# CTAHR Research News

February 2010
Volume 6, Issue 2 (46)

Susan Miyasaka looking at Black-eyed Susans (*Rudbeckia hirta*, Asteraceae) at the Royal Tasmanian Botanical Gardens in Hobart, Tasmania.

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# From the Associate Dean and Associate Director for Research

Economics nationally seems to have improved somewhat in recent months; however, typically, Hawaii lags behind the national trend. While we continue to watch our budget numbers closely, unfortunately, we do not have any news for you at this time. The message we have received from Bachman Hall is: the outlook is not pretty. We will not receive an anticipated savings from the faculty salary reductions and the university must come up with an additional 3% salary increase in years 3 and 4 of the contract period. Coupled with the loss of federal stimulus funds, this translates into a substantial university budget gap that must be filled by other revenue sources. Failing that would mean position cuts. We have noticed other colleges have already trimmed their staff. CTAHR has been able to get by without resorting to staff reduction this fiscal year. Unfortunately, our budget planning shows clearly that CTAHR will not be able to absorb another budget reduction from the central administration. Therefore, a much tougher time is still in front of us if we are required to cut faculty and staff positions to balance our budget. The best way to insulate us from this potential impact is to create our own positions. The USDA has more than doubled its competitive grant program (AFRI) budget, and both NIH and NSF have also received a substantial increase to boost their competitive funding. Only by submitting more grant proposals can we increase our chances of boosting our extramural funding to save our support staff and minimize the loss of faculty salaries. It is going to be a tough five years looking forward. We can either wait for the consequences, or we can create our own future by bringing in our own research dollars. Please write and submit grant proposals! Congratulations to those who are listed in our "grants won" section!

Although we are in a tough budget period, it does not mean that our faculty are not doing good work for the state, and our stakeholders. We would like to share with you the story of Dr. Susan Miyasaka, a faculty located in Hilo, and a member of the Department of Tropical Plant and Soil Sciences. You will notice Dr. Miyasaka does not work alone. She works with many collaborators on many different projects with one mission in mind, finding solutions for problems that challenge the existence of agriculture in our state. We are very fortunate to have dedicated faculty such as Susan in our ranks! Oh, check out Scot Nelson's new Plant Doctor app, too!

As we approach March, it is time for us to finish writing our station reports, and send out project renewal announcement. Having most of our research FTEs covered by research projects has been extremely helpful for us to have more flexibility to use federal formula funds to supplement diminishing state funds in critical areas. If your project is ending this year, please be ready to write a renewal or participate in an existing project. We will provide more information on this next month. Until then, be happy and be safe!

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

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# Making connections: integrating research with education

**By Susan C. Miyasaka, Agronomist**
**Department of Tropical Plant and Soil Science**


Drs. Y. Judy Zhu, Xiaoling (Linda) He, Maureen Fitch, and Susan Miyasaka at Hawaii Agriculture Research Center.

When explaining what I do, I am often asked 'What is an Agronomist?' An Agronomist is a scientist who conducts applied research on large-scale crops for food, fuel, or fiber. In 1989, I was hired to work on Alternative Crops due to the drastic decline in sugarcane and pineapple production in Hawai'i. One particular focus of my research efforts involves improving the sustainability of food production in our island ecosystem. We import 85% of our food and are particularly vulnerable to disruptions in shipping, because we only have a 10-day reserve supply. A second research focus involves identifying and utilizing natural plant mechanisms to resist or tolerate invasive pests and diseases which are continually reaching our shores. These new pests and diseases are adversely impacting our ability to grow food crops and our ability to maintain a healthy ecosystem.

As a Manoa-based researcher who is stationed at the Komohana Agricultural Research Center in Hilo, Hawai'i, I've made substantial efforts to establish and maintain working relationships with scientists and students at Manoa campus, as well as those in other institutions. These connections involve not only collaborative research, but educational outreach efforts with agricultural industry clientele, K-12 teachers, and community volunteers. Here are some examples.

## Connections with Hawai'i Agriculture Research Center (HARC) and Natural Resource and Environmental Management (NREM)

Taro is a tropical root crop that the ancient Polynesians brought to Hawai'i. Taro Leaf Blight (TLB), caused by the pathogen *Phytophthora colocasiae*, reached Hawai'i during the 1920s and is one of the worst diseases of

Tissue-cultured plantlets of non-transformed (NT) Chinese taro 'Bun long' and 'Bun long' transformed by wheat oxalate oxidase gene (g5) at 12 days after inoculation with pathogen that causes Taro Leaf Blight. Note that non-transformed taro is almost dead while transformed taro is healthy.

taro today. I served as the academic supervisor of Dr. **Xiaoling (Linda) He** (Ph.D. degree from TPSS, now a post-doctoral research associate at HARC) in a project funded by the USDA-CSREES-TSTAR program. Drs. Maureen Fitch and Y. Judy Zhu at HARC served as research supervisors for Linda. Linda successfully transformed Chinese taro 'Bun long' with two disease resistance genes, and found that insertion of the oxalate oxidase gene from wheat into Chinese taro resulted in complete stoppage of the spread of TLB under laboratory conditions. For scientists, these are exciting results!

