

SUMMER 2002

# Update

California State University, Fresno

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California State Park Interpreter Shirley Spenser (right) leads visitors along the walking path at the new botanical garden demonstration site at Millerton Lake, just north of Fresno.

## Demonstration site offers ideas for water conservation

**T**hanks to a team effort by the Center for Irrigation Technology (CIT) and several other public and private agencies, central San Joaquin Valley residents now have a new botanical garden they can visit at Millerton Lake just north of Fresno.

The two-acre garden features winding walkways, water-saving irrigation systems and drought-resistant plants. It was designed and constructed by CIT staff with plants purchased from local nurseries and with irrigation equipment donated by area commercial manufacturers. Funding support was provided by the federal Bureau of Reclamation and California State University's Agricultural Research Initiative (ARI).

"This garden is for residents' use," said CIT staff member Marilyn Creel,

who has helped to oversee development of the site. The primary purpose of the garden is to demonstrate and teach water conservation through the use of drought-resistant plants and innovative irrigation systems. The irrigation equipment includes drip systems, micro-sprayers and sprinklers, she said.

The garden site lies just south of Friant Dam, and at its western edge offers a panoramic view of the tree-lined San Joaquin River as it winds its way across the valley floor. A small building on the site houses photographs and maps for visitors to view and also serves as a classroom and meeting area for students and groups touring the site.

Although the garden has become an increasingly popular field trip destination for local school children, access for

*See Site, Page 4*

## **Ozone research spawns conference set for October**

**A** new research program at California State University, Fresno will serve as the backdrop for a first-of-its-kind Ozone III conference to be held in Fresno in October.

The Ozone Research Program at Fresno State began in 2000 under the leadership of assistant professor Erin Dormedy of the Department of Food Science and Nutrition. The program involves testing ozone for expanded use as a disinfectant in the food processing industry. Funding has been provided by California State University's Agricultural Research Initiative (ARI) and by private industry.

"Each year in the United States up to 80 million people acquire and 9,000 die from food-borne illnesses, at an estimated

*See Ozone, Page 8*

C A T I



CALIFORNIA  
AGRICULTURAL  
TECHNOLOGY INSTITUTE

# Tests show more options for stone fruit growers

## *Research efforts focus on materials that could replace conventional organophosphates*

**C**alifornia's Food Quality Protection Act of 1999 has left many of the state's stone fruit growers scrambling to find new ways to control San Jose scale (SJS), peach twig borer (PTB), and other pests in their peach and nectarine orchards. Among other things, the act's new regulations restrict the use of organophosphate pesticides, which in the past have provided effective control of these types of pests.

While there are other commercial products on the market, few, until now, have been tested specifically for their effectiveness against SJS and PTB, notes Fresno State plant science professor Earl Bowerman in a report just published by the California Agricultural Technology Institute (CATI).

In an effort to provide growers with information on alternative control methods, Bowerman joined scientists from the University of California Cooperative Extension and the Califor-



Studies have shown reduced-risk oils to be effective in controlling low to moderate infestations of San Jose scale and peach twig borer.



nia component in a dormant spray for controlling SJS were conducted. The results were encouraging.

"The results suggest that both oil formulations tested may abate overwintering populations of SJS under low to moderately infested conditions," Bowerman reported.

potential source for agents used in an augmentative biological control program," he said.

The CTFA and UC already have sponsored grower field days and other events to publicize the results of the research, Bowerman noted.

"Through this effort, hundreds of growers and professional crop care consultants have been exposed to alternative, reduced-risk practices that effectively address the pest complexities of the stone fruit industry," he said.

Bowerman's portion of the research was supported by California State University's Agricultural Research Initiative (ARI). His full report, titled "Development of an Integrated Farming System for the Production of Stone Fruit," (ARI Project #00-1-005) is available for viewing under the "Production and Cultural Practices" section of the ARI website at [ari.calstate.edu](http://ari.calstate.edu).

Research in these areas is ongoing, and additional information may be accessed through the CTFA's website at [caltreefruit.com](http://caltreefruit.com).

***"...hundreds of growers and professional crop care consultants have been exposed to alternative, reduced-risk practices that effectively address the pest complexities of the stone fruit industry."***

nia Tree Fruit Agreement (CTFA) to explore the use of reduced-risk oils as well as biological controls.

