CTAHR Research News

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Dr. Cerruti Hooks looks for banana aphids on a farm in Waimanlo, Oahu.

In this issue

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From the Associate Dean and Associate Director for Research

Now that another semester has come and gone and traffic is lighter around campus, we are definitely ready for the holidays! In this final *CRN* for 2007, we introduce Dr. Cerruti Hooks of the Plant and Environmental Protection Sciences (PEPS) Department. Dr. Hooks' research interests are in vegetable crops; however, opportunity and fate has led him to spend most of his time on banana, a major crop in Hawaii which has seen a gradual decline in acreage (since 2001) due to diseases: the major culprit being the Banana Bunchy Top Virus (BBTV). Dr. Hooks does not work alone: he works with a team of CTAHR faculty and staff in this effort. Cerruti represents a unique class of CTAHR faculty who are on limited-term appointment: meaning they are not on a tenure track position and regardless how productive they are, they may lose their job if funding is no longer available. Cerruti is one of a few faculty members in CTAHR who supports his own research and salary, as well as his graduate students and post-docs, by writing successful grants. Although Cerruti's work is very applied in nature, involving many extension faculty and farmers, he has been able to secure adequate extramural funds to support his successful program. Dr. Hooks demonstrates that one can indeed find enough funding to support a productive research program even if the research is not "laboratory" or "basic" in nature. We are very fortunate to have Dr. Cerruti Hooks among our faculty rank.

Although federal fiscal year started on October 1, we still do not have a federal budget for most of federal agencies, USDA included. The implications is that there are no special grants and no formula funds. However, we did distribute our Hatch funds more than two months ago so your work is not impacted by the lack of federal budget. Although Congress has passed its budgets and forwarded them to the President last week, President Bush has not signed them into laws at this moment. More details in Doug Vincent's piece on federal budget situation.

It seems that TSTAR special grants will return this year, albeit in a lower amount (see Doug's piece in the *Calabash*). Because of the lower funding level and the existing commitments exceed the available funds, we will NOT have a new RFP this year. We will do our best to support our new faculty members through other resources so their programs will not be impacted. This is the second year in a row we will not have RFP for TSTAR program. Although we anticipate that TSTAR will return next year, we won't know the actual funding level making it clear that we cannot build our programs on special grants.

Happy Holidays to you and your families! Eat and exercise while watching bowl games (especially the Sugar Bowl) during this holiday season! We will see you again in 2008. *Go Warriors!!!*

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

Protecting Hawaii bananas from two infamous outlaws

By Cerruti R. R. Hooks
Assistant Entomologist
Department of Plant and Environmental Protection Sciences

The Hook's lab. Koon-Hui Wang (Kuala Lumpur, Malaysia), Eden Perez (Los Banos Laguna, Philippines), Cerruti RR Hooks (North Carolina), and Roshan Manandhar (Kathmandu, Nepal).

When Dr. Cerruti R^2 Hooks, an Entomologist in PEPS department, was first asked if he was interested in working with an insect-transmitted virus of bananas, he was quite hesitant: his interest was working with vegetable crops such as broccoli, peppers, cucumbers, okra, zucchini, and eggplant. Fulfilling his research addictions to sustainable agriculture, ecological pest management, and biological control may be jeopardized if he worked on a banana pest complex. Further, his strong desire to study the potential use of spiders as biological control agents against insect pests would be out of reach. However, he eventually came to view banana as a notable opportunity to work with a true tropical crop and on a problem that plagued the Hawaii banana industry. In addition, Cerruti viewed bananas as an opportunity to work with a crop he could cheerfully chew.

Banana orchard showing a number of destroyed plants because of BBTV.

Hawaii banana growers – who rank number one in the USA in banana production – are being threatened by a perilous pathogen known as banana bunchy top disease (BBTD) caused by banana bunchy top virus (BBTV). Plants infected early with this virus do not bare fruit, and plants infected later in their growth

Eden Perez collecting banana suckers from a farmer in Kahuku to be tissue cultured. Steve Fukuda is assisting.

cycle bare fruits that are typically stunted, unattractive and not saleable. The banana aphid, a small soft-bodied insect, is BBTV's crime partner, and its main job is to be a carrier for BBTV. In other words, it injests BBTV into its body and releases it into healthy banana plants. After canvassing banana fields and conducting many interviews, Cerruti learned that most banana growers consider the banana aphid and BBTV their arch nemesis.

Expelling myths and misinformation about BBTV

At the time that Cerruti was canvassing banana fields and conducting interviews, there was only a limited amount of research being conducted on BBTV in the field, which explained why growers relied on their own guesswork. As a result, several unproven "myths" had developed in Hawaii regarding BBTV and current banana production practices had done little to halt the virus. Instead, some atypical Hawaii production practices have also helped contribute to the spread of the virus. Cerruti and his colleagues geared their outreach and research efforts to dispelling these unproven myths, sermonizing on known truths, and uncovering the facts regarding BBTV and its aphid carrier. Several individuals have and continue to contribute to the efforts to mitigate the negative impacts of banana aphids and BBTV: **Dr. Eden Perez, Dr. Mark Wright, Dr. Rodrigo Almeida, Dr. Koon-Hui Wang, Dr. Scot Nelson, Roshan Manandhar, Mandy Anhalt, Jacquelyn Robson, Cheryl Young, Derek Kabasawa**, and a long line of student assistants.

Early efforts of the BBTV research team

BBTV researchers are currently conducting laboratory, greenhouse, and field investigations to address the many questions of banana growers, stakeholders, and hobbyists. Cheryl Young and Mark Wright kicked off field investigations by studying the distribution of banana aphids within banana orchards. Their main interest was in determining what areas of banana orchards the banana

Extension agent Steve Fukuda injecting a BBTV infected banana plant with a bananacide.