Controversy erupted over genetic engineering of taro due in large part to cultural concerns. However, there is an extremely low risk of accidental movement of transgenes from a genetically engineered Chinese taro to a Hawaiian taro variety, because: a) Chinese taro 'Bun long' rarely flowers under the environmental conditions of Hawai'i; b) Hawaiian taro varieties flower but rarely produce seed capable of growing into a whole plant; and c) taro is grown vegetatively from 'hulis' and not from seed [http://www.ctahr.hawaii.edu/gmo/image/Update-GE-Dec14-06.pdf]. Despite these scientific facts, bans on genetic engineering of taro (including research) have been passed by the Hawai'i County Council in 2008 and by the Maui County Council in 2009. As a scientist, I believe that bans on research are like 'eating your seed corn'; they limit your future ability to grow and protect a crop. Also, bans often result in research being conducted in other countries that may not have the extensive system of regulations to ensure the safety of genetically engineered crops as in the United States.


Taro is vegetatively propagated by 'hulis', or lower 12" of stems with 1/4" of corm

Dr. Ania Wieczorek presenting information on agricultural biotechnology to middle- and high-school teachers of science and agriculture.

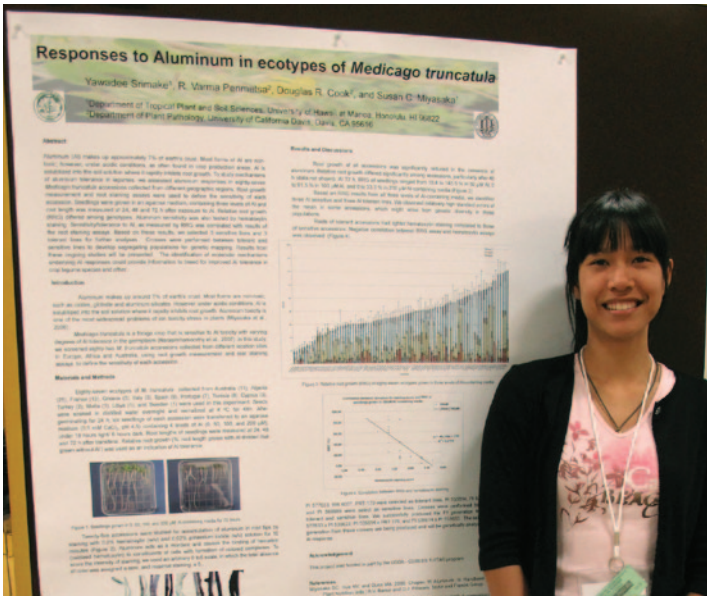
Fortunately, resistance to TLB has been found to occur naturally within the taro gene pool (although there are other deadly diseases for which natural resistance in taro is unknown). As a result of the controversy over genetic engineering of taro, we have switched the focus of our research to identifying genetic markers associated with disease resistance. Recently, Linda He found the existence of naturally-occurring oxalate oxidase genes in several taro varieties. If we are able to identify genetic markers or genes associated with disease resistance, then conventional breeding could be accelerated to improve resistance to TLB.

As part of a collaborative grant funded by the Hawai'i Department of Agriculture, Dr. **Linda Cox** (Interim Associate Director of Extension, former NREM faculty) conducted face-to-face interviews with 476 people on Oahu during September, 2009. Approximately half of the respondents knew what hybridized taro was with no additional educational materials and of these, one-third responded they would consume disease-resistant taro hybridized using genetic markers. After reading the educational material, two-thirds responded that they would consume hybridized taro. Education had a large, positive impact on the consumers' decision to consume hybridized taro, indicating the importance of programs to educate the public about new agricultural technologies.

### Connections with Tropical Plant & Soil Sciences (TPSS), University of Hawai'i – Hilo (UHH) College of Agriculture, Forestry, and Natural Resource Management (CAFNRM), and Kamehameha Schools

Drs. **Ania Wieczorek** (TPSS), Michael Shintaku (UHH CAFNRM), Mario Patino (science educator at Kamehameha Schools - Hawaii, and I co-taught a summer class (AG 494 – Agricultural Biotechnology) at UHH during June 2009 for middle school and high school teachers. Dr. **Charly Kinoshita** (CTAHR Associate Dean of Instruction) and Dr. William Sakai (UHH-CAFNRM) provided funding from the University of Hawaii's Agribusiness Education, Training, and Incubation Program, funded by USDA-CSREES under its Alaska Native-Serving and Native Hawaiian Serving Institutions Education Grants Program. Tuition was waived for all seven teachers taking this course and travel support was provided for three off-island teachers. Papayas were used to teach about agricultural biotechnology through lectures, laboratories on genetic transformation, and field trips to commercial papaya farms, packing plants, Kamehameha Schools – Hawai'i, and the Pacific Basin Agriculture Research Center. For example, research to develop papaya ringspot-resistant papayas using genetic engineering was essential to save the commercial papaya industry in Hawai'i, because no natural resistance was found within the papaya gene pool.

The pasture legume *Medicago truncatula*, or barrel medic.




Yawadee Srimake in front of the poster she presented at the Plant Biology meeting held in Honolulu, July 2009.

## Connection with University of California, Davis (UC-Davis)

Cattle are grazed on extensive pastures and rangelands in Hawai‘i, and are one of the 12 major diversified agricultural commodities in the state. Biological nitrogen fixation (BNF) via legumes is a low-input method of increasing nitrogen supply to warm season grasses. In the humid Tropics, acid soils, and aluminum toxicity in particular, are a problem that reduces root growth and BNF. During 2004-05, I conducted research at Dr. Douglas R. Cook's laboratory at UC Davis during a sabbatical leave, and found a quick, repeatable method of evaluating aluminum-tolerance of the pasture legume *Medicago truncatula*, or barrel medic. Ms. **Yawadee Srimake** (Ph.D. student, TPSS) continued this research, evaluating 87 ecotypes of barrel medic and finding differences in their response to aluminum toxicity. She is in the process of crossing Al-tolerant and Al-sensitive varieties of barrel medic to produce a population that can be analyzed genetically in hopes of discovering novel genes involved in plant tolerance to aluminum. It is anticipated that discovery of such genes will lead to greater tolerance of acid soils by pasture legumes, to greater nitrogen fixation, to better grass production, and to higher weight gain by grazing animals.

