September 2009

UPDATE

San Joaquin Valley Agricultural Sciences Center

Inside this issue:

- Judy Johnson, Research Entomologist 2009 EEO/CR PWA award winner.
- Dr. James Leesch retires from ARS after 38 years of service.

Introduction

San Joaquin Valley Agricultural Sciences Center (SJVASC) researchers continue to partner with stakeholders. This close interaction and communication with stakeholders is essential for ensuring effective use of research results and technology developed by ARS in Parlier. Scientific knowledge and information developed by SJVASC scientists are used by the private sector, and by State and Federal regulatory agencies. Key components of these interactions are regular customer or stakeholder meetings, workshops and conferences at the SJVASC. The Water Management Research Unit held a stakeholder workshop earlier this year in February. Recently, the Crop Diseases, Pests and Genetics Research Unit also hosted a one-day stakeholder conference at the Center. Two Commodity Protection and Quality Research Unit stakeholder meetings are scheduled. A Navel Orangeworm Areawide Project workshop was held in August. In addition, a broad-based Commodity Protection and Quality Research Unit stakeholder meeting is being planned for later in the year (October-November). These interactive forums enable researchers to update SJVASC customers and stakeholders about current research activities and future research plans, as well as opportunities to gain input to identify future research needs and directions.

Dr. Jim Leesch, Research Leader of the Commodity Protection and Quality Research Unit (CPQRU), recently retired after more than 38 years of service. Dr. Atanu Biswas, a polymer chemist in the Plant Polymer Research Unit at the USDA-ARS National Center for Agricultural Research in Peoria, Illinois, is currently serving as the acting Research Leader of the CPQRU. Recruitment of a Research Leader for the CPQRU is underway.

Current Research Highlights

National Arid Land Plant Genetic Resources Unit

Recent stakeholder interest has led to the investigation of *Jatropha curcas*, a potential biodiesel oilseed, as a possible crop to maintain at the National Arid Land Plant Genetic Resources Unit (NALPGRU). While there is a growing commercial interest in using this plant as biodiesel and feedstock, the crop is not being maintained currently in the National Plant Germplasm System. Repositories around the world that maintain *J. curcas* germplasm are being contacted to identify sources of plant materials for trialing at the NALPGRU site.

Fresno County Economic Development Team expressed interest in crops maintained at the NALPGRU. Some of these new or alternate crops have commercial potential and they would be cultivated on county's west side that has marginal lands with limited water supply.

Jerry Serimian, a biological science technician, discovered a rotary cultivator that is better than any commercially available cultivator. Jerry's cultivator is compact in design and it can be used from a small tractor to remove weeds and clean row tops in established trees and vines without damaging them. NALPGRU filed a patent application on Jerry's invention.

Crop Diseases, Pests and Genetics Research Unit

Elaine Backus used Electrical Penetration Graph (EPG) technology to identify specific feeding behaviors of the glassy-winged sharpshooter (GWSS) that deposit *Xylella fastidiosa* (Xf) cells into grape plants. Results support a model in which GWSS salivates into the plant, then sucks up a saliva-xylem sap mixture which releases Xf cells bound to the cuticle of the GWSS foregut. Subsequent inoculation of dislodged Xf cells to plants results from a combination of salivation and fluid flow outward (egestion) from the insect's foregut.

Jianchi Chen conducted research at the South China Agricultural University, Guangzhou, PR China, as part of an international collaboration on citrus Huanglongbing (HLB) during a two-week visit June 28 - July 12, 2009.

Craig Ledbetter has evaluated an almond X *Prunus webbii* hybrid that exhibits superior recovery from almond leaf scorch disease. Enhanced winter curing in the hybrid as compared with the 'Butte' almond cultivar parent was observed after two winters. The results from this study show that *P. webbii* can be used in breeding to develop new almond cultivars that effectively eliminate *Xylella fastidiosa* infections during the winter dormant period.