Koon-Hui Wang, Cerruti on Lanai sampling Alberta De Jetley LLC banana plants for nematodes. Also pictured is Alberta.

aphids occupy and whether their population size is more prevalent during certain seasons. Jacquelyn Robson then took the lead on an aphid sampling expedition across Oahu, aimed to develop a feasible sampling method for growers to track banana aphids and monitor their densities. Monitoring pest densities allows for informed decision making regarding the judicious use of pesticides or other weapons for their control. From these aphid surveys, a simple grower-friendly sampling protocol was developed that is currently being used to determine when populations of banana aphids are at levels that warrant action. Prior to these surveys, banana growers were without any valid guidelines on how and when to track and suppress banana aphids. This tracking protocol helps banana growers reduce their insecticide usage, resulting in lower production costs.

Cerruti noticed he, and many banana growers, often asked questions that could only be addressed through field investigations. Cerruti took a special interest in tackling questions that required physically demanding fieldwork because he enjoyed science, physical activities, and working outside. For example, a grower once asked him how high up on the banana plants are aphids typically found. In response to the challenge, Roshan Manandhar, Koon-Hui Wang, and Cerruti packed a measuring tape and 12-foot orchard ladder, and started canvassing banana plantings throughout the Hawaiian Islands. They investigated the population dynamics of aphids within banana mats, and measured how high in the banana canopy they were found. These trips included stops on Lanai, Big Island, Molokai, and Maui. Because of their cryptic nature, banana aphids' presence on banana plants is not readily obvious. Knowing where, and in which banana plants, aphids inhabit is essential to finding and destroying them.

Although fieldwork was fun, Cerruti and his colleagues understood that not all relevant information on banana aphids could be obtained from field investigations. Laboratory investigations were conducted to develop a detailed profile of the banana aphid and their biological and ecological requirements. Data on population growth, longevity, and reproductive ability of the banana aphid at different temperatures were obtained. They then determined the ideal temperature for their intrinsic rate of increase, net reproductive rate, doubling time, and mean offspring per female. Similarly, they determined the optimum temperature for banana aphids to successfully pickup and drop off BBTV into healthy banana plants. These findings help farmers predict when banana aphid populations will build to greatest numbers and at what times of the years are they most likely to cause disease outbreaks; thus, assisting them in developing management practices aimed at ending the assault of BBTV and its carrier.

In a well-planned set up and surveillance operation, Mandy Anhalt determined that the banana aphid could acquire and transmit BBTV between 20 and 28 hours after feeding on a healthy plant. She also determined the length of time that a banana aphid can acquire and transmit the virus after a plant has been inoculated with BBTV, is somewhere between 15 and 20 days. This information was important in creating definite timeline on how long a grower has to kill an aphid to prevent

Maui banana farm with plants that are propped with wooden poles to prevent them from toppling over due to nematode infection.

virus transmission. They also discovered that immature aphids (*aka* nymphs) were not very successful in transmitting the virus. Thus, management practices took aim at controlling the virus by eliminating adult aphids.

Why aren't biological control agents helping bananas?

The banana aphid typically hides beneath the leaf sheath or in areas between the petiole and pseudostem of banana plants; this cryptic behavior shields them from predators and parasitoids. In Hawaii, natural enemies of aphids do not search within such confined spaces. Further, surveys conducted under Mark Wright in banana orchards have suggested that natural enemies of the banana aphid only provide limited suppression. Similar, Cerruti has found limited evidence that biological control agents can effectively suppress banana aphids. When aphid populations reach a high density, and the aphids are displaced from the leaf sheath, only then do parasitoids and predators have an opportunity to launch an attack. As such, the use of natural enemies has not been a viable option and thus far, attempts to recruit naturally occurring fungal pathogens have not been successful. Despite this setback, Cerruti and his colleagues continue their search for biological control agents, and are currently evaluating a "soft" insecticide with systemic activity. This pesticide is particularly attractive because it is not toxic to natural enemies or wild life inhabiting banana fields. Thus, there is hope that this systemic insecticide will compliment the limited activity of predators and parasitoids and provide banana growers with an effective weapon in their arsenal. Work is being conducted with the assistance of PEPS colleagues, **Mike Kawate** and **Julie Coughlin**, whose aim is to determine the lowest insecticide rate that can effectively killed banana aphids and/or prevent them from dropping off BBTV into healthy banana plants.

Studying the virus movements

In addition to putting together a profile on the banana aphid, Cerruti is studying the epidemiology of the virus itself, using GPS units to track BBTV as it moves through banana orchards. With **Adam Vorsino**, a GPS specialist, they have determined that the virus movement is influenced by wind direction and that the spread pattern is clustered. Within farm movement BBTV is greatly influenced by individuals planting suckers (keikis or corms cut off from the mother plant) already containing the virus. Molecular work by colleague Rodrigo Almeida has verified that the spread of BBTV throughout Hawaii is greatly influenced by the movement of infected plant material and that there was only one introduction of this pathogen into the State of Hawaii. Oahu served as the original BBTV source area.

Changing a traditional practice to knockout BBTV for good

In Hawaii, banana has traditionally been propagated by suckers. Farmers and hobbyists, alike, generally obtain suckers produced from field-grown plants to establish new plantings or replace diseased plants. Typically when searching for new planting material, the mother plant and attached keikis are inspected for BBTV, and if no symptoms are apparent, the sucker is assumed healthy, collected, and planted in a new location. However, BBTV has a long incubation period (i.e.,

Jane Taveres using a microscope to count spiral nematodes for a banana experiment.

time after aphid inoculation that symptoms appear) ranging from 20 to 85 days, suggesting that this visual inspection is unreliable and can promote virus spread. To prove his point, Cerruti canvassed a major banana-producing farm that had a history of BBTV and surveyed 50 banana suckers just after they were transplanted. All the suckers appeared healthy, but he uncovered the fact that 100% of the suckers contained banana aphids, and 92% were infested with winged banana aphids, which are most responsible for virus spread. Using PCR methodology, Eden Perez discovered that 20% of the plants contained aphid carriers of BBTV at time of planting. Since some plants may take longer to test positive for the virus, Cerruti and Eden considered this a conservative estimate of the percentage of suckers containing aphids loaded with BBTV. Thus, current recommendations warn against this conventional planting method, especially in areas where BBTV is present.