## Connections with Big Island Farm Bureau, Hawai‘i Cattlemen's Council, Hawai‘i Community Colleges, HNFAS, PEPS, and Community volunteers

Due to the high cost of feed, the majority of calves in Hawai‘i are shipped to the mainland United States for finishing. One goal of "Mealani A Taste of the Hawaiian Range" is to educate chefs and consumers about the benefits of eating grass-fed beef and other locally raised meats. This event was co-founded by **Glenn Fukumoto** (HNFAS), **Milton Yamasaki** (Farm Manager of Mealani Research Station), and **Burton J. Smith** (retired, formerly with the department of Agronomy & Soil Science). In 2008, Glenn stepped down as chair after 12 years of helping to build up this event, and I co-chaired the "Taste" with Michelle Galimba (Hawai‘i Cattlemen's Council). We obtained funding from the County of Hawai‘i's Research & Development program and organized the event in 2008 with the help of Tom Asano (Kulana Foods), **Leomi Bergknut** (CTAHR Hawai‘i County during that time), **Eunice Domingo** (CTAHR Hawai‘i County), Lorie Farrell (Big Island Farm Bureau), **Randall Hamasaki** (PEPS), **Trent Hata** (CTAHR Hawai‘i County), Jeri

Susan at the CTAHR booth during the 2008 Mealani A Taste of the Hawaiian Range, providing information on CTAHR research projects, such as blueberries, macadamia nuts, and tea.

Moniz (rancher), Joan Namkoong (community), and many other volunteers. In addition to the food-grazing event, we added an Agriculture Festival Trade Show to allow farmers, ranchers, and producers of local food and beverage products more time to interact with media and buyers. Also, we organized "Cooking Grass-fed Beef 101" in which Chef Peter Merrimen demonstrated how to properly cook grass-fed beef. Chefs Alan Okuda and Paul Heerlein (chef-instructors from Hawai'i Community College – East and West Hawai'i), Chef **Mark Segobiano** (HNFAS), and students from the various Food Service programs volunteered to help at this event. Over 1200 people attended this celebration of local agriculture, and feed-back was very positive.

In 2009, community volunteers stepped forward to assume leadership positions with Leomi Bergknut (community) serving as chair, Jeri Moniz (rancher) as vice-chair, **Mary Kaheiki** (CTAHR Hawai'i County) as secretary, and me as Treasurer. Leomi competed successfully for grants from the Hawai'i Tourism Authority in 2009 and 2010. Ranchers and farmers on the Island of Hawai'i agree that this educational event helps to improve their economic sustainability. Their support and commitment is shown by the meat and produce that they donate and by their volunteering to help organize and stage the event.

## Connections with TPSS, Plant and Environmental Protection Sciences (PEPS), and Botany

Koa (Acacia koa) accounts for 75% of the value of Hawai'i-grown wood products. In addition to its commercial value, koa serves as one of the keystone, endemic species in high rainfall forests across all the major Hawaiian Islands. A koa wilt disease caused by *Fusarium oxysporum f.sp. koae* was first observed in 1980 and the severity of the disease has increased since that time. Ms. **Ayami Shiraishi** (Ph.D. student, PEPS) is supervised by Dr. **Janice Uchida** (PEPS) on a TSTAR project that focuses on the causal pathogen, and by me on a McIntire-Stennis project that focuses on the resistance or tolerance of koa to the disease. Dr. **James Brewbaker** (TPSS), students, and CTAHR staff planted 818 Acacia koa progenies from 1991 to 2002 at the Hamakua research station on the Island of Hawai'i. These trials turned into studies of resistance


Chef Mark Segobiano, turning skewers of mutton at the "Taste."

or tolerance to koa wilt, because this disease killed trees through the 9th year from planting. In 2009, Ayami and I helped Dr. Brewbaker measure survival rates on these field trials, and selected 18 progenies as resistant or tolerant to koa wilt. Genetic analysis will be conducted by Ms. Shiraishi in the laboratory of Dr. Cliff Morden (Botany) to identify genetic markers that are associated with disease resistance or tolerance to koa wilt. If we are successful in locating genetic markers associated with disease resistance or tolerance, then young koa seedlings could be tested in the nursery rather than losing seedlings during the first 10 years after planting. Such nursery selections will help to prevent large economic losses to growers who are trying to revitalize the koa population in the state.

*So, what is an Agronomist?* Another definition is a scientist with 'one foot in the furrow' and the other foot in the laboratory or classroom. We make connections and build problem-solving teams to improve the sustainability of agriculture and forestry in Hawai'i.

Ayami Shiraishi, collecting koa seeds at the Kona Hema Preserve.

## Susan C. Miyasaka

**Hometown**: Honolulu, Hawaii

**Joined CTAHR**: 1989

**Educational History**: Ph.D. Cornell University, M.Sc. University of Hawaii, B.Sc. University of California, Berkeley

**Specialization**: Plant Nutrition

**Current Work**: Alternative crops and cropping systems

**Languages spoken**: English, French (un peu)

**Selected publications**


Srimake, Y., Penmetsa, R.V., D.R. Cook, S.C. Miyasaka. 2009. Response to aluminum in ecotypes of *Medicago truncatula*. 2009 Annual Meeting of the American Society of Plant Biologists (ASPB). Abstract P08051, pp. 145.