Rodrigo Krugner compared reproductive behavior of two allopatric populations of glassy-winged sharpshooters in California and evaluated inheritance of characteristics in hybrid individuals. The preoviposition period for Riverside GWSS was shorter than that for Bakersfield GWSS. Identification of biological and behavioral differences among glassy-winged sharpshooter populations is critical for development and implementation of effective management strategies.

Current Research Highlights (continued)

Crop Diseases, Pests and Genetics Research Unit –continued

Hong Lin led a team successfully sequencing the whole genome of "*Candidatus* Liberibacter solanacearum", an unculturable bacterium associated with potato zebra chip disorder. The genomic information obtained will facilitate development of the zebra chip associated bacterium as a surrogate model system to examine pathogenicity and disease control strategies of related "*Ca*. Liberibacter" species, including those associated with citrus Huanglongbing, potato zebra chip disease, and other diseases of solanaceous crops.

David Ramming continues to evaluate advanced peach, nectarine and plum selections from the stone fruit breeding program. The selections that have shown commercial potential this year consist of 13 plums, 23 nectarines, 5 peaches, 20 flat peaches and 2 flat nectarines. Fruit characteristics are evaluated in the laboratory for size, firmness, % soluble solids, acid, and in the field for yield. One plum selection has potential as a pollinator for the very early blooming cultivar Black Splendor.

Elizabeth Rogers identified three ecotypes of the model plant *Arabidopsis thaliana* that allow 5 to 10-fold more growth of the Pierce's disease pathogen *Xylella fastidiosa* (Xf) than do the majority of *Arabidopsis* ecotypes. Plants were mechanically inoculated and Xf growth was monitored by both quantitative PCR and dilution plating. The extensive genetic tools that are available for *Arabidopsis* will facilitate the rapid identification of genetic loci that differ between these ecotypes and that may limit pathogen growth.

Drake Stenger has initiated a research project on the potential of viruses to serve as biological control agents of the glassy-winged sharpshooter. Current research efforts are focused on virus discovery in GWSS and related insect species to identify biological control candidates.

Mark Sisterson examined the role of host plant quality and oviposition experience on egg maturation rates of glassy-winged sharpshooter. The study determined that egg maturation rates increased with quantity and quality of food consumed. In contrast, oviposition experience did not stimulate egg maturation. A better understanding of factors effecting egg maturation will aid in understanding glassy-winged sharpshooter population dynamics in the field.

Ray Yokomi developed a protocol to expedite identification of economically important strains of Citrus tristeza virus (CTV). The first step is to test samples with the monoclonal antibody MCA13 which reacts with severe strains of CTV. In subsequent steps, MCA13 reactive isolates are analyzed by a series of PCR assays to determine genotype. If economically severe CTV genotypes are found, they are immediately subjected to a virus index test to confirm virulence. This approach is being used by the Central California Tristeza Agency in collaboration with ARS-Parlier San Joaquin Valley Agricultural Sciences Center to find and identify virulent tristeza strains.

Current Research Highlights (continued)

Commodity Protection and Quality Research Unit

Chuck Burks, **Judy Johnson** and **Joe Smilanick** hosted students in the CASS (Cooperative Association of States for Scholarships) program. The program is funded by the United States Agency for International Development. The three students, all from Central America and the Caribbean, study agriculture at Reedley Community College, and must complete a 3 week internship in an agriculturally related setting, such as the SJVASC. Upon completion of the program, the students return to their home countries to share their knowledge and skills, becoming agents of change within their communities.

Judy Johnson, in collaboration with Juming Tang and Shaojin Wang of Washington State University, Pullman, is developing radio frequency heat treatments for dried beans and peas as alternatives to chemical fumigation for insect disinfestation. The pupal stage of the cowpea weevil (*Callosobruchus maculatus*) has been identified as the most heat tolerant stage, and studies are ongoing to determine the thermal death kinetics of this important legume pest. Comparing the dielectric properties of dried beans with cowpea weevil suggest that cowpea weevil will heat more rapidly during radio frequency treatments, resulting in an efficacious treatment that does not harm product quality.