As a result of these findings, a team of collaborators from UH-CTAHR, led by Cerruti, **Jari Sugano**, Eden Perez and Scot Nelson, have started to promote the use of known disease-free planting material (tissue culture banana plantlets) so that banana growers can avoid the unintentional planting and distribution of infected plants. The CTAHR team conducts workshops, farm visits, and presentations at conferences, to familiarize banana growers with tissue-cultured banana plants and to discuss the benefits of using disease-free plants as part of an integrated disease management program. These outreach efforts have resulted in an increased interest in tissue-cultured plants. To ensure that individuals have access to disease-free banana plantlets, a banana tissue culture facility was developed in coordination with **Ray Uchida** and **Desmond Ogata** of the CTAHR Agricultural Diagnostic Service Center (ADSC) to distribute BBTV-free banana plants for a small fee. Ray Uchida has agreed to make this a permanent service of ADSC.

Additional investigations

Other investigations being carried out by Cerruti and colleagues include establishing how fast PCR methods can detect a BBTV-infected plant versus visual symptoms, determining how long banana plants remain virulent after a bananacide injection (i.e., herbicides that can be injected into banana plants for destruction of infected plants), investigating organically acceptable methods for killing BBTV-infected plants, and determining whether different banana cultivars differ in their susceptibility to BBTV.

Hidden banana pest

While interviewing a concerned citizen in Waianae who reported that some of his banana plants were toppling over, Cerruti uncovered a new assault against the banana industry. With Nematologist colleague, Koon-Hui, Cerruti begin a statewide banana nematode survey (BNS), aimed at determining what was occurring below the soils of banana orchards. To their surprise, spiral nematodes *Helicotylenchus multicinctu*s, a plant-parasitic nematode previously not reported in Hawaii was found in great abundance throughout the state. This nematode and the burrowing nematode is notorious for

Mike Kawate and Julie Coughlin spraying banana plants.

causing severe root damage and yield losses in banana orchards worldwide. Most growers did not realize their plants were harboring nematodes. Later, Koon-Hui and Cerruti determined that this problem was being exacerbated and spread because banana suckers infected with nematodes were being used as replant material, providing yet another reason to promote the use of tissue culture banana plantlets.

Recently, Koon-Hui, Cerruti and colleagues received funding from the Hawaii Department of Agriculture to look at various non-chemical approaches to rid banana roots of nematodes, and for outreach efforts. During their surveys, Koon-Hui and Cerruti found that some banana orchards have plenty of natural enemies of nematodes. For example, *Pasteuria penetrans*, a bacteria parasite of root-knot nematodes, is very abundant in some orchards. Unfortunately, this bacterium was never found attacking the more dangerous spiral nematodes. Another natural enemy of plant-parasitic nematodes, nematode-trapping fungi, were commonly found in the banana orchard surveyed. Unfortunately, several species of these fungi indiscriminately trap beneficial nematodes and plant-parasitic nematodes.

During their surveys, Koon-Hui and Cerruti also discovered many beneficial nematodes in the soil, which contributed to soil health through soil nutrient cycling. These nutrient cyclers may feed on bacteria, fungi, and other soil fauna smaller then themselves including plant-parasitic nematodes. The researchers compared good nematodes in organic and non-organic farms, and found higher abundance and richness (higher number of genera) of free-living nematodes in organic farms; suggesting that soils in organic banana orchards may be healthier.

Nematode and BBTV interaction?

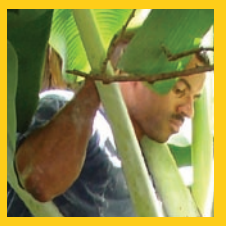
On several occasion during their surveillances of banana aphids and nematodes, Cerruti and Koon-Hui found fields infested with both BBTV and nematodes, leading then to test whether banana plants physiologically stressed by nematodes could result in an earlier symptom expression of BBTV. The investigators are now testing this hypothesis using spiraling nematodes to stress banana plants with plans to examine BBTV symptom expression.

Cerruti's future endeavors

Growers have gained a better understanding of both BBTV and nematodes and are changing their production practices to mitigate their negative impacts on the Hawaiian banana industry, thanks to the collaborative efforts of Cerruti and the CTAHR extension program, especially Scot Nelson, Jari Sugano, and Steve Fukuda. With the recent availability of tissue-cultured banana plantlets, researchers expect to see a reversal in the loss of banana acreage and income. With this achievement, Cerruti is looking forward to devoting more time to sustainable pest management research, vegetable production, and his favorite ubiquitous arthropod, the spider.

Oh, one more thing. I would like to thank our many funders, including: CSREES PBARC, CSREES TSTAR, CSREES W-SARE, and CSREES USDA Minor Crops.

Cerruti R. R. Hooks



Born: North Carolina

Joined CTAHR: 2000

Education: BS, biology, North Carolina Central University; MS, Weed Science, North Carolina State University; PhD Entomology, University of Hawaii at Manoa.

Specializations: Biological control, sustainable agriculture, ecological pest management.

Current Work: Management of insect caused plant viruses and phytotoxemias, sustainable management of insect, nematode, and weed pests in vegetables and fruit crops.

Selected grants

R.R. Hooks, K.H. Wang, and et al., 2006-2009. Using cover crops to build an ecological based pest management program for vegetable production. USDA CSREES Crops at Risk (CAR) $434,120.

C.R.R. Hooks, K.H. Wang, & B.S. Sipes, 2007-2009. Solarization and cover crop as alternatives to soil fumigants for Hawaii pineapple growers. US Environmental Protection Agency (EPA) $90,000.

Selected publications

Hooks, C.R.R., R. R. Pandey, and M. W. Johnson. 2006. Effects of spiders presence on *Artogeia rapae* and host plant biomass. *Agri. Ecosys. Environ.* 112: 73-77

Hooks, C. R. R. and A. Fereres. 2006. Protecting crops from non-persistently aphid-transmitted viruses: A review on the use of barrier plants as a management tool. *Virus Research*. 120: 1-16.

Hooks, C.R.R., Wright, M.G., Kabasawa, D.S., Manandhar, Almeida, R.P.P. 2008. Effect of Banana bunchy top virus Infection on Morphology and Growth Characteristics of Banana. *Annals of Applied Biology*, in press.