He, X., S.C. Miyasaka, M.M.M. Fitch, P.H. Moore, Y.J. Zhu. 2008. *Agrobacterium tumefasciens*- mediated transformation of taro (*Colocasia esculenta* (L.) Schott) with a rice chitinase gene for improved tolerance to a fungal pathogen *Sclerotium rolfsii*. Plant Cell Rep. 27: 903-909. http://www.springerlink.com/content/60t1v5k678g2638k/?p=4a970be9cacc468fb474b5ef311993da&pi=10

Miyasaka, S.C., N.V. Hue, and M.A. Dunn. 2007. Chapter 16, Aluminum. p. 439-497. *IN*: A. Barker and D.J. Pilbeam. (eds.) *Handbook of Plant Nutrition*. Marcel Dekker, New York.


**Selected grants**

Identification of Genetic Markers to Improve Disease Tolerance of *Acacia koa*. S.C. Miyasaka, J. Brewbaker, J. Uchida, Q. Yu. McIntire-Stennis. Amount: $60,000. Duration: October 2008 – September 2013.

Increasing Sustainability of Tropical Pastures Through Selection of Legumes Tolerant to Drought and Aluminum. S.C. Miyasaka, P.W. Singleton, B.W. Mathews. T-STAR grant. Amount: $162,728. Duration: Sept. 15, 2004 – Sept. 14, 2007.

Increased Fungal Resistance of Taro through Genetic Transformation. S.C. Miyasaka, P.H. Moore, M.M.M. Fitch, J. Cho, Y.J. Zhu. T-STAR grant. Amount: $142,862. Duration: July 2003 – June 2007.

# Tea specialist from Yunnan, China visits

**By CY Hu**
**Associate Dean and Director for Research**

Shao Wan-Fang (right) and Eva Lee, former president of the Hawaii Tea Society, evaluates locally made teas at Volcano.

*Camellia sinensis* is an amazing plant. All teas are made from different varieties of this plant, including the most common ones such as black teas, green teas, and oolong teas. These three very different types of teas can be made from the same tree, and the only difference is in the processing of the tea leaves. Certain cultivars, however, are more suitable for one specific type of processing than others. Many CTAHR faculty members have looked into tea as a potential new crop for local growers, and for various reasons, none of the previous efforts succeeded. CTAHR has had tea planted on our stations in Kauai and the Big Island since the 60's. The most recent planting was at our Mealani Research Station more than ten years. Dwight Sato, Stuart Nakamura, Randy Hamasaki, and Milton Yamasaki, in collaboration with Francis Zee of USDA/ARS/PBARC, have revived an old dream of creating a viable tea industry in Hawaii with new plantings of various cultivars of tea at our Volcano and Mealani Research Stations. Through newsletters, extension publications, seminars and workshops, many people are now actively growing teas on the Big Island, as well as on Maui and Kauai. CTAHR has contributed a great deal by providing technical support, as well as cutting distributions. More than six tea gardens on the Big Island have been actively selling their products since last year. As more tea gardens are ready to harvest their teas in the next several years, we will begin to see more income from selling Hawaii grown teas. We have learned that tea plants grow extremely well in Hawaii; however, we have a long way to go in mastering the tea-making techniques, as well as determining which type of teas we should concentrate on in Hawaii.

Two tea specialists from the China's Tea Research Institute visited CTAHR in 2008 (read article in CRN November 2008 issue). The Tea Research Institute is located in Hangzhou, a region known for its green teas. Will green tea, which is preferred by Chinese,

Japanese, and Koreans, or black tea, which is favored by the rest of world, be the best choice for our research emphasis? How about oolong teas, you may ask? All of these three types of teas are processed immediately after harvesting; the whole process takes only one to two days to finish. There is a fourth type of tea: Puer Tea, which requires fermentation for 40-60 days, similar to the composting we do in our backyard. In order to learn more about this tea, we invited Professor Shao Wan-Fang, Dean of Longrun Puer Tea College, Yunnan Agricultural University to visit CTAHR and Hawaii last December. Professor Shao gave several seminars and workshops to our faculty and staff, as well as our stakeholders and the general public. Professor Shao also visited both the Volcano and Mealani stations and four private tea gardens to witness the progress we have made in the last 10 years. She thinks tea plants grow better in Hawaii than their native land in Yunnan! Hawaii has all the necessary environmental conditions to grow the finest quality teas. As a result of Professor Shao's vist our staff and stakeholders have learned that another type of tea is also a potential product for Hawaii. Since the Puer tea fermentation process has not been well documented, there are plenty of opportunities for our faculty members to conduct experiments and develop a well-defined processing protocol for the local production of fermented tea in Hawaii. We have now established a good relationship with the Longrun Puer Tea College, and this connection will continue to benefit Hawaii's efforts to establish a vibrant tea industry. We will keep you posted on future exciting developments about CTAHR's tea program. Professor Shao's presentations are available on the CTAHR website at:

General tea seminar

Puer tea seminar

Check out these CTAHR Extension publications about growing tea in Hawaii:

Guide to insect and mite pests of tea in Hawai'i [IP-28] January, 2008

In-ground procedure for rooting tea cuttings [SCM-23] March, 2008

Tea (Camellia sinensis), a new crop for Hawaii [tea_04_07] April, 2007

Germinating tea seeds (Camellia sinensis) [SCM-17] March, 2007

Home processing black and green tea (Camellia sinensis) [FST-26] March, 2007

Identification guide for diseases of tea (Camellia sinensis) [PD-33] October, 2006

Zinc deficiency in tea (Camellia sinensis) [PD-34] October, 2006

Factors affecting development of a tea industry in Hawaii [AB-15] August, 2004

Small-scale tea growing and processing in Hawaii [NPH-9] September, 2003

Tea [EFS-8] August, 1990

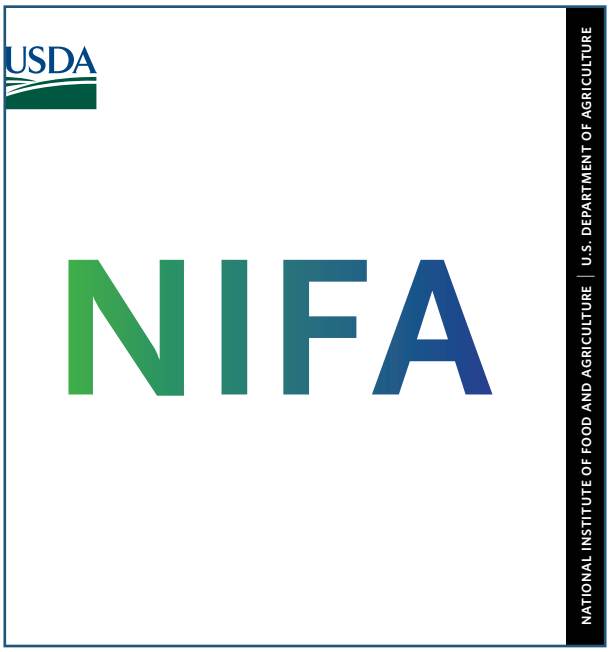
Dr Shao Wan-Fang discussing tea with the CTAHR Mealani farm staff.

Dr Shao Wan-Fang giving a class on tea.


Dean Andrew Hashimoto presents Dr Shao Wan-Fang a certificate of appreciation for her contributions to CTAHR.

# NIFA's FY2011 agenda*

On February 1, 2010, President Obama forwarded the Fiscal Year (FY) 2011 Budget to Congress. The FY 2011 Budget Request includes approximately $1.35 billion in discretionary funding for the National Institute of Food and Agriculture (NIFA). While in total the amount is the same as the 2010 level, it reflects a redirection of funding priorities. The Budget greatly increases funding of competitive grants, maintains funding for capacity building through formula programs, and eliminates funding for Congressional earmarks. The following categories summarize the focus of the NIFA budget:




## AGRICULTURE AND FOOD RESEARCH INITIATIVE

Increased funding will support the following high priority issues:

**Bioenergy:** Funding will support the department's strategic goals of assisting rural communities to create wealth so they are self-sustaining, repopulating, and economically thriving, and help America promote agricultural production and biotechnology exports. The increased funding also will support centers for biomass production.

**Global Climate Change:** Funding supports critical research on mitigation potentials and adaptive capacities of agricultural and environmental systems. Research funded via NIFA will provide vital information needed for USDA to implement an agriculture and forestry cap and trade system.

**Global Food Security:** Programs in this priority area will address pressing issues of global food security to help develop appropriate agricultural systems. Funds will create opportunities for interdepartmental initiatives and partnerships to deliver agricultural extension programs to at-risk nations.

Nutrition and Health: Projects will focus on identifying the behavioral factors that influence obesity; developing valid behavioral and environmental instruments for measuring progress in obesity prevention efforts; and nutrition research that leads to the development and evaluation of effective programs to prevent obesity. Projects also will address the micro-nutrient content of new cultivars of food crops.

Food Safety: Funds will be used to improve the safety of the U.S. food supply through new and improved rapid detection methods, pre- and post-harvest epidemiological studies, and improved food harvesting and processing technologies. NIFA will fund critical environmental and ecological research to improve our understanding of disease-causing micro-organisms, and of naturally occurring contaminants in meats, poultry, seafood, and fresh fruits and vegetables.

## SUSTAINABLE AGRICULTURE

Research and extension activities will support systems research and farmer/rancher projects that will improve soil quality and carbon sequestration, save energy, and mitigate climate change. Extension activities will emphasize training on crop and livestock management to improve soil quality and carbon sequestration, save

energy, and mitigate climate change, and marketing innovations that enhance profitability, such as local and regional food systems. Integrated activities will focus on a federal-state matching grant program to help create or enhance state sustainable agricultural research, extension, and education programs.

## MINORITY PROGRAMS

To expand activities for minority-serving programs, requested funds will support an increase in the number of federally-recognized tribes being served by extension programs and pilot a food and nutrition program in a number of Native American communities through the competitively awarded Extension Services at the 1994 Institutions Program.

## HISPANIC-SERVING AGRICULTURAL COLLEGES AND UNIVERSITIES (HSACU) ENDOWMENT FUND

The Hispanic/Latino community is the fastest growing sector of the American population. This investment in the Hispanic- Serving Agricultural Colleges and Universities is needed to ensure they can compete effectively for NIFA grants. Support for this endowment fund for HSACU will assist in the development of a skilled and marketable Hispanic student population for employment in the food and agriculture sector.