Judy Johnson received the USDA-ARS Pacific West Area Outreach, Diversity and Equal Opportunity Award for the Non-Supervisory/Non-Managerial category, in recognition of her outstanding service to challenge children, youth and teachers in the sciences to continue excelling in their education.

L.P.S. (Bas) Kuenen is continuing his research on navel orangeworm (NOW) behavior and biology. In collaboration with University of California researchers, he elucidated critical secondary sex pheromone components that, combined with the earlier identified major pheromone component, elicits male responses equal to that elicited by female sex pheromone extract. In early trapping experiments, some trap bait types captured more male NOW moths than unmated females used as a trap bait. In addition to his work on sex pheromone, collaboration with **Spencer Walse** (CPQ) is directed toward elucidating volatiles from pistachios that are attractive to female NOW moths for better trapping and monitoring during field use of mating disruption treatments.

David Obenland, working with Lisa Neven and colleagues from the ARS laboratory in Wapato, WA, conducted a large test to determine the ability of forced-air heat treatment combined with low oxygen and high carbon dioxide to kill oriental fruit moth larvae infested in peaches. The treatment was conducted using fruit placed into trays inside standard boxes that were stacked together onto a pallet in order to simulate how the treatment would be conducted commercially. Although complete insect mortality was achieved it was found that heating the fruit in a boxed/palletized format increased the needed heat dose to a degree that would likely compromise fruit quality. A redesign of box format to increase airflow will be needed for this treatment to be a viable replacement for methyl bromide.

Current Research Highlights (continued)

Commodity Protection and Quality Research Unit –continued

Joel Siegel determined navel orangeworm infestation levels of almond mummies, primarily Butte and Padre varieties, and overwintering survival in pistachio mummies for the winter of 2008-2009 in study sites in Madera County. Survival was high and the mummies did not rot. In the summer of 2008, he evaluated the duration of protection provided by pyrethroid and insect growth regulators and found that combinations of both provided protection to pistachios for as long as 6 weeks. On August 25th Dr. Siegel organized a stakeholder meeting at the San Joaquin Valley Agricultural Sciences Center for the Areawide Project to Control Naval Orangeworm.

Spencer Walse is working with the California Tree Fruit Agreement, Walnut Marketing Board of California, and other specialty crop industries to protect commodities from stored product and quarantine pests in foreign trade and marketing channels, and to meet industry quality and quarantine requirements. The goal of this work is to conduct physicochemical research on the discovery and application of techniques for the specific purpose of overcoming these trade barriers, as they are of serious economic consequence to the San Joaquin Valley's specialty crop industry.

Victoria Yokoyama initiated work with the National Hay Association to develop data to show that Hessian fly, a quarantine pest, would not be introduced through hay exports from the western states into existing and emerging markets in the Pacific Rim. The 2008-2009 seasonal parasitoid release program was completed for biological control of olive fruit fly using *Psyttalia* cf. *concolor*, imported from the USDA-APHIS-PPQ, Moscamed, Petapa Biological control Laboratory in Guatemala. The parasitoid release program was conducted in eleven counties in California and is funded in part by the California Olive Committee. This project was reported in a February 2009 magazine article, "Can Small Foe Foil Olive Fruit Fly?" in USDA, ARS, Agricultural Research, Vol. 57, No. 2. http://ars.usda.gov/is/AR/archive/feb09/olive0209.htm

Water Management Research Unit

Gary Banuelos, Plant/Soil Scientist, was awarded a 5-month OECD (Organization for Economic Co-operation and Development) Research Fellowship to conduct boron and phytoremediation research at the Swiss Federal Institute of Technology in Zurich, Switzerland.

Gary Banuelos was the senior editor on the newly-published book "Biofortification and the Development of New Agricultural Products" by CRC Press.