The research calabash

By Doug Vincent
Special Program Director for Grants and Contracts

CTAHR Student Research Symposium – April 11-12, 2008

The 20th Annual CTAHR Student Research Symposium will be held on Friday and Saturday, April 11-12, 2008. The Symposium provides a forum for graduate and undergraduate students to present their research conducted under the supervision of CTAHR and UH-Hilo CAFNRM faculty. Please inform and encourage your graduate and undergraduate students to participate. Stay tuned for future announcements and expect that abstracts will be due in early March 2008.

Hawaii Sea Grant College Program Seeking Pre-proposals

Preliminary proposals are requested for the University of Hawaii Sea Grant College Program funding in 2009-2011. Faculty from universities and colleges in Hawaii, Guam, American Samoa and the U.S. affiliated insular Pacific region are invited to submit proposals. Funding begins February 1, 2009 and ends January 31, 2011. Not including funding for graduate assistantships, a typical award is $30,000 per year. Companion graduate assistantships for successful proposals are funded separately. The 2009-2011 Program will address the four National Sea Grant Focus Areas: Sustainable Coastal Development, Coastal Hazard Resiliency, Healthy Coastal Ecosystems and Sustainable Safe Seafood Supply. Four cross-cutting themes of these focus areas are also of interest: Globalization, Climate Change, Coastal and Ocean Literacy and Decision-making Capacity. To receive consideration, preliminary proposals are due electronically via the UH Sea Grant proposal submission websites, eProjects (http://www.soest.hawaii.edu/eProjects/logn/logn_login.php). The deadline for pre-proposals is Wednesday, February 13, 2008. To download more detailed information, go here: http://www.soest.hawaii.edu/SEAGRANT/home/pdf/RFP%20-%202009-2011.pdf

Integrated Taxonomic Information System Available

nbii National Biological Information Infrastructure

USDA ARS, USDA NRCS, EPA, USGS, NOAA, the National Biological Information Infrastructure, the Smithsonian Institute along with Mexican and Canadian agencies have partnered together to develop an easily accessible database with reliable information on species names and their hierarchical classification. The Integrated Taxonomic Information System (ITIS) can be found at http://www.itis.gov/. A search of over 450,000 scientific names and 100,000 common names can be accomplished at the ITIS web site. An integral part of the ITIS is the Taxonomic Resources Expertise Directory (TRED) can put those in need of more detailed information in touch with appropriate taxonomic specialists. To access the TRED database, go here: http://tred.nbii.gov/portal/server.pt. The National Biological Information Infrastructure (NBII) is a broad collaborative program to provide increased access to data and information on the nation's biological resources. Go here to access the NBII web site: http://www.nbii.gov/portal/server.pt. ITIS is also partnering with the Global Biodiversity Information Facility here: http://www.gbif.org/.

CTAHR Distinguished Visiting Scholar Here – January 10-18, 2008

Dr. Chiu-Chung Young of the Department of Soil and Environmental Science at National Chung Hsing University, Taiwan will be visiting CTAHR January 10-18, 2008. As CTAHR's first Distinguished Visiting Scholar, Dr. Young will make several presentations and will be available to meet with faculty, students and staff. A tentative schedule includes special seminars on January 14 and 15, 2008 and a visit to Hawaii Island on January 17, 2008. More details will follow. Dr. Young is a graduate of CTAHR, earning his Ph.D. from the Department of Agronomy and Soil Sciences in 1979. If any of you wish to schedule a meeting with Dr. Young, contact the NREM Department. An abbreviated CV outlining Dr. Young's background is available here: http://www.ctahr.hawaii.edu/vincent/Young_CV.pdf.

Farm Bill Passes Senate

After weeks of wrangling between the Democrats and Republicans, the Senate passed the Farm Bill on Friday, December 14, 2007. The Farm Bill passed in a clear bipartisan vote of 79-14. Key reforms including the Dorgan-Grassley amendment to put caps on commodity payments were defeated. The House-Senate Joint Conference Committee must meet quickly to fashion a final bill to get it to the President late in January 2008.

Cooperative State Research, Education, and Extension Service

CSREES advances knowledge for agriculture, the environment, human health and well-being, and communities through national program leadership and federal assistance.

USDA CSREES Announces Recommendations for Ecosystems Services Funding Portfolio

Our federal partner, USDA Cooperative State Research, Education and Extension Service has released a discussion paper "Consequences of Ecosystem Change for Human Well-being," with recommendations for a funding portfolio within USDA CSREES linking competitive, formula and special grants that are related to ecosystem services. For the uninitiated, ecosystem services are the benefits that people obtain from an ecosystem. The UN's Millennium Ecosystem Assessment http://www.millenniumassessment.org/en/index.aspx defines Ecosystem Services as:

1. Provisioning Services such as food, water, timber, fuel and fiber and genetic resources
2. Regulating Services, which affect climate, floods, drought, disease, waste, land degradation and maintenance of air and water quality.
3. Cultural Services that provide recreational, aesthetic and spiritual benefits
4. Supporting Services, such as soil formation, photosynthesis, biodiversity and nutrient cycling.

The hope is CSREES will develop a research portfolio in support of ecosystem services that would provide integration of programs and topics relevant to this matter. To read the CSREES discussion paper on this issue, go here: http://www.csrees.usda.gov/nea/nre/pdfs/ecosystems_discussion_doc.pdf.

CSREES Releases Discussion Papers

Our federal partner, USDA CSREES has released three papers for discussion. These white papers examine critical issues for CSREES and serve as planning and prioritization documents for future budgeting and programming. These papers have particular relevance to Hawaii and CTAHR and encourage your interest. The papers are available on line at the links below.

