FETCH program. Our work with taro, coffee, and coastal wetlands are featured. Two important milestones are also described – the 20th Year of the CTAHR Student Research Symposium and the celebration of CTAHR's first 100 years through the publication of the "*College of Tropical Agriculture and Human Resources: Celebrating the First 100 years*." We hope you will download and read the latest impact report and learn more about CTAHR. This is but a taste of the College.



Noted authors on organic farming to speak on UHM campus in February

By Doug Vincent
Special Program Director for Grants and Contracts

Plant Pathology Professor Dr. Pamela Ronald and her organic farmer husband, Raoul Adamchak will be speaking at the University of Hawaii at Manoa Architecture Auditorium on **Thursday, February 5, 2009 from 5:30 to 7:00 pm.** Ronald and Adamchak are the authors of the recent Oxford University Press book *"Tomorrow's Table: Organic Farming, Genetic, and the Future of Food."* Dr. Ronald is a geneticist and professor of Plant Pathology at the University of California at Davis, and a recently been elected a Fellow of the American Association for the Advancement of Science. Dr. Ronald also received one of USDA highest research awards, the Discovery Award, for her rice genome research that developed rice strains that withstand flooding. Mr. Adamchak is an organic farmer and the CSA market garden coordinator at the certified organic farm, The Student Farm, on the University of California at Davis campus. The event, sponsored by UH-M Chancellor Hinshaw, is part of a nationwide book tour. Ronald and Adamchak will also be meeting with holding a briefing for Hawaii legislators on **Friday, February 6, 2009 at 2:30 to 4:00 pm** at the State Capitol Auditorium (pending), as sponsored by the University of Hawaii at Manoa, Hawaii Farm Bureau Federation and the Hawaii Crop Improvement Association. Another event will be "A Taste of Tomorrow's Table" on **Friday, February 6, 2009 from 5:30 to 9:00 pm** at the Waterfront at Aloha Tour Marketplace. **Chef Chai Chaowasaree** will prepare sampling pupus featuring locally grown organic, conventional and genetically engineered produce, such as Hawaii's Rainbow papaya for this pau hana sunset event. For more information at the UH-Manoa event, contact Kevin Kelly at 808-956-6651 or kevink@hawaii.edu. For more information about the legislative briefing or the pau hana sunset event contact the Hawaii Crop Improvement Association at 808-224-3648 or director@hciaonline.com. For more information about Dr. Ronald, see her blog at Tomorrow's Table.



Ecologically-based nematode management for Hawaii

By Koon-Hui Wang

Assistant Nematologist
Department of Plant and Environmental Protection Sciences

One of the biggest challenges in developing sustainable agriculture is managing multiple pest components in an agroecosystem. This challenge becomes complicated when farmers are dealing with above and below ground pests (such as insects, nematodes and weeds). Farmers are especially concerned about the rising prices of fertilizer. Thus, we focus on nematode suppression strategies that are compatible with whole farm management and keep costs down. We are promoting "Ecologically Based Nematode Management" that is not only managing plant-parasitic nematodes, but also enhancing beneficial free-living nematodes that are involved in recycling soil nutrients.

Soil health bioindicators

Free-living nematodes are ubiquitous in the soil and have diverse feeding behaviors (feeding on bacteria, fungi, algae, or being omnivorous or predacious on other nematodes). Free-living nematodes also have diverse life strategies; some can survive polluted or disturbed environments, whereas others are very sensitive to disturbance. Therefore, nematode ecologists use nematodes as soil health indicators to determine if the soil is enriched with nutrients, and whether the soil has been disturbed.

Sunn hemp cover crop

Over the years, we have found the leguminous cover crop, sunn hemp (*Crotalaria juncea*) to be a "superhero" for ecologically-based nematode management. Cover crops are non-cash crops that are typically grown between cash crop cycles to reduce soil erosion, suppress weeds, and improve soil health. If selected carefully, cover crops may also aid in the control of nematode and insect pests by enhancing the activities of natural enemies. Sunn hemp is an ideal cover crop for Hawaii, generating considerable dry biomass within a short period of time. In addition, sunn hemp is a poor host for two of the most important nematode pests for vegetable crops in Hawaii; root-knot and reniform

Koon-Hui Wang counting good and bad nematodes under an inverted microscope to evaluate soil health management practices.

nematodes. When soil incorporated, sunn hemp releases a compound toxic to plant-parasitic nematodes. After growing for two to three months, sunn hemp also can be incorporated into the soil for maximum nitrogen inputs.

Above and below ground pests management

Our entomology research team, **Drs. Cerruti Hooks** and **Mark Wright**, and graduate student, **Roshan Manandhar**, found that when sunn hemp was used as a living mulch intercropped with zucchini, it served as a 'virus sink.' This means that aphid carriers of plant viruses lost the virus after probing sunn hemp. Therefore, we are examining sunn hemp in a strip-till system where alternate rows of sunn hemp are tilled into the soil, and the remaining sunn hemp rows serves as living mulch to manage insect transmitted diseases. In addition, sunn hemp is clipped and the clipped residues remain on the soil surface for weed suppression. This cover cropping system is being evaluated by collaborators in California and Florida (Drs. McGriffin, M., R. McSorley, A. Ploeg, B. S. Sipes,W. Klassen, and D. Seal).

Sunn hemp and cucumber crop in a strip-till cover cropping system.

Sharadchandra P. Marahatta setting up Berlese funnel to trap beneficial microarthropods from the soil.

Sharadchandra Marrahatta joined our research team as a Ph.D. student to further examine the impact of cover cropping systems on beneficial nematodes and other soil microarthropods that play important roles in soil nutrient cycling. He is also looking at how to improve cover cropping effects by studying the timing of cover crop incorporation and nematode survival capabilities.

Integration approach

We collaborate closely with PEPS nematologist, **Dr. Brent Sipes**, on various projects for managing nematodes on vegetable, pineapple and banana. Pineapple industries in Hawaii are reliant on nematicides. We are examining the effect of integrating sunn hemp and soil solarization as an alternative to soil fumigants.

Nematode management on banana

Most recently, we conducted a state-wide survey on nematodes infecting banana planting in Hawaii. We found that spiral nematode, *Helicotylenchus multicinctus,* is a widely distributed and abundant plant-parasitic nematode infecting banana roots in Hawaii. Most banana growers and local extension specialists were not aware that this nematode threatens banana worldwide. Currently, PEPS undergraduate student, **Jane Tavares**, is monitoring damages cause by spiral nematodes on various cultivars of banana commonly grown in Hawaii. One approach to reduce nematode damage on banana is by using nematode-free planting materials. We collaborate closely with PEPS researcher, **Dr. Eden Perez**, in promoting the use of tissue cultured bananas as they are nematode-free. In addition, we are collaborating with PEPS faculty, **Dr. Arnold Hara**, to determine the best hot water treatment scheme to kill nematodes inside banana keiki. For growers that do not have access to hot water tank facilities, we are examining if solarization can be used to kill nematodes infecting banana keiki.

Exploring native plants as cover crops

To expand our options in developing cover cropping system for sustainable agriculture in Hawaii, we are collaborating with PEPS weed scientist, **Dr. James Leary**, to explore native plants as potential cover crops. Jane Tavares is setting up greenhouse test to screen for susceptibility of several native plants to root-knot nematode, *Meloidogyne javanica*.

We are looking forward to collaborate with more CTAHR scientists to develop soil health management and sustainable agriculture practices in Hawaii.

Jane Tavares monitoring damages cause by spiral nematodes on various cultivars of banana.

A sustainable model for tropical fruit production and marketing

By Richard Bowen
Specialist in Resource Economics
Department of Natural Resources and Environmental Management

Ken Love
Project Manager

Chef Heirleen (without hat) watches students explain their prepared meal to wait staff prior to lunch.

Small farmers in the Kona region of Hawaii struggle with high cost and limited availability of land and labor in trying to find profitable farming activities. Ken Love, the project manager, and I, developed the Sustainable Polyculture and Marketing of Exotic Tropical Fruits in Hawaii, better known as the "12 Trees Project," to demonstrate a sustainable model of diversified year-round fruit production and sales. Grant support was provided by the Western Sustainable Research and Education program. We partnered with the Kona Pacific Farmers' Cooperative (KPFC), whose members are small farmers growing primarily coffee and macadamia nuts.