Graduate student Christine Rainbolt, working with **Brad Hanson**, initiated experiments in flower nurseries near Nipomo and Oxnard, CA to compare steam and solarization with pre-plant methyl bromide soil fumigation to control soil-borne pests in collaboration with **Jim Gerik** and University of California collaborators. Soil fumigants are being tested and evaluated for weed and nematode control in rose nurseries near Wasco and tree nurseries near Modesto. An herbicide screening program in perennial crop nurseries, which currently includes trials near Wasco, Visalia, Modesto, Sacramento, Yuba City, and Maxwell, is beginning to have an impact on the industry with several growers implementing recently demonstrated techniques.

Current Research Highlights (continued)

Water Management Research Unit –continued

In collaboration with UC and CSUF collaborators, **Brad Hanson** is characterizing several *Conyza* weeds with evolved resistance to the herbicide glyphosate (RoundeUp) in laboratory and field experiments.

Meeting, Conferences, Workshops & Visitors

The **Crop Diseases, Pests and Genetics Research Unit** held a Stakeholder Conference August 12, 2009. Current areas of CDPGRU research were presented and valuable feedback from stakeholders was received. The conference was attended by 19 stakeholders.

Elaine Backus conducted a week-long training workshop on Electrical Penetration Graph (EPG) technology for monitoring insect feeding behavior. The workshop was attended by 12 entomologists from the US interested in applying EPG technology to their research.

Elaine Backus, Jianchi Chen, Hong Lin, Mark Sisterson and Ray Yokomi attended and presented research results at the American Phytopathological Society Annual Meeting, Portland, OR Aug 1-5, 2009.

Jianchi Chen presented research seminars on fastidious prokaryotes at the South China Agricultural University (July 3, 2009) and Sun Yat-sen University (July 9, 2009). Both universities are located in Guangzhou, PR China.

Rodrigo Krugner attended and presented research on spatial-temporal distribution and movement of glassy-winged sharpshooters in citrus at the International Integrated Pest Management Symposium, Portland, OR, March 24-26, 2009.

Craig Ledbetter attended the Consorzio Vivaistico Pugliese in Bari, Italy, June 15-19, 2009 to present current information to Italian stone fruit growers on the status of variety development and trends in the California stone fruit industries.

David Ramming attended and presented a summary of the ARS grape breeding project at the North American Grape Breeders Conference, Tallahassee, FL., August 6, 2009.

Elizabeth Rogers attended and presented research on the use of *Arabidopsis* as a model host plant for *Xylella fastidiosa* research at the International Society for Molecular Plant-Microbe Interactions, Quebec City, Quebec, Canada, Vancouver, July19-23, 2009.

Drake Stenger attended and presented research results on genomic characterization of a virus infecting the glassy-winged sharpshooter at the American Society for Virology Annual Meeting, Vancouver, British Columbia, Canada, July 11-15, 2009.

Ray Yokomi presented citrus disease research updates at the 2009 Kern Spring Citrus Meeting (Bakersfield, CA, April 7, 2009), the Variety Committee Meeting, California Citrus Nursery Board (Riverside, CA, June 10, 2009), and the Citrus Research Growers' Educational Seminar, Citrus Research Board and University of California Cooperative Extension (Exeter, CA, Aug. 27, 2009). Dr. Yokomi also presented lectures in a course on Integrated Pest Management of Mediterranean Fruit Tree Crops at the International Center of High Mediterranean Agronomic Studies (CIHEAM), Valenzano, Italy, June 15-17, 2009.

Meeting, Conferences, Workshops & Visitors (continued)

Brad Hanson presented research on "Fumigants and Nematicides" at a meeting hosted by the Stanislaus County Ag Commissioners office on March 31, 2009. He also made presentations to tree nursery growers, CDFA personnel, and members of the Fruit Tree, Nut Tree, and Grapevine Improvement Advisory Board on April 21, 2009 titled "Herbicide Screening in Tree Nurseries"; and "Identification of Weed Seed in Grapes for Export" at a training session attended by commodity inspectors in the southern San Joaquin Valley on May 27, 2009.

