UPDATE

期间的过去四年内，科学人员，包括研究领导者的显著变动。随着Dr. Dong Wang的加入作为水管理研究单元（WMRU）的新研究领导人，所有研究领导者都已到位。Jim Ayars在汤姆·特鲁特（Tom Trout）从科罗拉多州的富尔顿（Ft. Collins）搬迁后过去一年作为WMRU代理研究领导。Jim Leesch早于去年成为商品保护和质量研究单元（CPQRU）的研究领导人，而Drake Stenger则在去年秋天成为作物病害、害虫和遗传研究单元（CPQRU）的研究领导人。

**Introduction**

在过去的四年中，SJVASC的科学人员，包括研究领导者发生了显著的变动。随着Dr. Dong Wang作为水管理研究单元（WMRU）的新研究领导人的到来，所有的研究领导人们都已经就位。Jim Ayars担任了WMRU代理研究领导，自从Tom Trout从科罗拉多州的富尔顿（Ft. Collins）搬迁后的一年。Jim Leesch早于去年成为商品保护和质量研究单元（CPQRU）的研究领导人，而Drake Stenger则在去年秋天成为作物病害、害虫和遗传研究单元（CPQRU）的研究领导人。

**Crop Diseases, Pests and Genetics Research Unit**

两个新葡萄品种，Autumn King和Thomcord，最近由David Ramming发布，可能在两年内出现在超市。Autumn King是一个吸引人的、大个体的、白色、无籽的葡萄，可以在10月晚收获，且在冷库存放时保持坚硬和甜美。Thomcord，是Concord和Thompson Seedless的杂交品种，是一种蓝色的、丰满的、甜的、温和的、好吃的、多汁的、无籽的葡萄，非常适合于加利福尼亚的阳光葡萄园。

Hong Lin利用创新的分子技术成功地获得了柑橘黄龙病（HLB）或绿病细菌（Candidatus Liberibacter）中的新DNA序列。Hong已经识别并表征了超过10,000个来自亚洲型的CL的基因组DNA的碱基对。这些新序列现在可以在GenBank上公开获取。他开发的技术可以应用于其他难以培养的微生物，其中DNA序列有限。HLB相关的CL是革兰氏阴性、难以培养的、韧皮部限制的细菌，对于其中缺乏基因组信息的CL感染的早期、临床诊断提供了新的信息，有利于开发更加敏感和更加具体的DNA检测工具，以期改善病害管理策略。最近在佛罗里达州的HLB发生，对整个美国柑橘工业构成了严重威胁。
Current Research Highlights (continued)

Raymond Yokomi is developing an improved diagnostic capability for citrus stubborn disease caused by *Spiroplasma citri*, a leafhopper transmitted, phloem-limited bacterium. Routine identification of the pathogen by culturing is labor intensive and requires two weeks to complete the assay. Dr. Yokomi has developed a reliable DNA-based assay for detection of *S. citri* from stubborn-affected field trees in 1-2 days using a polymerase chain reaction (PCR). Comparison of the two assays demonstrated that the PCR assay is as reliable as isolation and culturing of the pathogen yet costs significantly less per sample to implement.

Mark Sisterson has developed a simple model for the economics of rouging almond trees affected by almond leaf scorch disease (ALSD) to help growers determine if they should replace or keep infected trees. This model was used to evaluate conditions under which replanting infected trees would increase returns. ALSD has been present in California’s almond growing regions for over 60 years. The disease is caused by *Xylella fastidiosa* and the pathogen is vectored by xylem feeding sharpshooters and spittlebugs. Currently there are no effective management techniques to prevent trees from becoming infected. Yields of ALSD-affected Sonora and Nonpareil trees were lower than those of unaffected trees for both cultivars. The model considers orchard age, the degree of yield loss due to infection, and the value of a maximally producing almond tree to determine when replacement of ALS-affected trees is warranted.

**Commodity Protection and Quality Research Unit**

In a collaborative ARS-UC project, Dave Obenland has been testing different detection methods designed to predict whether fruit has been damaged by freezing conditions, including headspace ethanol and illumination of fruit with UV light. Obenland and Support Scientist Dennis Margosan discovered the UV light method. The UV light method shows promise and it is much easier and quicker to use, and is also more sensitive, than the ethanol method. Citrus packinghouses already have blacklight rooms which can work for this purpose, and at least one packinghouse is actively using the UV light method to sort frozen from non-frozen fruit. As public demonstrations were recently held, other packinghouses are expected to implement this technology.

Joe Smilanick and Monir Mansour are collaborating with Julie Doctor of Sunkist Growers, UC Davis engineer Jim Thompson, and a large citrus packinghouse near Oxnard, California, to conduct large-scale thermal disinfestation tests in an effort to replace chemical treatments presently used. The tests consist of heating humidified storage rooms to about 120°F (50°C) for 24 hours to kill the spores of two fruit decay fungi, the green mold and sour pathogens, *Penicillium digitatum* and *Geotrichum citri-aaurantii*, respectively. The objectives of this work are to evaluate both the efficacy and energy costs of this treatment, and to see how it could be adapted into the normal operation of a commercial facility.