This was a demonstration project, designed to create market linkages between small farms in Kona and high end restaurants and retail stores within marketing distance. We used a holistic approach, from farm to table, including use by restaurants and retail stores and the development of agritourism as an income supplement and risk management strategy.

Information was gathered on over 100 fruits already grown in the Kona region. The 12 demonstration fruits were selected based on surveys of 54 island chefs and on the project objective to have year round production. We wanted to develop a model that smooths out the demand for labor over the year to reduce reliance on hired labor. The 12 trees species selected were:

1. Loquat – 3 varieties
2. Mysore berry
3. Poha (Cape gooseberry)
4. Pomegranate – 4 varieties
5. Cherimoya – 2 varieties
6. Tamarillo (tree tomato)
7. Rangpur "Kona" lime
8. Tropical apricot
9. Grumichama
10. Surinam cherry – 2 varieties
11. Kumquat – 2 varieties
12. Figs – 2 varieties

Cover of CTAHR publication of the project

Fifty other fruits or varieties were also planted for testing and to enhance the site as an agtourism destination. A variety trial with 30 types of figs also took place at the site. Upcoming trials include no-chill stone fruit and low elevation Ohelo.

Mixed varieties of figs being tested at the project site.

A one-acre demonstration site was developed from unused land adjacent to macadamia nut and coffee processing facilities owned by KPFC. Organic production protocols and other sustainable practices were developed with the assistance of community farmers who grow these fruits. A large number of individuals and community groups volunteered in preparing and maintaining the site. The use of the site for training and education grew as the site developed.

The culinary aspects of the project involved both chefs and University of Hawaii, West Hawaii Culinary Arts program, headed by Chef Paul Heerlein. We donated fruits purchased from farms, and later from the project site itself, to the culinary program. Student chefs developed and tested with consumers a variety of menu items, which were served to the public at Thursday and Friday lunches and Wednesday breakfasts. Students were very creative in developing uses for the fruits. The culinary school in Kona has made the use of locally grown fruits a mandatory curriculum element for students in each semester. Graduates of the Kona culinary program are now working in the food service industry, taking the knowledge of locally grown tropical fruits with them, to the benefit of Hawaii producers and consumers.

Dick Kuehner, a retired designer of visitor attractions for the U.S. Fish and Wildlife Service, voluntarily prepared a design for the demonstration site/visitor attraction/educational center. Kuehner's design integrated the 12 Trees project site with the co-op's present operations. Through the Hawaii Tropical Fruit Growers Association, funding was obtained from the Hawaii Tourism Authority and the County of Hawaii to fund signage and displays complete with educational kiosks and displays, pathways, signage, and landscaping.

For market development, we worked with Adaptations, an organic produce marketing company. The company sold fruit from the project site to restaurants to demonstrate how to develop a market and to establish market prices. CTAHR's **Dr. Kent Fleming** calculated cost of production estimates that showed that eight fruits were profitable and four unprofitable. When the chefs learned of the true costs, they accepted increased prices for the previously unprofitable project fruit.

The most profitable was the figs, which came into sufficient production during the project to market them to chefs on a regular basis. The project helped build demand that now exceeds supply, including figs from the estimated 20 farmers who have started fig production as a result of the project.

We learned that resort hotel chefs are very concerned about product quality and are willing to pay more for high quality. Hence farmers need to emphasize packaging, consistent sizing, and availability. Chefs have learned from the project that there are many ways to use the fruit, ranging from buffets line items to haute cuisine. Prior to the project, local tropical fruits were primarily served as fresh fruit only.

The immediate beneficiaries of the 12 Trees project are Kona area farmers on the Big Island of Hawaii, the chefs and restaurant customers (tourists and locals), and the local agricultural economy. The project is showing farmers how to create an organic polyculture system for exotic tropical fruits and how to develop markets, including agtourism. The project has demonstrated how the fruit can be used to create exciting menu items for restaurants and for home consumers, helping to build demand for the fruit. Because of the project, we are seeing increased numbers of existing or new farms growing and marketing more exotic tropical fruits.

For further information on production and uses of the fruits, see the CTAHR publication, *Twelve Fruits with Potential Value-Added and Culinary Uses*. (http://www.ctahr.hawaii.edu/oc/freepubs/pdf).

Project site featuring the visitor kiosk.

Fumigating naughty bacteria with plant oils

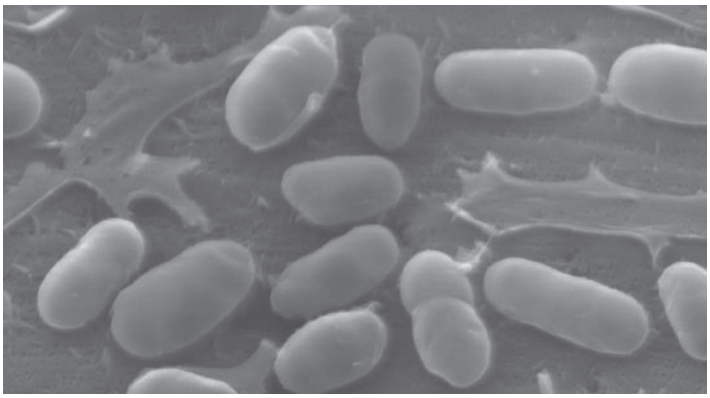
By Anne Alvarez
Researcher
Department of Plant and Environmental Protection Sciences

Ginger plants suffering water stress from bacterial wilt disease.

Bacteria cause plant diseases worldwide and one treacherous tribe annually devastates the local ginger crop. Without this disease, Hawaii is well known for high quality edible ginger. For many decades growers reaped rich rewards by cultivating ginger in the volcanic soils of the Big Island. Ginger root is used for sushi ginger, spicy candy, ginger bread, ginger beer and crunchy ginger snaps. It's also a major ingredient of traditional medicines. Along with ginger planting stocks from various countries came numerous strains of the bacterial pathogen, *Ralstonia solanacearum*, which later became widespread in production fields. Ginger root growers along the Hamakua Coast know an invasion has occurred when the plants turn yellow and leaves curl inward. Soon afterwards plants wilt, dry up and the roots rot, leaving a slushy mess.

Bacterial wilt disease has taken a heavy toll on growers in recent years, and the ginger root industry is now facing major difficulties. Methyl bromide, a chemical fumigant successfully used for decades to reduce disease, is now being phased out by the Environmental Protection Agency, citing the detrimental effects to the ozone layer. We are searching for alternative fumigants for disease management, focusing on volatile oils from plants, including palmarosa (*Cymbopogon martinii*), lemongrass (*Cymbopogon citratus*) and eucalyptus (*Eucalyptus globulus*). Lab and field studies have shown that lemongrass and palmarosa oils have excellent bactericidal properties, rupturing bacterial cells, killing them and spilling their contents. Eucalyptus oil deforms the cells, making them look like squashed doughnuts, but it doesn't kill them. Lemongrass is the most effective in greenhouse studies.

Eco-friendly methods are sought in Hawaii and biofumigation shows promise for sustainable agriculture. Producing disease-free ginger root and fighting the pathogens with natural plant products is our motto for the coming years.



Bacterial cells clog the vessels of infected plants.

Healthy ginger plants.

Optimal water and nutrient management for sustainable agriculture

By Ali Fares
Associate Professor of Hydrology
Department of Natural Resources and Environmental Management

Sustainable agricultural production requires adopting best management practices (BMPs) to optimize irrigation water and nutrient resources, and minimize excess water and nutrient leaching. Organic amendments (OA) enhance crop yield and improve soil quality. However, their improper application may result in negative environmental impacts through nutrient leaching below their target area. Movement of excess nutrients from OA decomposition within and below the root zone is a function of manure types, application rates, and time of application. Water and nutrient BMPs for different crops grown in Hawaii are needed.

The Watershed Hydrology Laboratory at NREM has been conducting multi-season field experiments to i) optimize water input and nutrients from different OAs, and, ii) evaluate the environmental impact of different OA (compost, chicken and dairy manure). Cropped corn was irrigated with drip irrigation and its soil was amended with OA at Waimanalo research station during the last three cropping seasons. During the first cropping season, different rates of surface broadcasted chicken manure and compost were manually mixed with the topsoil. Under no-till practice, we used the same types and rates of OA during the second cropping season. During the third cropping season, we repeated similar activities as for the first cropping season with additional OAs. We outfitted the experimental plots with different equipment. Soil water content and soil solutions within and below the root zone were monitored using multi-sensor capacitance probes and soil suction cups, respectively. Carbon dioxide (CO_2) emission from different plots and plant leaves relative to chlorophyll concentration (RCC) were also recorded on weekly and/or bi-weekly basis.