The Human and Social Dimensions of a Bioeconomy: Implication for Rural People and Places. http://www.csrees.usda.gov/about/white_papers/pdfs/bioeconomy_discussion_paper.pdf

Recommendations for Social, Economic, and Environmental Science Priorities for Bioenergy Research, Education, and Extension: Results of the Joint USDA-DOE Experts Workshop on Bioenergy, Washington, DC, June 21-22, 2007. http://www.csrees.usda.gov/about/white_papers/pdfs/usda_doe_discussion_paper.pdf

Implementing Research, Education and Extension for Specialty Crops. http://www.csrees.usda.gov/about/white_papers/pdfs/specialty_crops.pdf

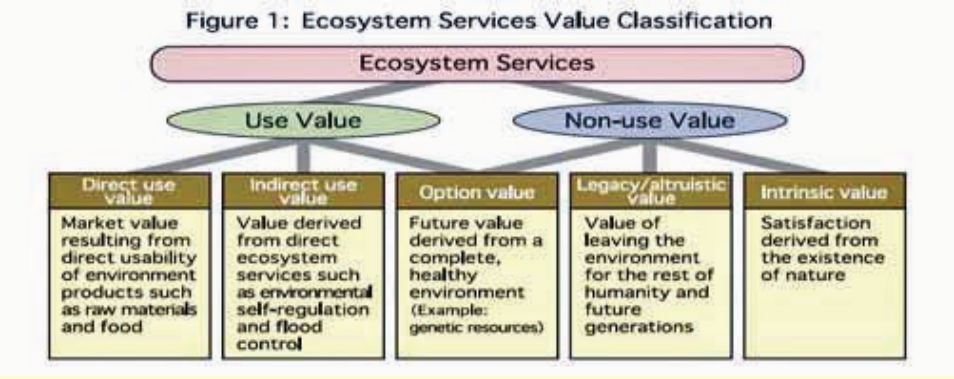


Figure from the USDA CSREES discussion paper and adapted from "Science on Sustainability: Summary Report 2006 Research on the Scientific Basis for Sustainability (RSBS).

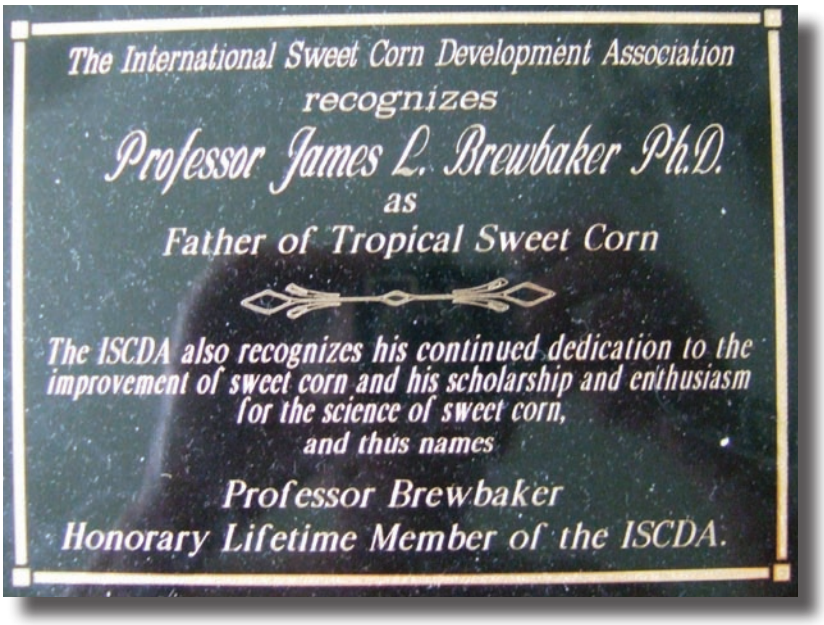
Aloha to Dale Uno!

We offer our warmest aloha and congratulations to Ms. Dale Uno, Director of CTAHR's Office of Communication Services. Dale has resigned her position to take another position in the private sector. Dale will be leaving us in January, 2008. Dale joined CTAHR in June of 2001 as a temporary hire. She served as Interim Director of PIO from June 2002 until her appointment as Director of PIO, now OCS, in July of 2004. Please take this opportunity to thank Dale for her leadership of OCS and her outstanding service to CTAHR. Good luck and best wishes in the future.

Dale and daughter Sophie Uno at the 2007 Taste of the Hawaiian Range.

Jim Brewbaker honored

Dr. Jim Brewbaker, CTAHR's and TPSS's father of tropical sweet corn is so honored. At a recent meeting of the International Sweet Corn Development Association, Dr. Brewbaker was honored as "Father of Tropical Sweet Corn" and recognized for his "continued dedication to the improvement of sweet corn and his scholarship and enthusiasm for the science of sweet corn." Dr. Brewbaker was also honored by the Guangdong (China) Academy of Agricultural Sciences Crops Research Institute. More on "Dr. B" can be found in the October 2006 *CRN*. Please join us in congratulating Dr. Brewbaker on his recent international honors.



Update on TSTAR funding

By Doug Vincent
Special Program Director for Grants and Contracts

Thanks to college faculty for inputs on proposed changes to the TSTAR program. We will take suggestions and comments under advisement. Regarding the TSTAR program, the House of Representatives passed the final version of the omnibus spending bill on Wednesday, December 19, 2007. It is expected that the President will sign the bill on Thursday, December 20, 2007. Included in the bill are a number of earmarks that benefits Hawaii and CTAHR, among them are $7.161 M for TSTAR. This amount subject to a .7% rescission and whatever fees USDA CSREES takes for managing the program. We estimate that the Pacific share will be around $3.2 M.

We are very happy to have the funding; the amount we expect to receive falls a little more than $1 M short of the amounts we have received in past years. With the reduced funding and the existing commitment for projects previously approve (in FY 2005 and FY 2006), we do not have sufficient funds to support any new projects.

Although the TSTAR grants have been up to three years in duration, funding for these grants have been done annually. What this means is that for each of the grant years, a separate appropriation has been necessary. For a program that had been funded every year for over 20 years, it made sense to operate in that fashion. Unfortunately, with the loss of the earmarks in FY 2007, we suddenly lost all funding for TSTAR grants.

When we funded new and continuing projects in FY 2006, we did so with the expectation that funding would continue annually. It did not. It left us with 23 projects that started in FY 2005 that were due their 3rd year of funding and 20 projects due their 2nd year of funding. We also have commitments to the 3rd year of funding for the project originally approved in FY 2006. After consultation with CTAHR leadership and our partners in Guam, we have decided to not have a new RFP and to clear out our past commitments and start fresh in FY 2009.