## STEM Education

Funded activities will support the President's initiative to make science, technology, engineering, and mathematics (STEM) a national priority at all grade levels and help improve the rural economy through targeted research and education programs. The requested budget proposes increases in the Secondary Education, Two-Year Postsecondary Education, and Agriculture in the K-12 Classroom Grants Program and the Higher Education Institution Challenge Grants Program.

## OTHER PROGRAMS

NIFA will continue funding for most other programs, including formula funded programs in order to serve the nation's needs through exemplary research, education, and extension to address the many challenges that face agriculture, the environment, and nutrition. From production, nutrition, and food safety to energy independence and the sustainability of our natural resources, NIFA's investment in science secures America's future.

* From NIFA Presidents Budget Request for FY2011 Brochure

# The Plant Doctor app for iPhones

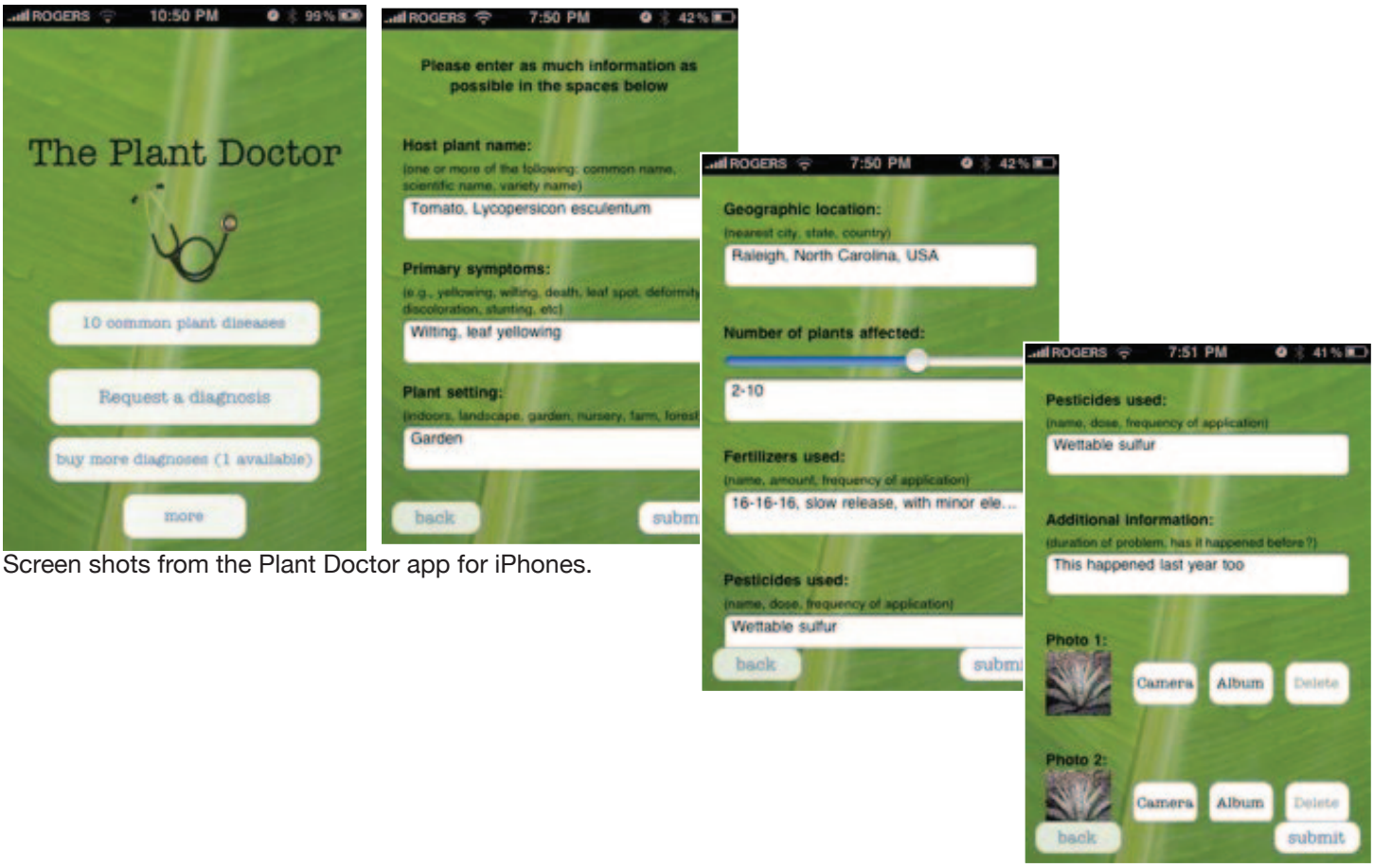
**By Scot Nelson, Plant Pathologist**
**Department of Plant and Environmental Protection Sciences**

Although the smart phone industry is still young, these mobile devices have quickly evolved into preferred methods for acquiring and transmitting digital information. Software developers produce data-rich apps (programs) for telephones to meet the needs of their clients.

Adelante Consulting, Inc. (http://www.iphodea.com) and CTAHR's Scot Nelson recently produced The Plant Doctor app, which may be downloaded for free worldwide: http://itunes.apple.com/WebObjects/MZStore.woa/wa/viewSoftware?id=349613537&mt=8.

The Plant Doctor provides convenient, real time and truly interactive diagnosis and advice about plant diseases in gardens, landscapes, nurseries and farms. It presents illustrated descriptions of ten of the most common plant diseases. If users are unsure about the nature of their own problem, they may purchase a diagnosis for a nominal fee. For diagnosis, the app collects user-supplied text and photographs and sends it to a plant pathologist. The user receives detailed communications from the pathologist, including the probable disease name and pathogen, disease management tactics, and contact information for local experts who may provide more information or examine samples.