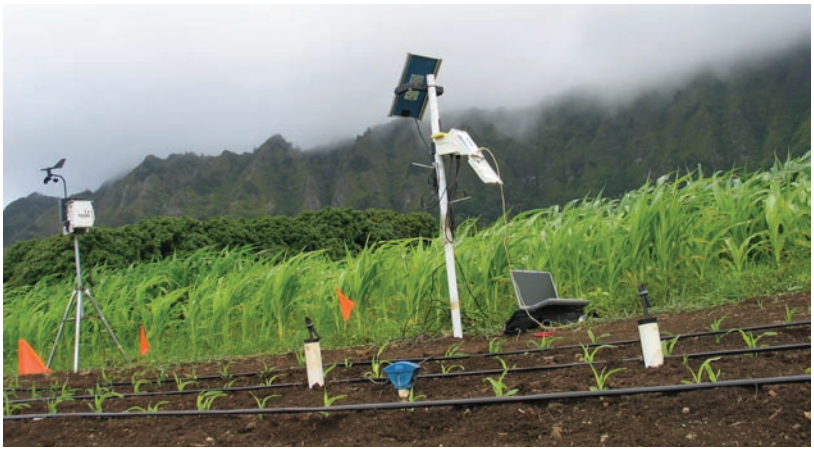
We collected soil and plant root/shoot samples to analyze for soil physical and chemical properties, plant root distribution, and root/shoot nutrient concentrations. Crop yield was also recorded. We used tension and double ring infiltrometers to determine water infiltration (WI) and soil saturated hydraulic conductivity (K_{sat}).

Ali Fares samples soil at different depths to characterize the long-term effect of minimum tillage on soil physical and chemical properties.

We analyzed soil samples for bulk density (ρ_b), porosity (θ), soil organic matter (SOM), and soil organic carbon (SOC). Soil water samples were analyzed for macro- and micro-nutrients, pH, EC, and NO_3-N concentrations.

A carbon turnover model was used to simulate CO_2 emission across the OA treatments. Increased OA rates and levels decreased ρ_b and increased θ. Water infiltration rate and K_{sat} increased with an increase in OA rates and levels. A good agreement was observed between WI and K_{sat} values calculated from tension and double ring infiltrometers across the treatments. The SOC concentration and CO_2 emission increased with an increase in OA application rates. There was a highly significant correlation between measured and simulated SOC and between measured SOC and simulated CO_2 emission.

The values of K_{sat} correlated with the measured and simulated SOC and the simulated CO_2 emission. An inverse relationship between ρ_b and K_{sat} was also



View of the multi-season research site equipped with a weather station, two soil water content monitoring systems, soil solution sampling suction cups and a drip irrigation system.

observed. In addition to improving soil aggregation, decreasing ρ_b, and increasing K_{sat}, OA application increases SOC pools. Concentration of NO_3-N within and below the root zone, and plant leaf RCC were higher in chicken manure treatments followed by dairy manure as compared with the control treatment. NO_3-N in soil solution and plant leaf RCC increased with increasing OA application rate. Plant leaf RCC was correlated with NO_3-N concentration within the root zone only. Therefore, plant leaf RCC may be used as an indicator of NO_3-N availability for sweet corn cultivated under conditions similar to those of this study.

There was no correlation between pH and any of the N contents or EC levels. Electric conductivity measurements may serve as practical indicators of NO_3-N concentrations for this study. However, this relationship may not substitute for laboratory analysis of NO_3-N.

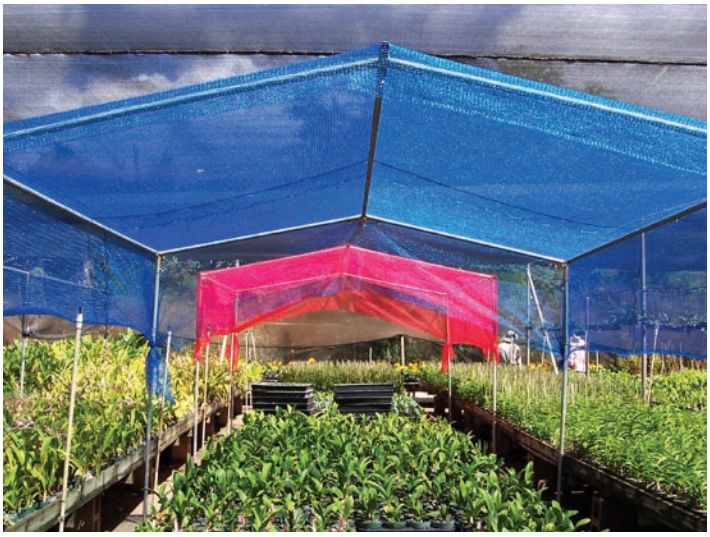
Application of OA had affected biomass production as well as macro- and micro-nutrients in plants and in the root zone. Overall, biomass production and nutrient content were affected by OA in the following order: chicken manure > dairy manure > control treatments. We found that more decomposition and leaching occurred during rainy growing seasons as compared with dry seasons. This finding can help growers use appropriate manure application rates for their crops cultivated during rainy seasons. Farmers must avoid excess application of OA and over irrigation especially during rainy seasons. Fall and winter applied manures are susceptible to enhanced mineralization; this could significantly increase leaching of valuable minerals below the crop root zone. This research is continuing during upcoming growing seasons. We will be fine tuning some of these findings and evaluating them in different locations before making any recommendations.

A large view of the research site right before the application of the different organic amendments.

Watershed Hydrology staff (Farhat, Sanjit, Zrelli, Amjad and Samira) are taking soil temperature, moisture and compaction for a geo-spatial data analysis.

Sustainability in ornamental crop production

By Kent Kobayashi, Edwin Mersino*, Andrew Kawabata, Joanne Lichty, and John Griffis
Departments of Tropical Plant & Soil Sciences, *Plant and Environmental Protection Sciences



Twelve types of orchids growing under different photoselective shadecloths that modify the light spectrum of sunlight. Photoselective shadecloths can alter the amount of blue, red, and far-red light reaching the plants.

How can we produce ornamental crops in a more sustainable way? In an attempt to minimize long-term effects on the environment, reduce the use of chemicals, and promote worker safety, we are looking into several approaches.

To control plant height, induce flowering, and increase branching, chemical growth regulators are often used. Can we reduce the use of growth regulators and other chemicals applied to plants? Fertilizers are necessary to ensure optimum growth and flower production. The question now becomes whether or not reduced fertilizer application rates give similar results.

Production of plants also requires potting media that promote optimum growth of the plant. However, some media components are limited (for example, volcanic cinder), making them expensive and sometimes difficult to obtain (such as peat moss). Are there alternative potting media components that could be used to substitute for these?

Lastly, compact fluorescent lights are gradually replacing incandescent lights. However, fluorescent lights have problems with heat production, short life, and mercury contamination. Light-emitting diodes (LEDs) for plant growth could provide an alternative to reduce the use of fluorescent lights.

How our work is sustainable

Sustainability seeks to preserve the environment and have minimal long-term effect on the environment. Therefore, resource use and environmental impact are reduced. Our work addresses these goals.

We are investigating the various qualities (colors) of light that plants use for growth and flower enhancement. Our previous work with orchids, anthuriums, dracaenas, poinsettias, Easter lilies, and chrysanthemums has shown that photoselective shadecloths and photoselective plastic films can achieve these aims. Results of our studies on alternative potting media with impatiens and palms have revealed the effectiveness of certain media components that can serve as substitutes for volcanic cinder and peat moss. With impatiens, we found that a lower fertilizer application rate than the recommended rate is just as effective. Our work with LED lights has demonstrated that LEDs are effective in the micropropagation of dracaena.