Acting Curator, **Craig Ledbetter**, attended the annual Plant Germplasm Operations Committee meeting in Sturgeon Bay, Wisconsin in July 14-15, 2009, to represent both the National Arid Land Plant Genetic Resources Unit (NALPGRU) at Parlier, and the National Clonal Germplasm Repository in Davis, CA. The meeting highlight was an in-depth demonstration of a new Global GRIN database that should be in place by September 2010.

The **NALPGRU** hosted the Fresno County Economic Development Team at the SJVASC for an informational meeting regarding the crops maintained at the Parlier repository on May 8. The meeting focus was to discuss and identify potential new, or alternative, crops suitable for the limited water supply and on marginal soils of the county's west side.

Joe Smilanick presented research and participated in two events: 1) "Packinghouse Day", an annual event for sponsored by the Florida State Department of Citrus in Lake Alfred, Florida on August 27; and 2) "Indian River Citrus Postharvest Workshop" held nearby on August 28. In addition to these meetings, he visited several packinghouses and groves in central Florida, with his host, Mark Ritenour, of the University of Florida.

David Obenland attended and presented research titled "Relationship of soluble solids, acidity and aroma volatiles to flavor in late-season navel oranges" at the 6th International Postharvest Symposium held in Antalya, Turkey from April 8 -12, 2009.

Bas Kuenen, Judy Johnson and **Elizabeth Rogers** participated in the Future Scientist program held at the San Joaquin Valley Agricultural Sciences Center on June 18-19. The program, organized by Craig Wilson of Texas A&M University, is designed to provide science teachers with agriculturally related classroom activities. Bas Kuenen spoke on wind tunnel flight experiments with moths, Judy Johnson presented information on heat treatments and cowpea weevils, while Elizabeth Rogers discussed the use of field mustard (*Brassica rapa*) in the classroom.

Victoria Yokoyama presented a talk, "2008 Field Releases of *Psyttalia* cf. *concolor* for Biological Control of Olive Fruit Fly in California," at the Entomological Society of America, 93rd Pacific Branch Annual Meeting, San Diego, California, March 29-April 1, 2009: and "Olive Fruit Fly's Worst Enemy---A Wasp from Guatemala," at the Olive Growers Council of California, Central California Olive Day, Exeter, California, August 6, 2009.

Upcoming Events

2009 International Research Conference on Methyl Bromide Alternatives and Emissions Reduction; November 10-13, 2009, San Diego, California.

Citrus Huanglongbing and Potato Zebra Chip Diseases Workshop, November 16-18, 2009, McAllen, Texas.

2009 Pierce's Disease Research Symposium, December 9-11, 2009, Sacramento, California.

Recent Publications

Wang, S., **J. A. Johnson, J. D.** Hansen, and J. Tang. 2009. Determining thermotolerance of fifth-instar *Cydia pomonella* (L.) (Lepidoptera: Tortricidae) and *Amyelois transitella* (Walker) (Lepidoptera: Pyralidae) by three different methods. J. Stored Products Res. 45: 184-189. Available http://hdl.handle.net/10113/30134

Johnson, J. A., E. M. Yahia, and **D. G. Brandl.** 2009. Dried fruits and tree nuts. In: Modified and controlled atmospheres for the storage, transportation, and packaging of horticultural commodities. Yahia, E. M. (ed) Boca Raton, FL., CRC Press, 507-526 pp.

Johnson, J. A. 2009. Use of low temperatures to control postharvest Indianmeal moth. Australian Nutgrower 23(2): 6-8.

Obenland, D., Collin, S., Mackey, B., Sievert, J., Fjeld, K., Arpaia, M.L. 2009. Determinants of flavor acceptability during the maturation of navel oranges. Postharvest Biology and Technology 52(2):156-163.

Obenland, D., Margosan, D., Collin, S., Sievert, J., Fjeld, K., Arpaia, M.L., Thompson, J., Slaughter, D. 2009. Peel fluorescence as a means to identify freeze-damaged oranges. HortTechnology 19(2):379-384.