All gardeners and farmers in Hawaii who do not wish to use the app may still receive free diagnosis for their plant health problems by contacting Dr. Nelson via telephone (808-969-8265), in person, or by e-mail (snelson@hawaii.edu).



Screen shots from the Plant Doctor app for iPhones.

# Grant season in full swing!

**By Sharee Pepper**
**Grant coach**

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, NIFA Grants.gov Application Guide – A guide for the preparation and submission of NIFA applications via grants.gov. http://www.nifa.usda.gov/funding/grant_forms/electronic_app_guide.pdf

## Agriculture, Rural and Community Development Grants

$ - USDA, NIFA - Agriculture and Food Research Initiative (AFRI) Competitive Grants Program (Note: includes prior NRI grants)
**Deadline: all have expired (use as guide for 2010)**
http://www.nifa.usda.gov/funding/afri/pdfs/program_announcement.pdf or http://www.nifa.usda.gov/funding/afri/afri.html

$ - USDA, NIFA - Outreach Assistance for Socially Disadvantaged Farmers and Ranchers Competitive Grants Program
**Deadline: March 1, 2010**
http://www07.grants.gov/search/search.do?&mode=VIEW&flag2006=false&oppId=51155

$ - USDA, NIFA, AFRI - Plant Biology: Growth and Development
**Deadline: March 2, 2010**
http://www.nifa.usda.gov/fo/plantbiologygrowthanddevelopmentafri.cfm

$ - USDA, NIFA - Special Research Grants Program - Pest Management Alternatives
**Deadline: March 3, 2010**
http://www.nifa.usda.gov/funding/rfas/pmap.html

$ - National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration - Hawaii Seafood Program
**Deadline: March 5, 2010**
http://www.grants.gov/search/announce.do;jsessionid=pl1pLFcZvbqXyZCvkhPF1lFp55QHNqcs5SJRynzq06hN12z2L7Nr!-2003793174

$ - USDA, NIFA, AFRI - Animal Genome: Genetics and Breeding
**Deadline: March 5, 2010**
http://www.nifa.usda.gov/fo/animalgenomegeneticsandbreedingafri.cfm

$ - USDA, NIFA - Alaska Native-Serving and Native Hawaiian-Serving Institutions Education Competitive Grants Program (ANNH)
**Deadline: March 5, 2010**
http://www.nifa.usda.gov/funding/rfas/pdfs/10_annh.doc

$ - Environmental Protection Agency (EPA) Region 9 - Strategic Agricultural Initiative 2010 RFA
**Deadline is March 15, 2010**
http://www.epa.gov/region09/funding/food-quality.html

$ - USDA, NIFA, AFRI – Integrated Solutions for Animal Agriculture
**Deadline: March 16, 2010**
http://www.nifa.usda.gov/fo/integratedsolutionsforanimalagricultureafri.cfm

$ - USDA, NIFA - Biotechnology Risk Assessment Research Grants Program
**Deadline: March 17, 2010**
http://www.nifa.usda.gov/funding/rfas/biotech_risk.html

$ - USDA, NIFA - Integrated Pest Management: Crops at Risk, Risk Avoidance and Mitigation, and Methyl Bromide Transitions Competitive Grants Programs
**Deadline: March 22, 2010**
http://www07.grants.gov/search/search.do?&mode=VIEW&flag2006=false&oppId=51286

$ - USDA, NIFA - Beginning Farmer and Rancher Development Program
**Deadline: April 6, 2010**
http://www.nifa.usda.gov/funding/rfas/bfrdp.html

$ - USDA, FIFA - New Era Rural Technology Competitive Grants Program (RTP)
**Deadline: April 14, 2010**
http://www.nifa.usda.gov/funding/rfas/new_era.html

$ - Robert Wood Johnson Foundation (RWJF) - Active Living Research and New Connections Grant Opportunities
**Proposal Deadline: April 14, 2010**
http://www.rwjf.org/applications/solicited/cfp.jsp?ID=21041

$ - USDA, NIFA, AFRI - Biology of Weedy and Invasive Species in Agroecosystems
**Deadline: April 20, 2010**
http://www.nifa.usda.gov/fo/weedyandinvasivespeciesafri.cfm

$ - Farm Foundation
**Deadlines: April 30 and October 31**
http://www.farmfoundation.org/webcontent/Farm-Foundation-NFP-Small-Grants-Program-357.aspx?z=85&a=357

$ -USDA, NIFA - 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

$ - 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

## Education

$ - NOAA - Environmental Literacy Grants (ELG) for Informal/Nonformal Science Education
**Deadlines - Letters of Intent (Required): February 16, 2010.**
**Deadline for full applications: April 6, 2010.**
**An informational teleconference: January 21, 2010**.
http://www.oesd.noaa.gov/funding_opps.html

$ -NSF **-**Undergraduate Research and Mentoring in the Biological Sciences (URM)
**Deadline: March 2, 2010**
http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=500036&org=NSF&sel_org=NSF&from=fund

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

$ - NSF – Active Funding Opportunities
**Deadline: Multiple**
http://www.nsf.gov/funding/pgm_list.jsp?org=NSF&ord=date

## Environment, Water, Energy, Invasive Species Grants

$ - USDA, NIFA – Air Quality
**Deadline: March 5, 2009**
http://www.nifa.usda.gov/fo/airqualityafri.cfm