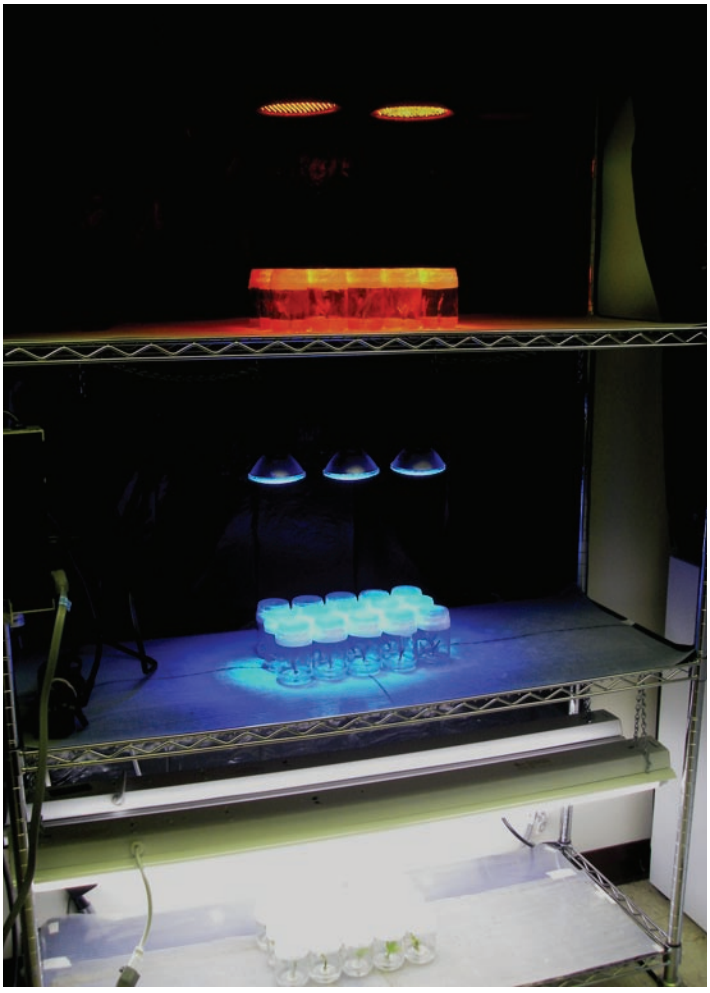
Different photoselective shadecloths being used to modify the growth and flowering of dracaena and anthurium plants.

Potential impact of our work

Our work impacts ornamental plant production systems by manipulating light quality to reduce the use of growth regulators. Fertilizer application rates can be reduced to lower fertilizer costs and decrease the leaching of fertilizers from potted plants into the ground, thereby minimizing environmental contamination. Alternative potting media components, such as compost, coir (coconut fiber), macadamia nut shells, macadamia nut shell charcoal, and corncob charcoal, help reduce the use of volcanic cinder and peat moss. Finally, LEDs reduce heat production from lights, energy consumption, and mercury contamination compared to fluorescent lights.

Ornamental crop production is going green!

Impatiens plants growing in five different potting media with various combinations of the components volcanic cinder, compost, carbonized corncobs, and peat moss) and two application rates of a controlled release fertilizer.



Use of red light-emitting diodes (LEDs), blue LEDs, and fluorescent lights for dracaena micropropagation.

Acknowledgements

We gratefully acknowledge the assistance of the following people and organizations:

- Federal Floriculture Research Grant Research Committee—grants.
- Dept. of Research and Development, County of Hawaii—grant.
- Bernie Cagauan, Kiilani Gifts & Garden.
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- P. McGrath, Hawaii Nurseries.
- David Schell, Island Princess Macadamia Nut Co.
- Michael Lurvey, Carbon Diversion, Inc.
- Christopher Kobayashi—review comments.

Sustaining Hawaii's honey bees

By Mark Wright
Associate Professor
Department of Plant and Environmental Protection Sciences

A bee pupa and 12 Varroa mites that were parasitizing it.

Tyler Ito and Scott Nikaido applying sugar to a frame of bees. The fine sugar is spread over the bees, and does them no harm.

Honey bees (*Apis mellifera*) are depended upon as pollinators of many crops worldwide. Hawaii is no exception, with many of our crops depending on pollinators for effective fruit set. Honey production is another significant contribution that honey bees make to agriculture, and Hawaii has a number of large honey producers, some of them certified organic and producing unique honeys form certain plants in Hawaii. Production of queen bees for re-queening hives is a substantive industry in Hawaii – the Big Island has the world's largest commercial producers of queen bees. Hawaii queen bees are distributed worldwide. Until 2007, Hawaii was one of the last places on earth with no infestations of Varroa mite (*Varroa destructor*) - a severe parasite of bees that has spread throughout the world, attacking honeybees of European origin. Varroa mites are originally from South East Asia, where they evolved with Asian bees. European bees are highly susceptible to attack by these mites. The mites were detected on Oahu in 2007, and were found to be widespread on the island. In August 2008, an incipient infestation of Varroa mite was detected in Hilo. The mites reproduce by laying eggs into cells with bee larvae, where the mites feed on the larvae, and can severely weaken or kill the bees. Adult mites disperse among colonies on adult bees.

There is serious concern that the mites will reach bee-producing areas on the Big Island, and threaten the sustainability of the bee industry, which is centered on the island. Other tropical regions that have been infested by Varroa mites have suffered severe reductions in bees. Florida reported a 95% reduction in feral bee colonies, which are important for the pollination services they provide. Managed bee hives in Florida were reduced by about 50% by Varroa infestations. We have seen similar impacts on Oahu. Some farmers are resorting to hand pollination for certain crops as a result of the dearth of honeybees in the environment.

To address this issue, the Hawaii Department of Agriculture (HDOA) funded a project in PEPS, to pursue the development of effective means of reducing risks of the mites invading other islands from Oahu, to eradicate new invasions on outer islands, and to investigate sustainable management of infested hives. Mark Wright and Ethel Villalobos are the principal investigators for the project. We have hired a staff of researchers, research associates and graduate students (Mike Klugness and Maria Diaz in Hilo; Scott Nikaido and Tyler Ito on Oahu) to work on the various aspects of the project. The project includes short-term responses to invasions by the mites, and long-term investigation of sustainable management options for hives infested by Varroa mites.

Reducing risks of mites moving from Oahu to other islands needs to be addressed through ensuring that feral bee colonies near ports are suppressed. Swarming bees on ship containers (or any items being shipped) may

A sugar coated drone bee – this bee will be stimulated to groom aggressively, and will dislodge Varroa mites from its body in the process.

carry phoretic ("hitchhiking") mites, which can then serve to produce founder populations in ports on other islands. One of our main priorities is the development of an effective means of baiting and eradicating feral hives near ports. We are working on different insecticides that can be deployed in honey baits at very low concentrations, so that forager bees collect toxin and return it to the colonies, resulting in their demise.

In dealing with the recent invasion of Hilo, we have deployed numerous experimental treatments with toxic baits, some with great success. Considerable additional effort has been made in the Hilo area, where we have implemented manual feral colony eradication, and monitoring programs for mites in feral and managed hives in a 5-mile radius around the original detection site. A crisis exemption declared by the HDOA will allow us to use a highly effective baiting system for 15 days in January 2009, and we are confident that the infestation will be contained at that time.

Sustainable management options for infested hives are being investigated by the Oahu team (Ethel Villalobos, Scott Nikaido and Tyler Ito). They are investigating procedures for suppressing mites in colonies, using non-toxic options. These options include the use of organic miticides, trapping mites in drone comb, "sugar-shaking" and thymol. Sugar shaking entails coating the bees with a dose of confectionery sugar, which encourages the bees to groom vigorously, and dislodge mites in the process. This can be an effective method, albeit quite labor intensive. Using drone brood (the male bees produced by the colony) to trap mites can be implemented by encouraging the bees to construct larger than normal cells on plastic drone combs. Varroa mites appear to parasitize the drone larvae (which are larger than female larvae) preferentially; combs of drones can thus be removed from hives after mites have attacked them and frozen, effectively reducing mite infestation levels in hives, especially during bee reproductive season. Thymol treatments involve the application of a commercially produced gel that works as a vapor and via contact. The worker beehive cleaning behavior helps spread the thymol gel throughout the hive. The gel sublimates within the hive and effectively "fumigates" the bees as they enter the hive space. When applied correctly, thymol can reduce mite levels dramatically and quickly, and can be used against miticide resistant mites. We will continue investigating options for reducing numbers of mites in managed hives, and ways to keep hives from becoming infested with Varroa mites.

Drone-brood cells removed from a hive. The cells on the green frame are larger than normal cells, and produce drone-brood, which attracts the Varroa mites, like a trap.

A thymol-gel container, placed in the top of a hive. Appropriately planned doses can reduce Varroa mites significantly.