We recognize that this will place a burden on faculty expecting to seek funding through this program. We hope that they will seek funding through other opportunities or if they have unique cases, to speak with the Associate Dean/Associate Director for Research.

The President's desk, a gift from Queen Victoria of England in 1879, is where many bills get signed. Photo: Smithsonian Institute.

Grant coaching available now

By Doug Vincent
Special Program Director for Grants and Contracts

With the departure of Dr. Brian Turano, the CTAHR Office of Research is re-evaluating the grant specialist position and its duties and responsibilities. In the interim and to pilot a different model, the CTAHR Office of Research will provide **grant writing 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 may result in a return to that investment. Indirect cost returns provides CTAHR, college units and PI's that generate the RTRF with additional, highly flexible funding that can be used to support and expand research programs With our dependence on earmark funding, which does not provide indirect costs, we are not moving forward. 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 have an upcoming deadline and want help developing, polishing, and refining your proposal, complete the application found at this link http://www.ctahr.hawaii.edu/vincent/Grant_Coaching_Request.doc and forward it to C.Y. Hu. After review we'll put you in touch with resources that can help you with your grant proposal. Space and time is limited so if you are serious about seeking funding we're serious about helping you develop a winning grant proposal.

New faculty publications

Sonia Campbell (MBBE)
Campbell, S.; Harada, R.M.; Li, Q.X. 2007. *Ferrimonas senticii* sp. nov., a novel gammaproteobacterium isolated from the mucus of a puffer fish caught in Kaneohe Bay, Hawai'i. *International Journal of Systematic and Evolutionary Microbiology* 57, 2670-2673.

Travis Idol (NREM)
Idol, T.W., Baker, P.J., and Meason, D. 2007. Indicators of forest ecosystem productivity and nutrient status across precipitation and temperature gradients in Hawaii. *Journal of Tropical Ecology* 23:693-704.

Steiman S, Idol T, and Bittenbender HC. 2007. Analysis of kaolin particle film usage and its application on coffee. *HortScience* 42:1605-1608.

Christopher Lepczyk (NREM)
A.M. Pidgeon, V.C. Radeloff, C.H. Flather, C.A. Lepczyk, T.J. Hawbaker, M.K. Clayton, R.B. Hammer. 2007. Associations of forest bird Species richness with housing

New grants received

By Doug Vincent
Special Program Director for Grants and Contracts

Listed below are recent grants received. Since the last publication of the CTAHR Research News, we have received 5 new awards for $522,487. Congratulations and well done to those that have brought in these awards. As we approach the end of the first half of the FY2008, CTAHR has received 69 awards for $5,643,165. Last fiscal year, by the same date, CTAHR had won 124 extramural grants and contracts for $18,883,705. We've received just over half the number of awards as the previous year, but less than 30% of the funding amount. CTAHR's past dependence on earmark funding is becoming painfully clear. And it now appears that the earmarks may not materialize in FY 2008, so why don't you join your colleagues listed below and give it a go. You might read your name in the list below.

CTAHR grants from 11_27_07 to 12_12_07.

First name	Last name / Dept	Project Name	Funder	Amount
Jon-Paul	Bingham / MBBE	Synthesis of Fluroescent Peptide Toxins for Cellular Imaging of Ion Channels Defective in LQT Syndromes	American Heart Association	97,500
Greg	Bruland / NREM	Rapid Assessment and Trajectory Modeling of Soil Carbon Across a Southeastern Landscape	Univ of Florida	40,431
Jonathan	Deenik / TPSS	Subregional Showcase confrence for Hawaii	DA - SARE	25,000
Jonathan	Deenik / TPSS	Virtual Field Days to Improve Farmer-Researcher-Extension Linkages	Utah State University	25,000
Harold	Keyser / Maui	UH-CTAHR Extension and Research Projects in Maui County FY2008	Maui - Office of Economic Development	132,556
Sylvia	Yuen / COF	Relating to the Evaluation of the UPLINK Program	Hawaii Dept. of Human Services	202,000
Totals			6 grants for a total of:	522,487

There's no time like the present to seek new funding

By Doug Vincent
Special Program Director for Grants and Contracts

Listed below are new opportunities for funding. There are ample opportunities to seek funding, if you have the will. It is important that you begin thinking about opportunities for funding, now, while you may have funding. One rule of thumb about seeking funding is that if you wait until you need the funds – it's already too late. We all know that funding cycles take from 7 months to a year before you get the money into your hands. It's time now to anticipate your funding needs for next fall.

University of Hawaii
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

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

CHS Foundation
Returning Value to Rural Communities
Proposal Deadline: rolling – applications accepted year round
http://www.chsfoundation.org/programs/rvrc.htm

Hawaii Farm Bureau Federation
Agriculture Research and Market Development
Proposal Deadline: December 31, 2007
http://www.ctahr.hawaii.edu/vincent/FY2008_Farm_Bureau_RFP.pdf

American Orchid Society
Research Grants
Proposal Deadline: January 1, 2008
http://aos.org/aos/uploadedfiles/docs/guidelinesgrants.pdf

U.S. Environmental Protection Agency
Broad Agency Announcement for Conferences, Workshops and/or Meetings
Proposal Deadlines: January 7, 2008, June 5, 2008, December 9, 2008
http://es.epa.gov/ncer/rfa/2008/2008_baa.html

National Science Foundation
Long Term Research in Environmental Biology
Proposal Deadline: January 9, 2008, July 9, 2008
http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf07588

U.S. Department of Agriculture, CSREES
Integrated Organic Program, ICGP
Proposal Deadline: January 9, 2008
http://www.csrees.usda.gov/fo/integratedorganicprogramicgp.cfm
http://www.csrees.usda.gov/funding/rfas/pdfs/08_organic.pdf

U.S. Department of Agriculture, CSREES
Community Food Projects Competitive Grants Program
Letters of Intent Due: January 10, 2008
Proposal Deadline: February 25, 2008
http://www.csrees.usda.gov/funding/rfas/pdfs/08_community_food.pdf
http://www.csrees.usda.gov/fo/communityfoodprojects.cfm

National Science Foundation
Research Initiation Grants and Career Advancement Awards to Broaden Participation in Biology
Proposal Deadline: January 14, 2008
http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf07560