$ - 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

$ - National Geographic Conservation Trust Offers Funding to Preserve Earth's Resources
**Deadline: Open**
http://www.nationalgeographic.com/field/grants-programs/conservation-trust-application.html

## Families, Youth and Children Grants

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

## Financial Grants

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

$ - 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

## Health, Nutrition, Food & Biomedical Grants

$ - Robert Wood Johnson Foundation and Pew Charitable Trusts Announce Health Impact Project
**Deadline: Open**
http://www.rwjf.org/applications/solicited/cfp.jsp?ID=20921

## Science Grants

$ - USDA, NIFA, AFRI – Arthropod and Nematode Biology and Management: Tools, Resources, and Genomics
**Deadline: April 1, 2010**
http://www.nifa.usda.gov/fo/arthropodnematodetoolsresourcesgenomicsafri.cfm

NSF – Active Funding Opportunities
**Deadline: Multiple**
http://www.nsf.gov/funding/pgm_list.jsp?org=NSF&ord=date

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

## UH, Hawaii and Regional Grants

$ - 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

# Faculty publications

**Scot Nelson (PEPS)**

Nelson, S. C., and Abad, G. 2010. *Phytophthora morindae*, a new species causing black flag disease on noni (*Morinda citrifolia* L) in Hawaii. *Mycologia* 102:122-134.

**Paul Krushelnycky (PEPS)**

Krushelnycky, P.D., D.A. Holway and E.G. LeBrun. 2010. Invasion processes and causes of success. pp. 245-260, In: L. Lach, C. Parr, K. Abbott (eds.), *Ant Ecology*, Oxford University Press, Oxford.

Hartley, S., P.D. Krushelnycky and P.J. Lester. 2010. Integrating physiology, population dynamics and climate to make multi-scale predictions for the spread of an invasive insect: the Argentine ant at Haleakala National Park, Hawaii. *Ecography* DOI 10.1111/j.1600-0587.2009.06037.x.

**Clyde Tamaru (MBBE)**

Campora, C.E. , C. S. Tamaru, Y. Hokama , B. Anderson and D. Vincent 2010. Evaluating the Risk of Ciguatera Fish Poisoning from Reef Fish Grown at Marine Aquaculture Facilities in Hawaii. *World Aquaculture Society* 41(1):61-70.

Baensch F. U. and C. S. Tamaru. 2009. Captive hybridization of two geographically isolated pygmy angelfish species, *Centropyge fisheri* and *Centropyge resplendens*. *Journal of Fish Biology* (2009) 75, 2571–2584

Baensch, F. and C.S. Tamaru. 2009. Spawning and development of eggs, larvae and juveniles of the rare Pomacanthid, *Centropyge debelius* (1988), in the hatchery. *J. World Aquaculture Society*, Vol.40(4):425-439.

**Yoshie Weems (HNFAS)**

Y.S. Weems, T.M. Nett, L.A. Rispoli , T.L. Davis, D.L. Johnson, T. Uchima, A. Raney, E. Lennon, J. Pang, T. Harbert, G. Bowers, K. Goto, A. Ong, N. Tsutahara, R.D. Randel, C.W. Weems. 2010. Prostaglandin E1 (PGE1), but not prostaglandin E2 (PGE2), alters luteal and endometrial luteinizing hormone (LH) occupied and unoccupied LH receptors and mRNA for LH receptors in ovine luteal tissue to prevent luteolysis. *Prostaglandins & other Lipid Mediators* 91:42-50.

# Latest grant information from ORS

**By Sharee Pepper**
**Grant coach**

## CTAHR grants November 2009-January 10, 2010

| Last Name | First Name | Unit | Proposal Title | Sponsor Name | Department | Award Amount |
|---|---|---|---|---|---|---|
| Hollyer, | James R | ADAP / PEPS | Farm Food Safety Coaching Services | Agriculture, Dept - Agribusiness Dev Corp-HI | College of Tropical Agriculture and Human Resources | $7,500 |
| Idol, | Travis W | NREM | Sustainable Management of Agroecological Resources for Tribal Societies (SMARTS) | Virginia Polytechnic Inst and State Univ | Department of Natural Resources and Environmental Management | $228,784 |
| Paull, | Robert E | TPSS | Pineapple Research | University of Hawaii Foundation | Department of Tropical Plant and Soil Sciences | $10,000 |
| Su, | Wei-Wen Winston | MBBE | Cooperative Synthesis of Cellulosomes by an Engineered Yeast Consortium to Improve Lignocellulose Bi | Agriculture, Dept - FED | Department of Molecular Biosciences and Bioengineering | $150,000 |
| Su, | Wei-Wen Winston | MBBE | Plant and Protein Biotech Research | University of Hawaii Foundation | Department of Molecular Biosciences and Bioengineering | $25,000 |
| Sugano, | Jari S K | PEPS | A Risk Management Training Program for Underserved Southeast Asian Growers of Hawaii | Agriculture, Dept - FED | Department of Plant and Environmental Protection Sciences | $197,000 |
| Thorne, | Mark S | HNFAS | Quantifying Secondary Compounds in Common Pasture Vegetation for Behavior Based Grazing Management i | Utah State University | Department of Human Nutrition, Food and Animal Sciences | $41,760 |
| Yuen, | Sylvia H L | COF | State Prevention Framework State Incentive Grant Evaluation | Health, Dept - HI | Center on the Family | $224,985 |
| | | | | | Award Count: 9 | Total: $ 885,029 |