Is that New Year's resolution to write a new grant proposal? Here's where to start to fulfill those resolutions

By Doug Vincent
Special Program Director for Grants and Contracts

I know most New Year's Resolutions fall by the wayside soon after they've been made. But use me as an example – I finally cleaned off my desk (stop by and see!) and my resolution is to try hard to keep it neat (OK, neater than before). Anyway, we urge you to consider writing for funding to support your activities. On the agriculture side, the USDA CSREES has just released the **Agriculture and Food Research Initiative**, the program that replaces the National Research Initiative. This program has a 30% set aside for integrated projects – research and/or extension and/or education projects. Explore them! We also anticipate the Specialty Crop Research Initiative soon along with the Beginning Farmer and Rancher Development Program; both from **USDA CSREES**. Have interests elsewhere – the Departments of **Education** and **Energy** have opportunities open now. Funding agencies such as **National Oceanic and Atmospheric Administration** and **Environmental Protection Agency** also have new opportunities. Inclined on the basic science side? **National Science Foundation** has programs that might interest you.

So where to look? Start right here – **Dr. Sharee Pepper**, CTAHR's grant coach has provided a listing of funding opportunities that might be appropriate. But don't just rely on this list, there are several, very user-friendly means to find funding opportunities. The most obvious is **Grants.gov**. Grants.gov has a very robust search engine and if you want personalized service you can set up an e-mail subscription so that Grants.gov can e-mail you new notices using specific criteria – such by agency. Don't want to be troubled by Grants.gov or have a particular agency you want information – many agencies such as NSF and NIH will set up specific e-mail alerts. Or you can subscribe to RSS feeds from these agencies to notify you when new opportunities come open. Not keen about dealing with Grants.gov – the University of Hawaii maintains a subscription to the **Illinois Research Information Service (IRIS)**. The IRIS system also has a very good search engine for grant opportunities and you can also set up an IRIS Alert using your e-mail address. Go here to set up an **IRIS e-mail alert**. Another avenue is **Community of Science (COS)** – as a University of Hawaii member (if you have @hawaii.edu e-mail address, you can join Community of Science. COS is the largest source of grant information on the web. If you don't want to join COS, the UH Hamilton Library maintains a **portal to search for grant opportunities on COS**. If seeking private foundation funding is your desire – then Hamilton Library maintains a subscription to the Foundation Directory Online Professional – but you can only access it at the Library. There are many avenues to seek funding opportunities. You have to take some initiative but having done so; you can be set up to find specific opportunities in your quest for funding. Give it a go. In the mean time, peruse the list below and we'll be back next month with more opportunities.

The following list includes some current funding opportunities that may be of interest to CTAHR faculty. If the deadline is too short for this year, it is still a good indication of the likely due date for next year. **Let us know if we can be of any assistance with developing and editing your grant application.**

For information on submitting grants electronically on grants.gov the following publication may be useful. **USDA, CSREES Grants.gov Application Guide – A guide for the preparation and submission of CSREES applications via grants.gov.**
http://www.csrees.usda.gov/funding/grant_forms/electronic_app_guide.pdf

Agricultural Grants

$ - USDA, CSREES - Assistive Technology Program for Farmers with Disabilities: State and Regional AgrAbility Projects
Deadline: January 30, 2009
http://www.csrees.usda.gov/funding/rfas/pdfs/agrability_12102008.pdf

$ - USDA, CSREES – Biotechnology Risk Assessment Research Grants Program
Deadline: January 30, 2009
http://www.csrees.usda.gov:80/fo/biotechnologyriskassessment.cfm

$ - USDA, CSREES - Assistive Technology Program for Farmers with Disabilities: State and Regional AgrAbility Projects
Deadline: January 30, 2009
http://www.csrees.usda.gov/fo/agrabilitystateandregionalagrabilityprojects.cfm

$ - USDA, CSREES - USDA/RMA
Deadline: February 13, 2009.
http://edocket.access.gpo.gov/2008/pdf/E8-29549.pdf

$ - USDA, CSREES – Plant Feedstock Genomics for Bioenergy: A Joint Research Solicitation - USDA, DOE
Deadline: February 18, 2009
http://www.csrees.usda.gov/fo/plantfeedstock.cfm

$ - USDA, CSREES - Agriculture and Food Research Initiative (AFRI) Competitive Grants Program **(Note: these were NRI grants)**
Deadline: See Table on last page for exact LOI and application deadlines
(Note: Jan & Feb deadlines are in Red)
http://www.csrees.usda.gov/funding/afri/pdfs/program_announcement.pdf

$ -USDA, CSREES - Western Sustainable Agriculture Research and Education Program
Sustainable Agriculture Tours
Deadline: Open until funding is exhausted
http://wsare.usu.edu/grants/docs/RFA_SAT.pdf

Education Grants

$ - USDA, CSREES - Higher Education Challenge Grants
Deadline: January 30, 2009
http://www.csrees.usda.gov/fo/educationchallengehigheredhep.cfm

$ - National Education Association (NEA) Foundation - Foundation Supports Professional Development for Educators
Deadline: February 1 & June 6
http://www.neafoundation.org/programs/Learning&Leadership_Guidelines.htm
Link to Funder Profile

$ - Motorola Foundation: Innovation Generation Grant Program
Deadline: February 15, 2009
http://www.motorola.com/content.jsp?globalObjectId=8153

$- UH Sea Grant, Dean John A Knauss Marine Policy Fellowship
Deadline: Friday, February 20, 2009
http://apply07.grants.gov/apply/opportunities/instructions/oppOAR-SG-2010-2001562-cfda11.417-cid2125348-instructions.pdf

$ - NMFS-Sea Grant Fellowships in Population Dynamics
Due February 20, 2009
http://apply07.grants.gov/apply/opportunities/instructions/oppOAR-SG-2009-2001573-cfda11.417-cid2127293-instructions.pdf

$ - NMFS-Sea Grant Fellowships in Marine Resource Economics
Due February 20, 2009
http://apply07.grants.gov/apply/opportunities/instructions/oppOAR-SG-2009-2001574-cfda11.417-cid2127311-instructions.pdf

$ - U.S. DOE Clean Cities/Biomass Program Solicitation for Education and Outreach Projects
Deadline: February 27, 2009
http://www.grants.gov/applicants/find_grant_opportunities.jsp

$ - NSF - Integrative Graduate Education and Research Traineeship Program (IGERT)
Deadline: Preliminary Proposal: March 13, 2009
Full Proposal Deadline Date :
September 14, 2009
(BY INVITATION ONLY)
http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=12759

$ - NOAA - Dr. Nancy Foster Scholarship Program
Due March 31, 2009
http://apply07.grants.gov/apply/opportunities/instructions/oppSEC-OED-2009-2001418-cfda11.481-cid2113921-instructions.pdf

$ - Human Frontier Science Program – Short Term Fellowship Program
Deadline: rolling – applications accepted year round
http://www.hfsp.org/how/appl_forms_STF.php

Environment, Water, Energy, Invasive Species Grants

$ - NOAA - Proactive Species Conservation Program
Deadline: February 12, 2009
http://apply07.grants.gov/apply/opportunities/instructions/oppNMFS-PRPO-2009-2001608-cfda11.472-cid2137229-instructions.pdf

$ - NOAA - Environmental Literacy Grants: Science on a Sphere Network Capacity Building
Due February 19, 2009
http://apply07.grants.gov/apply/opportunities/instructions/oppSEC-OED-2009-2001662-cfda11.481-cid2138663-instructions.pdf

$ - U.S. Environmental Protection Agency, Region 9, Resource Conservation Funds 2009: Requests for Initial Proposals - Solid Waste Management Assistance
Deadline: February 20, 2009
http://www.epa.gov/region09/funding/rcra.html

$ - NSF - Environmental Sustainability
Deadline: March 2, 2009 & September 15, 2009 (5:00 pm submitter's local time**)**
URL: http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=501027

$ - NSF - Energy for Sustainability
Deadline: March 2, 2009 & September 15, 2009 (5:00 pm submitter's local time)
http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=501026

$ - NSF - Biotechnology, Biochemical, and Biomass Engineering (BBBE)
Deadline: March 2, 2009 & September 15, 2009 (5:00 pm submitter's local time)
http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=501024

$ - NSF - Environmental Implications of Emerging Technologies
Deadline: March 2, 2009 & September 15, 2009 (5:00 pm submitter's local time)
http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=501030

$ - NOAA - NWS Hydrologic Research
Due March 3, 2009
http://apply07.grants.gov/apply/opportunities/instructions/oppNWS-NWSPO-2009-2001614-cfda11.462-cid2137409-instructions.pdf