American Association of University Women
Community Action Grants
Proposal Deadline: January 15, 2008
http://www.aauw.org/fga/fellowships_grants/community_action.cfm

Binational Agricultural Research and Development Fund
Senior Research Fellowship Grants
Proposal Deadline: January 15, 2008
http://www.bard-isus.com/ResFellguide_07.pdf

U.S. Department of Agriculture
CSREES – NRI
Water and Watersheds
Proposal Deadline: January 17, 2008
http://www.csrees.usda.gov/fo/waterandwatershedsnri.cfm
http://www.csrees.usda.gov/funding/rfas/pdfs/08_nri.pdf

U.S. Department of Agriculture, CSREES
International Science and Education Grants Program
Proposal Deadline: January 17, 2008
http://www.csrees.usda.gov/fo/educationinternationalscience.cfm
http://www.csrees.usda.gov/funding/rfas/pdfs/08_intl_science.pdf

U.S. Department of Agriculture
CSREES – NRI
Nanoscale Science and Engineering for Agriculture and Food Systems
Proposal Deadline: January 17, 2008
http://www.csrees.usda.gov/fo/nanoscalescienceengineeringnri.cfm
http://www.csrees.usda.gov/funding/rfas/pdfs/08_nri.pdf

U.S. Environmental Protection Agency
National Network for Environmental Management Studies Fellowship Program
Proposal Deadline: January 22, 2008
http://www.epa.gov/enviroed/NNEMS/pdf/solicitation2008.pdf

U.S. Department of Energy
DOE EPSCoR Implementation Awards
Proposal Deadline: January 22, 2008
https://e-center.doe.gov/iips/faopor.nsf/UNID/192B42DCFB9FA5C98525736A006A5632?OpenDocument

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service – Sea Grant Fellowships in Population Dynamics
Proposal Deadline: January 25, 2008
http://apply.grants.gov/opportunities/instructions/oppOAR-SG-2008-2001201-cfda11.417-cid2096960-instructions.pdf

U.S. Environmental Protection Agency
Environmental Technology Verification (ETV) Centers
Letter of Intent Due: January 7, 2008
Proposal Deadline: January 28, 2008
http://www.epa.gov/nrmrl/fundopps/solicit/solicitETVCenters.pdf

National Science Foundation
Discovery Research (K-12)
Proposal Deadline: January 28, 2008
http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=500047

Conservation, Food and Health Foundation
Grants directed conservation, food and health in the Developing World
Concept Applications Due: February 1, 2008
http://www.grantsmanagement.com/cfhguide.html

National Education Association Foundation
Learning and Leadership Grants
Student Achievement Grants
Proposal Deadline: February 1, 2008
http://www.neafoundation.org/grants.htm

U.S. Department of Agriculture, CSREES
Special Research Grants Program – Pest Management Alternatives
Proposal Deadline: February 1, 2008
http://www.csrees.usda.gov/fo/pestmanagementalternativessrgp.cfm
http://www.csrees.usda.gov/funding/rfas/pdfs/08_pmap.pdf

U.S. Department of Agriculture, CSREES
Higher Education Challenge Grant
Proposal Due: February 1, 2008
http://www.csrees.usda.gov/fo/educationchallengehigheredhep.cfm
http://www.csrees.usda.gov/funding/rfas/pdfs/08_hep_challenge.pdf

Binational Agricultural Research and Development Fund
Workshop Grants
Proposal Deadline: February 1, 2008
http://www.bard-isus.com/Workshop_07.pdf

BoatU.S. Foundation
Clean Water Grants
Proposal Deadline: February 1, 2008
http://www.boatus.com/foundation/cleanwater/grants/

National Science Foundation
Innovation and Organizational Change
Proposal Deadline: February 2, 2008
http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5378

National Institutes of Health
Diet Composition and Energy Balance (R01)
Proposal Deadlines: February 5, 2008, June 5, 2008, October 5, 2008
http://grants1.nih.gov/grants/guide/pa-files/PA-07-218.html

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
Dr. Nancy Foster Scholarship Program (for Marine biology)
Proposal Deadline: February 8, 2008
http://apply.grants.gov/opportunities/instructions/oppNOS-NMS-2008-2001067-cfda11.429-cid2077754-instructions.pdf

U.S. Department of Agriculture
Agricultural Marketing Service
Federal State Marketing Improvement Program
Proposal Deadline: February 11, 2008
http://www.ams.usda.gov/tmd/fsmip.htm

University of Hawaii Sea Grant
Hawaii Sea Grant College Program
Pre-proposals Due: February 13, 2008
http://www.soest.hawaii.edu/SEAGRANT/home/pdf/RFP%20-%202009-2011.pdf

National Science Foundation
Assembling the Tree of Life
Proposal Deadline: March 14, 2008
http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf08515

U.S. Department of Agriculture
CSREES – NRI
Plant Genome
Proposal Deadline: February 14, 2008
http://www.csrees.usda.gov/fo/plantgenomenri.cfm
http://www.csrees.usda.gov/funding/rfas/pdfs/08_nri.pdf

U.S. Department of Agriculture
CSREES – NRI
Rural Development
Proposal Deadline: February 14, 2008
http://www.csrees.usda.gov/fo/ruraldevelopmentnri.cfm
http://www.csrees.usda.gov/funding/rfas/pdfs/08_nri.pdf

U.S. Department of Health and Human Services
National Institutes of Health
Superfund Basic Research and Training Program (P42)
Letter of Intent Due: February 15, 2008
Proposal Deadline: April 15, 2008
http://grants.nih.gov/grants/guide/rfa-files/RFA-ES-07-006.html

U.S. Department of Agriculture
Food and Nutrition Service
FY 2008 Food Stamp Outreach Program
Proposal Deadline: February 19, 2008
http://www.fns.usda.gov/fsp/outreach/grants/2008/default.htm
http://www.fns.usda.gov/fsp/outreach/grants/2008/RFA.pdf

National Science Foundation
Microbial Genome Sequencing Program FY 2008
Proposal Deadline: February 19, 2008
http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf08511