Wang, X., M. W. Johnson, K. M. Daane, **Yokoyama, V. Y.**, and Pickett, C. H. 2009. Enlargement of cultivated olive fruit reduces the efficiency of the larval olive fruit fly parasitoid, *Psyttalia concolor*. Biol. Contr. 49: 45-51.
http://dx.doi.org/10.1016/j.biocontrol.2009.01.004

Yokoyama, V. Y. 2009. Biological and Cultural Control of Olive Fruit Fly in California---Utilization of Parasitoids from USDA-APHIS-PPQ, Guatemala, pp. 91-97. In M. W. Johnson [ed.], California Olive Committee Ann. Res. Rept. 2008. California Olive Committee, Fresno, CA.

Yokoyama, V. Y., P. A. Rendón, and J. Sivinski. 2008. Biological control of olive fruit fly (Diptera: Tephritidae) by releases of *Psyttalia* cf. *concolor* (Hymenoptera: Braconidae) in California, parasitoid longevity in presence of the host, and host status of walnut husk fly, pp. 157-164. In Proceedings of the 7th International Symposium on Fruit Flies of Economic Importance, 10-15 September 2006, Salvador, Bahia, Brazil.
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Recent Publications (continued)

Schneider, S.M. and **B.D. Hanson**. 2009. Effects of fumigant alternatives to methyl bromide on pest control in a deciduous fruit and nut plant nursery. HortTechnol. 19:526-532.

Schneider, S.M., **B.D. Hanson**, **J.S. Gerik**, T.J. Trout, A. Shrestha, and **S. Gao**. 2009. Comparison of shank- and drip-applied methyl bromide alternatives in perennial crop field nurseries. Hort Technol. 19:331-339.

Hanson, B.D., A. Shrestha, and D.L. Shaner. 2009. Distribution of glyphosate-resistant horseweed (Conyza canadensis) and relationship to cropping systems in the central valley of California. Weed Sci. 57:48-53.

Backus, E. A., Bennett, W. A. 2009. The AC-DC Correlation Monitor: new EPG design with flexible input resistors to detect both R and emf components for any piercing-sucking hemipteran. *Journal of Insect Physiology* 55:869-884.

Cheng, D.W., Lin, H., Walker, M., **Stenger, D.C., Civerolo, E.L.** 2009. Effects of grape xylem sap and cell-wall constituents on in vitro growth and virulence-related gene expression of *Xylella fastidiosa*. *European Journal of Plant Pathology* [doi:10.1007/s10658-009-9473-8]. Available: http://www.springerlink.com

Duan, Y., Zhou, L., Hall, D. G., Li, W., Doddapaneni, H., **Lin, H.,** Liu, L., Vahling, C. M., Gabriel, D. W., Williams, K. P., Dickerman, A., Sun, Y., Gottwald, T. 2009. Complete genome sequence of citrus Huanglongbing Bacterium '*Candidatus* Liberibacter asiaticus' obtained through metagenomics. *Molecular Plant-Microbe Interactions* 22: 1011-1020.

Garris, A. J., Cousins, P. S., **Ramming, D. W.,** Baldo, A. M. 2009. Parentage Analysis of Freedom Rootstock. *American Journal of Enology and Viticulture* 60(3):357-361.

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Karayiannis, I., **Ledbetter, C.A.** 2009. Susceptibility of certain apricot and plumcot cultivars to plum pox virus infection. *Acta Horticulturae* 825:153-156.

Krugner, R., Groves,, R.L., Johnson, M.W., Flores, A.P., Hagler, J.R., Morse, J.G. 2009. Seasonal population dynamics of *Homalodisca vitripennis* (Germar) (Hemiptera: Cicadellidae) in sweet orange trees maintained under continuous deficit irrigation. *Journal of Economic Entomology* 102(3):960-973.

Ledbetter, C.A. 2009. Using Central Asian germplasm to improve fruit quality and enhance diversity in California adapted apricots. *Acta Horticulturae* 814:77-80.