**Water Management Research Unit**

Since 2004, Suduan Gao has been conducting research on emission reductions from soil fumigation with 1,3-dichloropropene (1,3-D) and chloropicrin (CP) that are alternatives to methyl bromide. Minimizing emissions will reduce the detrimental impacts of fumigants on the environment and maintain practical use for agricultural production. Suduan Gao and Tom Trout have been focusing on developing practical methods (effective, economic and environmentally friendly) that can be adopted in the field. Because of the ineffectiveness of standard plastic (HDPE) to control 1,3-D emissions, they have been investigating water applications with sprinklers prior to (pre-irrigation) and after (water seal) fumigation, tarping, and soil amendment with organic materials, as well as combination of these methods to minimize fumigant emissions. Dr. Gao, her colleagues, and collaborators continue to study and develop effective emission reduction methods that also provide good control of soil pests and diseases.
**Current Research Highlights (continued)**

Water Management continued-

In addition to fumigant research, **Dr. Gao** also studies the fate and transport of toxic trace elements (e.g., Se, As, B, and Mo) associated with agricultural drainage management in the San Joaquin Valley. **Dr. Gao** continues research on the chemical behavior of trace elements in agricultural production systems to evaluate their potential risks and effectiveness of water management practices.

**Brad Hanson**, in cooperation with UC scientists, is conducting research to determine the distribution and level of herbicide-resistant horseweed in central California. Horseweed and hairy fleabane (Conyza spp) have become important weed problems in orchards, vineyards, canal banks, roadsides, and fallow lands in the San Joaquin Valley (SJV). At very high glyphosate concentrations, both biotypes were injured which suggests that resistance may be at least partly due to differences in translocation.

**Meetings, Conferences, Workshops**

**Ed Civerolo** and **Denice Chambers** participated in the first “USDA Networking Fair” on February 6, 2007 at California State University-Fresno (CSUF). This was organized by the USDA-Hispanic Serving Institutions National Program in collaboration with CSUF.

**Ed Civerolo** and **Marlene Jensen** participated in the National Program 305 Crop Production Customer Workshop in Stuart, Florida (February 20-22, 2007). This provided an opportunity to identify potential linkages between NP305 and research in the Water Management, and Crop Diseases, Pests and Genetics Research Units conducted under other National Programs (e.g., NP 207, NP 301 and NP 303) for inclusion in the next NP 305 Action Plan.

**Drake Stenger**, **David Ramming** and **Elaine Backus** attended the San Joaquin Valley Table Grape Commission Seminar in Visalia on February 28, 2007.

**Visitors**

A seminar entitled "Methyl Bromide Alternatives Research in China" was presented at the SJVASC by Prof. **Aocheng Cao**, Institute of Plant Protection, Chinese Academy of Agricultural Sciences, Beijing, China, on Monday, March 5, 2007. Prof. Cao is the Director of Pesticide Sciences, Institute of Plant Protection, Chinese Academy of Agricultural Sciences in Beijing, China. He was accompanied by **Fu Wiedong** and **Zhang Yanqing** from the Institute of Environment and Sustainable Development in Agriculture.

Two visitors from the **Israeli Ministry of Agriculture**, accompanied by a representative of the **USDA-Risk Management Agency**, visited the SJVASC on March 8, 2007 to see freeze-damaged citrus trees and **David Obenland**’s backlight detection of freeze-damaged citrus fruit.

**News**

**Dr. Dong Wang** reported for duty as the new Research Leader for the Water Management Research Unit on February 19, 2007. **Dr. Wang** is a Soil Scientist and certified Agricultural Engineer. He will be leading the irrigation and drainage water management, as well as, the pre-plant methyl bromide alternatives research within the Unit.

**Allan Brown** will join the National Arid Land Plant Genetics Resources Unit in Parlier as a post-doc in April 2007. The **Commodity Protection and Quality Research Unit** is recruiting for an Entomologist.
News, continued

The Crop Diseases, Pests and Genetics Research Unit is currently recruiting for a Plant Pathologist, an Entomologist and a Plant Physiologist/Plant Molecular Biologist.

Upcoming Events

- The 53rd Annual Soil Fungus Conference will be held in Fresno April 11-13, 2007 at the Piccadilly University. The conference is being organized by James Gerik. Additional information will be available online at http://soilfungus.ars.usda.gov or contact Jim at (559) 596-2865.
- A meeting regarding the USDA-ARS Pacific Areawide Program for Methyl Bromide Alternatives will be held at the SJVASC on April 16, 2007.
- The annual FFA Leadership Conference visit to the SJVASC will take place on April 16, 2007.
- The 9th Exotic Fruit Fly Symposium will be held April 25-26, 2007 in Fresno, California.
- USDA Disability Conference will be held at California State University - Fresno on April 24, 2007.

Recent Publications and Miscellaneous


Brad Hanson has been selected by the ARS Pacific West Area Office to mentor a student under the Summer Intern Program—FY2007. Outreach activities to diversify our workforce are a hallmark of the Pacific West Area.

Research Units and Contact Information

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