National Science Foundation
Interdisciplinary Training for Undergraduates in Biological and Mathematical Sciences
Proposal Deadline: February 21, 2008
http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf08510

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service – Sea Grant Fellowships in Marine Resource Economics
Proposal Deadline: February 22, 2008
http://apply.grants.gov/opportunities/instructions/oppOAR-SG-2008-2001202-cfda11.417-cid2097004-instructions.pdf

U.S. Environment Protection Agency
Activities that Advance Methane Recovery and Use as a Clean Energy Source
Proposal Deadline: February 22, 2008
http://www.epa.gov/air/grants_funding.html#0801

National Science Foundation
Research on Gender in Science and Engineering FY 2008
Proposal Deadline: February 25, 2008
http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf07578

Wildlife Conservation Society
Research Fellowship Program
Proposal Deadline: March 15, 2008
http://www.wcs.org/media/file/Factsheet_RFP_070130.pdf

University of Hawaii
University Research Council
Undergraduate Summer Research Award
Proposal Deadline: February 29, 2007
http://www.hawaii.edu/urc/pdf/uheh_g.pdf
http://www.hawaii.edu/urc/pdf/uheh_f.pdf

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
Dean John A. Knauss Marine Policy Fellowship
Proposal Deadline: February 29, 2008
http://apply.grants.gov/opportunities/instructions/oppOAR-SG-2009-2001198-cfda11.417-cid2096905-instructions.pdf

Civic Ventures Foundation
The Purpose Prize (for Americans leading with experience.)
Application Deadline: March 1, 2008
http://www.purposeprize.org/index.cfm

U.S. Department of Agriculture
CSREES – NRI
Air Quality
Letter of Intent Due: March 5, 2008
Proposal Deadline: June 5, 2008
http://www.csrees.usda.gov/fo/airqualitynri.cfm
http://www.csrees.usda.gov/funding/rfas/pdfs/08_nri.pdf

U.S. Department of Agriculture
CSREES – NRI
Animal Genome (D): Functional Genomics
Letter of Intent Due: March 14, 2008
Proposal Deadline: June 5, 2008
http://www.csrees.usda.gov/fo/animalgenomefunctionalgenomicsnri.cfm
http://www.csrees.usda.gov/funding/rfas/pdfs/08_nri.pdf

U.S. Department of Agriculture
CSREES – NRI
Animal Genome (A): Translational Animal Genomics
Letter of Intent Due: March 14, 2008
Proposal Deadline: June 5, 2008
http://www.csrees.usda.gov/fo/animalgenometranslationalgenomicsnri.cfm
http://www.csrees.usda.gov/funding/rfas/pdfs/08_nri.pdf

U.S. Department of Agriculture
CSREES – NRI
Arthropod and Nematode Biology and Management (B): Suborganismal Biology
Letter of Intent Due: March 14, 2008
Proposal Deadline: June 5, 2008
http://www.csrees.usda.gov/fo/arthropodnematodesuborganismalbiologynri.cfm
http://www.csrees.usda.gov/funding/rfas/pdfs/08_nri.pdf

U.S. Department of Agriculture
CSREES – NRI
Arthropod and Nematode Biology and Management (C): Tools, Resources and Genomics
Letter of Intent Due: March 14, 2008
Proposal Deadline: June 5, 2008
http://www.csrees.usda.gov/fo/arthropodnematodetoolsresourcesgenomicsnri.cfm
http://www.csrees.usda.gov/funding/rfas/pdfs/08_nri.pdf

U.S. Department of Agriculture
CSREES – NRI
Plant Biosecurity
Letter of Intent Due: March 14, 2008
Proposal Deadline: June 5, 2008
http://www.csrees.usda.gov/fo/plantbiosecuritynri.cfm
http://www.csrees.usda.gov/funding/rfas/pdfs/08_nri.pdf

U.S. Department of Health and Human Services
National Institutes of Health
Improving Diet and Physical Activity Assessment (RO1)
Letters of Intent Due: May 5, 2008
Proposal Deadline: June 5, 2008
http://grants.nih.gov/grants/guide/pa-files/PAR-07-259.html

U.S. Environmental Protection Agency
Broad Agency Announcement for Conferences, Workshops and/or Meetings
Proposal Deadlines: January 7, 2008, June 5, 2008, December 9, 2008
http://es.epa.gov/ncer/rfa/2008/2008_baa.html

U.S. Department of Agriculture
CSREES – NRI
Animal Genome (C): Bioinformatics
Proposal Deadline: June 5, 2008
http://www.csrees.usda.gov/fo/animalgenomebioinformaticsnri.cfm
http://www.csrees.usda.gov/funding/rfas/pdfs/08_nri.pdf

U.S. Department of Agriculture
CSREES – NRI
Animal Genome (B): Tools and Resources
Proposal Deadline: June 5, 2008
http://www.csrees.usda.gov/fo/animalgenometoolsresourcesnri.cfm
http://www.csrees.usda.gov/funding/rfas/pdfs/08_nri.pdf

U.S. Department of Agriculture
CSREES – NRI
Animal Growth and Nutrient Utilization
Proposal Deadline: June 5, 2008
http://www.csrees.usda.gov/fo/animalgrowthandnutrientusenri.cfm
http://www.csrees.usda.gov/funding/rfas/pdfs/08_nri.pdf

U.S. Department of Agriculture
CSREES – NRI
Human Nutrition and Obesity
Proposal Deadline: June 5, 2008
http://www.csrees.usda.gov/fo/humannutritionobesitynri.cfm
http://www.csrees.usda.gov/funding/rfas/pdfs/08_nri.pdf

U.S. Department of Agriculture
CSREES – NRI
Agricultural Prosperity for Small and Medium-Sized Farms
Proposal Deadline: June 5, 2008
http://www.csrees.usda.gov/fo/smallfarmsagriculturalprosperitynri.cfm
http://www.csrees.usda.gov/funding/rfas/pdfs/08_nri.pdf

U.S. Environmental Protection Agency
Broad Agency Announcement for Conferences, Workshops and/or Meetings
Proposal Deadlines: January 7, 2008, June 5, 2008, December 9, 2008
http://es.epa.gov/ncer/rfa/2008/2008_baa.html