$ - National Forest Foundation: Collaboration Support Program
Deadline: March 6 & August 7, 2009
http://www.natlforests.org/collaboration_support.html

$ - U.S. Environmental Protection Agency, Region 9 - Strategic Agricultural Initiative/Food Quality Protection Act
Deadline: March 18, 2009.
http://www.epa.gov/region09/funding/food-quality.html

$ - NOAA Coastal and Estuarine Land Conservation Program FY 2010 Competition (may need to partner with state agency)
Due March 31, 2009
http://apply07.grants.gov/apply/opportunities/instructions/oppNOS-OCRM-2010-2001655-cfda11.419-cid2138567-instructions.pdf

$ - NOAA Broad Agency Announcement (for special projects)
Due September 30, 2009 (closes but applications accepted on a rolling basis)
NOAA Office of Education:
http://apply07.grants.gov/apply/opportunities/instructions/oppNFA-NFA-2008-2001388-cid2112140-instructions.pdf
National Marine Fisheries Services
http://apply07.grants.gov/apply/opportunities/instructions/oppNFA-NFA-2008-2001388-cid2112136-instructions.pdf
National Environmental Satellite Data Information Service
http://apply07.grants.gov/apply/opportunities/instructions/oppNFA-NFA-2008-2001388-cid2112133-instructions.pdf
National Ocean Service
http://apply07.grants.gov/apply/opportunities/instructions/oppNFA-NFA-2008-2001388-cid2112139-instructions.pdf

$ - U.S. Fish and Wildlife Service - Coastal Programs
Deadline: September 30, 2009
http://apply07.grants.gov/apply/opportunities/instructions/oppCOASTAL-09-cfda15.630-instructions.pdf

$- NSF – Long Term Research in Environmental Biology (LTREB)
Deadlines: July 9 Annually
http://nsf.gov/pubs/2007/nsf07588/nsf07588.htm

$ - National Forest Foundation: Community Assistance Program
Local Forest Partnerships Fund
Deadline: proposals accepted on a rolling basis throughout year
http://www.natlforests.org/consp_05_cap.html

Families, Youth and Children Grants

$ - Robert Wood Johnson Foundation - Proposals for its Healthy Kids, Healthy Communities grants.
Short proposals are due: February 3, 2009
Invited full proposals are due: May 14, 2009
(RWJF will be holding applicant conference calls on **January 22, 2009.** See the following links for more details: http://www.healthykidshealthycommunities.org/index.html) http://www.rwjf.org/files/applications/cfp/cfp_HKHC2008.pdf

$ - HHS, Administration for Native Americans - Family Preservation - Improving the Well-Being of Children Project Planning
Deadline: March 25, 2009
http://www.acf.hhs.gov/grants/open/HHS-2009-ACF-ANA-NI-0049.html

$ - HHS, Administration for Native Americans - Family Preservation-Improving the Well-Being of Children Project Implementation
Deadline: March 25, 2009
http://www.acf.hhs.gov/grants/open/HHS-2009-ACF-ANA-NI-0059.html

$ - CHS Foundation
Rural Youth and Leadership Development
Deadline: rolling – applications accepted year round
http://www.chsfoundation.org/programs/ryld.htm

Financial Grants

$ - FINRA Investor Education Foundation General Grant Program
Deadline: February 4, 2009 & May 6, 2009
http://www.finrafoundation.org/grants.asp

$ - Money Management International Financial Education Foundation,
Financial Education Grants
Deadline: rolling – applications accepted year round
http://www.mmifoundation.org/GrantSeekers.asp

Health, Nutrition, Food, Biomedical Grants

$ - NOAA, National Marine Fisheries Service (NMFS), FY09 Hawaii Seafood Program
Deadline: February 13, 2009
http://www.fpir.noaa.gov/Library/OMI/Grants/FY09_Hawaii_Seafood_Program.pdf

$ - HHS, National Institutes of Health (NIH)
Improving Diet and Physical Activity Assessment (RO1)
Letters of Intent Due: January 16, 2009 (optional)
Proposal Deadline: February 16, 2009
http://grants.nih.gov/grants/guide/pa-files/PAR-07-259.html

$ - NIH - Improving Diet and Physical Activity Assessment (R21)
Letters of Intent Due: January 16, 2009 (optional)
Proposal Deadline: February 16 & May 7, 2009
http://grants.nih.gov/grants/guide/pa-files/PAR-07-259.html
http://www07.grants.gov/search/search.do;jsessionid=LHSfIHFSL4pBXG0Dtb7PpzkdDBMHJSl6vhyGyQ1tpTnGcSJ2WfZD!488375993?oppId=8282&flag2006=true&mode=VIEW

$ - RWJF Issues Healthy Eating Calls for Proposals
Deadline: February 24, 2009.
http://www.healthyeatingresearch.org/

$ - NIH -Pilot and Feasibility Clinical Research Studies In Digestive Diseases And Nutrition
Deadline: May 7, 2009
http://www07.grants.gov/search/search.do;jsessionid=LHSfIHFSL4pBXG0Dtb7PpzkdDBMHJSl6vhyGyQ1tpTnGcSJ2WfZD!488375993?oppId=8805&flag2006=true&mode=VIEW

$ - NIH - Exploratory/Developmental Clinical Research Grants in Obesity (R21)
Deadline: May 7, 2009
http://www07.grants.gov/search/search.do;jsessionid=LHSfIHFSL4pBXG0Dtb7PpzkdDBMHJSl6vhyGyQ1tpTnGcSJ2WfZD!488375993?oppId=8575&flag2006=true&mode=VIEW

$ - NIH – Improving Diet and Physical Activity Assessment (R21)
Deadline: May 7, 2009
http://grants.nih.gov/grants/guide/pa-files/PAR-06-103.html

Humanities Grants

$ - Hitachi Foundation: Business and Communities Grants Program
Grants Address Economically Isolated Communities
Interested organizations may submit an online inquiry to provide information about project ideas **at any time** and the Foundation's will determine if it fits their priorities.
http://www.hitachifoundation.org/grants/guidelines/index.html.

Rural and Community Development Grants

$ - USDA, Rural Development
Community Facilities Loan and Grant Program
Deadline: Applications accepted on an ongoing basis
http://www.rurdev.usda.gov/rhs/cf/cp.htm
http://www.rurdev.usda.gov/rhs/cf/brief_cp_grant.htm

$-Farm Foundation Grants
Deadline: Applications accepted on an ongoing basis
http://www.farmfoundation.org/news/templates/comm_template.aspx?articleid=357&zoneid=67

Science Grants

$ - NSF - Science, Technology, and Society
Deadline: February 1, 2009
http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf08553

$ - National Fish and Wildlife Foundation: Five-Star Restoration Matching Grants Program
Deadline: February 16, 2009
http://www.nfwf.org/AM/Template.cfm?Section=Browse_All_Programs&Template=/TaggedPage/TaggedPageDisplay.cfm&TPLID=30&ContentID=10890

$ - National Geographic Society – Waitt Grants Program
Deadline: Rolling
http://www.nationalgeographic.com/field/grants-programs/waitt-grants-application.html

UH, Hawaii and Regional Grants

$ - National Park Service: Tribal Preservation Program
Deadline: January 30, 2009.
http://www.nps.gov/history/hps/HPG/Tribal/index.htm

$ - USDA, CSREES - Alaska Native-Serving and Native Hawaiian-Serving Institutions Education Grants Program
Deadline: January 30, 2009
http://www.csrees.usda.gov/fo/alaskanativenativehawaiianinstitutions.cfm

$ - UH - $1 Million Sustainability Research Grant
Deadline: March 1, 2009
http://www.hawaii.edu/cgi-bin/uhnews?20081208144214

$ - UH, University Research Council - Faculty Travel Funds
Proposal Deadline: rolling – applications must be in >4 weeks before travel.
http://www.hawaii.edu/urc/pdf/factravel_g.pdf
http://www.hawaii.edu/urc/pdf/factravel_f.pdf