Ledbetter, C.A., Chen, J., Livingston, S., Groves, R.L. 2009. Winter curing of *Prunus dulcis* cv 'Butte,' *P. webbii* and their interspecific hybrid in response to *Xylella fastidiosa* infections. *Euphytica* in press.
Available: http://www/springerlink.com/content/80775k3135586p81/fulltext.html

Recent Publications (continued)

Lin, H., Doddapaneni, H., Munyaneza, J.E., **Civerolo, E.L.,** Venkatesan, S.G., Buchman, J.L., **Stenger, D.C.** 2009. Molecular characterization and phylogenetic analysis of 16S rRNA from a new *Candidatus* Liberibacter strain associated with zebra chip disease of potato (Solanum tuberosum L.) and the potato psyllid. *Journal of Plant Pathology* 91:215-219.

Livingston, S., **Chen, J., Civerolo, E. L.** 2009. Seasonal behavior of *Xylella fastidiosa* causing almond leaf scorch disease under field conditions and improved detection of the bacteria by means of array-PCR. *Journal of Phytopathology* , in press [doi: 10.1111/j.1439-0434.2009.01577.x]

Mello, A. F., Wayadande, A., **Yokomi, R. K.,** Fletcher, J. 2009. Transmission of different strains of *Spiroplasma citri* to carrot and citrus by *Circulifer tenellus* Baker (Hemiptera:Cicadellidae). *Journal of Economic Entomology* 102(4):1417-1422.

Ramming, D.W. 2009. Water loss from fresh berries of raisin cultivars under controlled drying conditions. *American Journal of Enology and Viticulture* 60:608-214.

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Riaz, S., Tenscher, A.C., Graziani, R., Krivanek, A.F., **Ramming, D.W**., Walker, M. 2009. Using marker-assisted selection to breed Pierce's disease-resistant grapes. *American Journal of Enology and Viticulture* 60(2):199-207.

Rogers, E. E., Wu, X., Stacey, G., and Nguyen, H. T. 2009. Two MATE proteins play a role in iron efficiency in soybean. *Journal of Plant Physiology* 166:1453-1459.

Sandanayaka, W., **Backus, E.A.** 2008. Quantitative comparison of stylet penetration behaviors of glassy-winged sharpshooter, *Homalodisca vitripennis*, on four crop plants important in New Zealand and the USA. *Journal of Economic Entomology* 98:787-813.

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Stenger, D.C., Sisterson, M.S., Krugner, R., Backus, E.A., Hunter, W.B. 2009. A new Phytoreovirus infecting the glassy-winged sharpshooter (*Homalodisca vitripennis*). *Virology* 386:469-477.

News

Dr. Christopher Wallis will join the Crop Diseases, Pests and Genetics Research Unit as a Research Plant Pathologist, September 27, 2009. Dr. Wallis will establish a research program focused on management of diseases of horticultural crops caused by *Xylella fastidiosa*.

Judy Johnson, Research Entomologist, was awarded the 2009 Pacific West Area Employee of the Year award for Outreach, Diversity, and Equal Opportunity . Judy is an outstanding example of those who excel in their careers and service to the Agency and stakeholders. She is an inspiration to her colleagues as well as her co-workers. It is through her efforts that standards continue to be raised for the Agency and for the Pacific West Area.

Jianchi Chen (CDPGRU), **John Freeman** (WMRU) and **Spencer Walse** (CPQRU) served as mentors for students in the American Chemical Society 2009 Project SEED Program. Project SEED helps economically disadvantaged high school students expand their education and career outlook. The program provides opportunities for students who historically lack exposure to scientific careers to spend 8-10 weeks during the summer conducting hands-on research with a scientist in academic, industry, and government research laboratories. On August 7, the SJVASC hosted the 2009 Project SEED class for presentations of final reports by the students. Thirty-three students from 11 cities in Central and Northern California, including four from Parlier, gave oral final reports of their projects.

Research Units and Contact Information

Water Management Research Unit

Commodity Protection & Quality Research Unit

Crop Diseases, Pests & Genetics Research Unit

National Arid Land Plant Genetic Resources Unit

United States Department of Agriculture
Agricultural Research Service
the in-house research arm of the U.S. Department of Agriculture

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