USDA, CSREES - Agriculture and Food Research Initiative (AFRI) Competitive Grants Program Contacts (Note: replacing NRI grants)

http://www.csrees.usda.gov/funding/afri/pdfs/program_announcement.pdf

USDA CSREES Agriculture and Food Research Inititative (AFRI) Competitive Grants	LOI Due	Deadline	National Program Leader	e-mail address
Air Quality	3/5/2009	6/5/2009	Raymond Knighton	rknighton@csrees.usda.gov
Animal Genome, Genetics and Breeding	3/5/2009	5/14/2009	Peter Burfening	pburfening@csrees.usda.gov
Animal Growth and Nutrient Utilization	none	7/8/2009	Mark A. Mirando	mmirando@csrees.usda.gov
Animal Health and Well-Being: Animal Health	1/16/2009	3/13/2009	Peter Johnson	pjohnson@csrees.usda.gov
Animal Health and Well-Being: Animal Well-Being	1/16/2009	3/13/2009	Peter Johnson	pjohnson@csrees.usda.gov
Animal Health and Well-Being: Tools and Resources	6/1/2009	8/14/2009	Peter Johnson	pjohnson@csrees.usda.gov
Animal Reproduction	none	3/3/2009	Mark A. Mirando	mmirando@csrees.usda.gov
Applied Plant Genomics Coordinated Agricultural Project	1/16/2009	3/11/2009	Ed Kaleikau	ekaleikau@csrees.usda.gov

Arthropod and Nematode Biology and Management: Organismal and Population Biology	none	3/9/2009	Mary Purcell-Miramontes	mpurcell@csrees.usda.gov
Arthropod and Nematode Biology and Management: Suborganismal Biology	4/1/2009	6/24/2009	Mary Purcell-Miramontes	mpurcell@csrees.usda.gov
Arthropod and Nematode Biology and Management: Tools, Resources and Genomics	4/1/2009	6/24/2009	Mary Purcell-Miramontes	mpurcell@csrees.usda.gov
Bioactive Food Components	1/22/2009	4/7/2009	Etta Saltos	esaltos@csrees.usda.gov
Biobased Products and Bioenergy Production Research	2/11/2009	4/2/2009	Chavonda Jacobs-Young	cjacobs@csrees.usda.gov
Improving Food Quality and Value	1/21/2009	3/31/2009	D. Ramkishan Rao	rrao@csrees.usda.gov
Food Safety and Epidemiology - Biological Approaches to Food Safety	3/4/2009	5/6/2009	Nancy Cavallaro	ncavallaro@csrees.usda.gov
Food Safety and Epidemiology - :Epidemiological Approaches to Food Safety	3/4/2009	5/6/2009	Nancy Cavallaro	ncavallaro@csrees.usda.gov
Food Safety and Epidemiology - Practical Approaches for Food Safety	3/4/2009	5/6/2009	Nancy Cavallaro	ncavallaro@csrees.usda.gov
Human Nutrition and Obesity	none	6/15/2009	Etta Saltos	esaltos@csrees.usda.gov
Integrated Solutions for Animal Agriculture	3/16/2009	6/30/2009	Peter Johnson	pjohnson@csrees.usda.gov
Managed Ecosystems	3/3/2009	6/2/2009	Diana Jerkins	djerkins@csrees.usda.gov
Markets and Trade	none	5/15/2009	Siva Sureshwaran	ssureshwaran@csrees.usda.gov
Microbial Biology: Microbial Associations with Plants	2/16/2009	4/30/2009	Ann Lichens-Park	apark@csrees.usda.gov
Microbial Genomics: Functional Genomics of Microorganisms	2/5/2009	4/16/2009	Ann Lichens-Park	apark@csrees.usda.gov
Microbial Genomics: Genomic Sequencing	none	3/2/2009	Ann Lichens-Park	apark@csrees.usda.gov
Plant Biology: Biochemistry	2/20/2009	4/27/2009	Ed Kaleikau	ekaleikau@csrees.usda.gov
Plant Biology: Plant Breeding and Education	3/16/2009	6/15/2009	Liang-Shiou Lin	llin@csrees.usda.gov
Plant Biology: Environmental Stress	1/30/2009	3/27/2009	Diana Jerkins	djerkins@csrees.usda.gov
Plant Biology: Growth and Development	3/2/2009	5/19/2009	Liang-Shiou Lin	llin@csrees.usda.gov
Plant Biosecurity	4/13/2009	6/26/2009	Liang-Shiou Lin	llin@csrees.usda.gov
Plant Genome, Genetics and Breeding	1/16/2009	3/11/2009	Ed Kaleikau	ekaleikau@csrees.usda.gov
Protection of Managed Bees	3/2/2009	5/1/2009	Mary Purcell-Miramontes	mpurcell@csrees.usda.gov
Rapid Response	7/30/2009	7/30/2009	Mark Poth	mpoth@csrees.usda.gov
Soil Processes	1/16/2009	3/17/2009	Nancy Cavallaro	ncavallaro@csrees.usda.gov
Sustainable Agroecosystems Science	none	3/2/2009	Michael A. Bowers	mbowers@csrees.usda.gov
Water and Watersheds	None	4/15/2009	James P Dobrowolski	jdobrowolski@csrees.usda.gov
Weedy and Invasive Species	4/20/2009	6/19/2009	Michael A. Bowers	mbowers@csrees.usda.gov

Grant funding in FY 2009 looks better

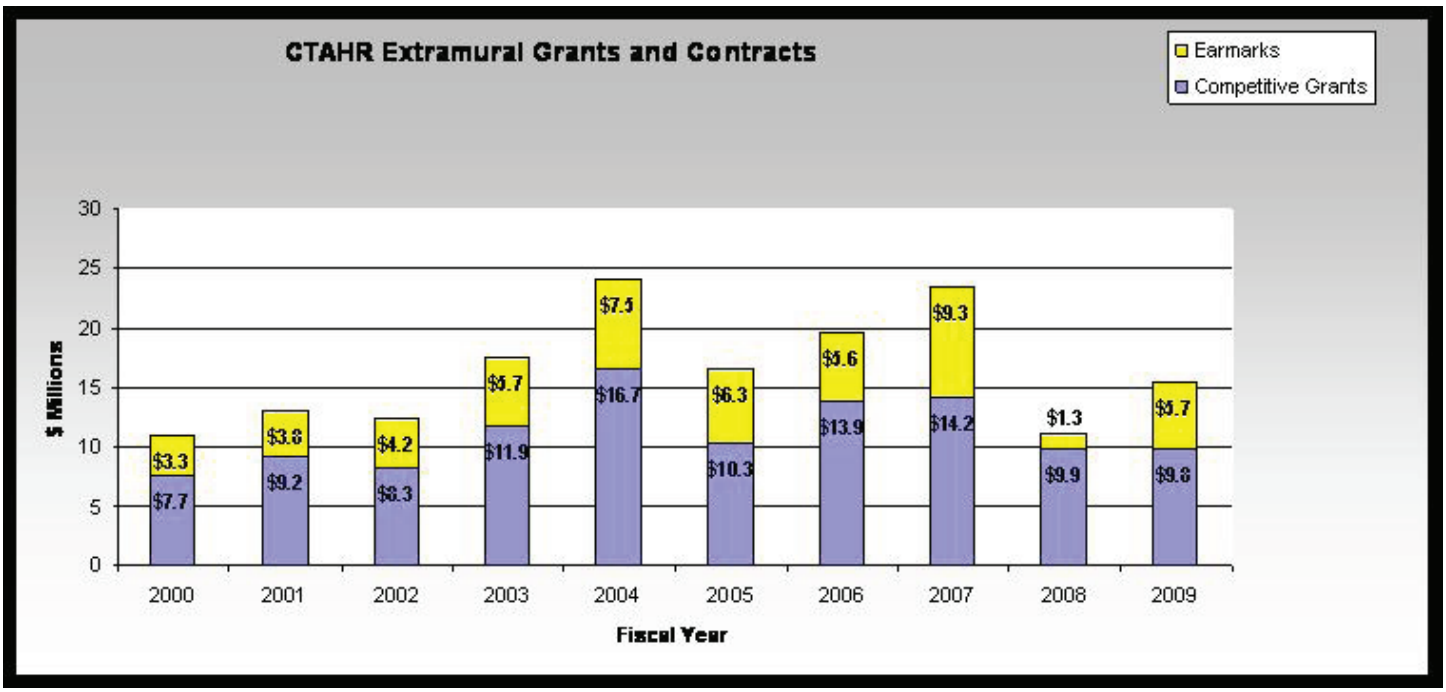
By Doug Vincent
Special Program Director for Grants and Contracts

In terms of grant funding level for FY 2008, let's forget about it. FY 2008 was the worst year for grant funding in CTAHR since FY 2000 and the fewest awards since FY 2003. I don't even want to think about the paltry $11.197 M that we received in FY 2008. I'd rather celebrate -- halfway through the FY 2009 fiscal year, things are looking better, much better. To date we've received over $15 M in extramural funding – already exceeding FY 2008 and with half the fiscal year to go. Of course, one third of the funding comes from earmark-funded projects. So far this fiscal year we've received $5.6 M in earmark-funded projects. But the two thirds of funding received that are non-earmark-funded projects are just shy of the comparable amount from the previous year, again with nearly half the fiscal year to go. So there is considerable room for growth.

Some cautionary words, however, the Hawaii State budget is dismal, especially for state FY 2010 fiscal year. Many of the grants and contracts received from the Hawaii government may not be forthcoming as the Governor has proposed significant cuts in government agency discretionary spending. We've already heard that agriculture research grants have been zeroed out of the HDOA budget. Other state agencies may also lose funding and not be able to fund new projects.

In spite of having our senior Senator ascend to the Chairmanship of the Senate Appropriations committee, we must temper this enthusiasm with concerns about the federal budget and budget deficits. We still don't have a federal budget for FY 2009, so we don't know where we stand with respect to our earmarks. The new Congress is already planning for the FY 2010 budget. Can we continue to operate on this sort of uncertainty? I urge you to think about the citizens of Alaska, who will be in for a shock, now that Senator Stevens is no longer in the Congress – his seniority provided federal dollars to Alaska. Some day that will be true for Hawaii. We need to plan for the day when the earmarks no longer exist, and to do so, if we wish to work, we need to go after competitive grants.

Below is a table of grants and contracts received since our last publication of the *CTAHR Research News*.



CTAHR Extramural Grants separated by earmark-funding awards and competitive awards.
Source: UH Office of Research Services.

CTAHR Competitive grants

First name	Last name / Dept	Project Name	Funder	Amount
Catherine	Chan-Halbrendt / NREM	Reclaiming Hawaii's Avocado Market through Branding of Hawaii County Grown Avocados	County of Hawaii	$5,000
Carl	Evensen / NREM	Water Quality Research and Extension Coordination in Hawaii	University of Arizona	9,148
Jim	Hollyer / ADAP	Logistics Arrangements for a Cattlemen's Trip to Australia to Learn About Leucaena	Hawaii Agricultural Development Corporation	43,000
Travis	Idol / NREM	Assessment of Acacia Koa Forest cover and Productivity Across Environmental Gradients in Hawaii Using…	Hawaii-DLNR	20,000
Carol	Ikeda / FCS	4-H Navy Youth Development Partnership Project	DA-Cooperative State Research Service	714,836
Kent	Kobayashi / TPSS	Adapting Aquaponics Systems for Use in the American Pacific Islands	Center for Tropical and Subtropical Aquaculture	12,836
Qing	Li / MBBE	Hair Analysis for Mercury and Arsenic Exposure	Hawaii-Department of Health	64,202
Creighton	Litton / NREM	The Invasive Species/Wildfire Cycle: Fuel Loads, Microclimate, Fire Potential and Fire Behavior in….	USDA Forest Service	69,001
Tomoaki	Miura / NREM	Vegetation Phenology and Vegetation Index from Multiple Missions and Satellite Sensors	University of Arizona	82,025
Clarie	Nakatsuka / FCS	Operation Military Kids	Kansas State University	75,000
Gernot	Presting / MBBE	Functional Genomics of Maize Centromeres	University of Georgia	226,229
Mark	Thorne / HNFAS	Extension Outreach and Assistance in Improved Pasture and Livestock Management Practices for Pacific….	DA-Cooperative State Research Service	297,224
Competitive Grants and Contracts			12	$1,618,501
Earmark-Funded Grants and Contracts			0	$-
Total this period			12	$1,618,501
FY 2009 YTD			118	$15,531,046
FY 2008 Total			114	$11,101,686
FY 2009 YTD	Competitive Grants		82	$9,832,462
FY 2009 YTD	Earmark-Funded Grants		47	$5,698,584

New faculty publications

Greg Bruland (NREM)
Bruland, G.L., C.M. Bliss, S. Grunwald, N.B. Comerford, and D.G. Graetz. 2008. Soil Nitrate-Nitrogen in Forested Versus Non-Forested Land-Uses in a Mixed-Use Watershed. *Geoderma* 148:220-231.

Ken Grace (PEPS)
Gentz, M. C., J. K. Grace and M. E. Mankowski. 2009. Horizontal transfer of boron by the Formosan subterranean termite (*Coptotermes formosanus* Shiraki) after feeding on treated wood. *Holzforschung* 63: 113-117.

Russell Messing (PEPS)
Messing, R. H. & X. G. Wang. 2009. Competitor-free space mediates non-target impact of an introduced biological control agent. *Ecological Entomology* 34: 107-113.

Rachel Novotny (HNFAS)
Martin CL, Murphy SP, Novotny R. Contribution of dietary supplements to nutrient adequacy among children in Hawaii. *JADA*. 2008 Nov;108(11):1874-1880.

Guerrero RTL, Paulino YC, Novotny R, Murphy SP. Diet and obesity among Chamorro and Filipino adults on Guam. *Asia Pac J Clin Nutr* 2008;17(2):216-222.

Kemmer TM, Novotny R, Gerber AS, Ah Ping I. Anemia and growth patterns in children ages 5 to 10 years living in American Samoa. *Public Health Nutrition Journal.* 2008 Jun 12:1-7. [Epub June 12].

Martin CL, Murphy SP, Leon Guerrero RT, Davison N, Jung YO, Novotny R. The Pacific Tracker (PacTrac): Development of a Dietary Assessment Instrument for the Pacific. *Journal of Food Composition and Analysis*, 2008; 21(1):S103-S108.

Shepherd J, Malkov S, Fan B, Laidevant A, Novotny R, Maskarinec G. Breast density assessment in adolescent girls using DXA: a feasibility study. Cancer, Epidemiology, *Biomarkers & Prevention.* 2008 Jul; 17(7):1709-13.

Walker MD, Novotny R, Bilezikian JP, Weaver CM. Racial and dietary interactions in the acquisition, maintenance, and loss of bone. *Journal of Nutrition* 2008; 138(6):1256S-1260S.

Wong SS, Boushey CJ, Novotny R, Gustafson DR. Evaluation of a computerized food frequency questionnaire to estimate calcium intake of Asian, Hispanic, and non-Hispanic White Youth. *Journal of the American Dietetic Association* 2008 Mar; 108(3):539-543.

Daniel Rubinoff (PEPS)
Rubinoff D, Le Roux JJ. (2008). Evidence of Repeated and Independent Saltational Evolution in a Peculiar Genus of Sphinx Moths (Proserpinus: Sphingidae). *PLoS ONE* 3(12): e4035. doi:10.1371/journal.pone.0004035

. . . in the interest of scientific rigor

Dear *CTAHR Research News* Staff:

This is to bring to your kind attention one of my humble research efforts that led to the retraction of a publication appeared in the prestigious journal of Proceedings of the National Academy of Sciences USA. Recently, Prasad et al. (Proc Natl Acad Sci USA (2006) 103: 13315-20) reported isolation of a gene (csy1) encoding for capsaicin synthase (CS) in capsicum spp. CS is supposed to catalyze the condensation of vanillylamine and methyl nonenoic acid in the final step of capsaicin biosynthetic pathway. They reported that they isolated the csy1 sequence through a reverse genetics approach, and claimed that a recombinant protein encoded from that sequence exhibited CS activity. Having cloned a couple of genes of enzymes of ascorbic acid biosynthesis pathway, I was surprised by the ease with which they isolated that gene. From a close reading I noticed several inconsistencies in their data. To verify their claims, I isolated the up-, and down-stream regions of csy1 from capsicum genome (GenBank Acc No.EF560217) The sequence result and an analysis revealed that their claims must be false. I presented my analysis to PNAS, which led to the retraction of their paper last week (http://www.pnas.org/content/early/2008/12/10/0811456105.full.pdf). It turns out that the authors fabricated their data extensively.

My effort has been appreciated by several senior MBBE faculty members as it underlines the fundamental value of scientific integrity, which all of our CTAHR scientists cherish. I wonder if my effort could find a mention in our popular *CTAHR Research News* magazine? It may perhaps be listed as a publication in the list of CTAHR publications as follows, or in any other suitable form that you may deem fit.

Sincerely,
Madhusudhan Rapolu
Junior Researcher, MBBE