One phase of the project involved establishment of three demonstration plots in Fresno, Kings and Yuba counties, totaling approximately 72 acres and featuring eight varieties of stone fruit. At each site, efficacy trials of two commercially available oils as the single

Other approaches to pest control also are being explored as part of the project, Bowerman said. The research team surveyed commercial orchards and determined that two groups of parasitoids, *Encarsia perniciosi* and *Aphytis vandenboshi*, may serve as endemic natural enemies of SJS.

"Laboratory colonies of the two groups have been established as a

## Center for Agricultural Business

# Dried on the vine. . .



Photo at left, taken in spring, shows raised overhead trellis system directing canes across row middle. Photo below shows raisins ready for harvest.



### *Economic study reveals significant yield increases with new production method*

**A** recent economic study of alternative raisin production systems suggests that growers willing and able to make a large initial investment could realize increased returns over traditional production practices, based on historical prices.

The study was conducted by assistant professor Lynn Williams of Fresno State's Department of Agricultural Economics, with support from the Center for Agricultural Business (CAB) and the California Agricultural Technology Institute (CATI). It showed that two new methods of drying grapes on the vine

increased yield and net returns dramatically.

"The primary aim of these alternative systems is to lower production costs, increase revenue, and lower the producer's exposure to risk," Williams writes in a report to be published by the California Agricultural Technology Institute (CATI). "Production costs are lowered, primarily, through a transfer of investment from temporary labor to a capital investment in machinery. Revenues generated by these new systems are increased due to increased crop yields."

Williams analyzed four raisin production systems in the central San Joaquin Valley, using cost and yield data from each operation to perform the economic analyses. The control operation involved traditional production methods using standard trellises, handpicking and drying on paper trays on the ground.

One alternative system featured partial drying on the vine, mechanized harvest and final drying on the ground. The two other systems involved drying raisins on the vine, followed by mechanized harvest.

The two dried-on-the-vine (DOV) systems were developed by Simpson Vineyards and Pitts Carbonics, commercial growers in the Fresno area. They feature vines planted closer together and an overhead trellis system 6.5 feet high. With this method the fruit-bearing canes are trained to grow perpendicular to the vine rows, across the row middles, with support from the trellis. Fruit-bearing canes are hand-clipped in late July to early August. Clusters are left on the vines. Approximately six weeks later the

*See DOV, Page 7*

## Upcoming events

**July 16** – California Agricultural Safety Certificate Program – Module 1: Introduction to Safety Laws and Regulations; Module 2: Managing Workplace Safety and Workers' Compensation Insurance Costs, in Calistoga. For more info, call (559) 278-4404.

**July 26** – Central Coast Winegrape Pre-harvest Breakfast Briefing – Protect Your Assets: FLC-Grower Relationships, in Paso Robles. For more info, call (559) 278-4405.

**August 1** – California Agricultural Safety Certificate Program – Module 3: Effective Tools to Prevent Injuries and Illnesses in the

Workplace; Module 4: Conducting Effective Health and Safety Training, in Calistoga. For more info, call (559) 278-4404.

**August 7** – California Agricultural Safety Certificate Program, modules 1 and 2, in Salinas. For more info, call (559) 278-4404.

**September 18** – California Agricultural Safety Certificate Program, modules 3 and 4, in Salinas. For more info, call (559) 278-4404.

**October 31** – 21st Annual Agribusiness Management Conference, Radisson Hotel and Conference Center in Fresno. For more info, call (559) 278-4405.

## Center for Irrigation Technology

# Site: New security measures require advance visit planning

from Page 1

the general public requires some advance planning, Creel said. Due to the extra security precautions enacted at California water reservoirs and dams in the aftermath of September 11, 2001, visitors must park at the original Millerton Courthouse on the shore of the lake and walk approximately one-quarter mile to the garden.

Once at the site they will see more than 90 species of native California

to help them understand the value of the site as a tool to teach water conservation.

In addition to touring the garden, visitors also will be able to get tips on fire protection for their homes. The California Department of Forestry is constructing an exhibit that will show how to make homes defensible against forest fires, including the use of non-combustible plant materials.

For now, Creel has been pleased with responses to the demonstration

## *Pump design, frost protection set as workshop topics*

**P**ump design and frost protection will be the topics of discussion at several workshops slated for this summer and fall at the Edison AgTAC in Tulare, California.

The seminars are hosted by the Center for Irrigation Technology. For details call Tim Jacobsen at (559) 278-5752. To preregister, call AgTAC at 1-800-772-4822. Workshops are as follows:

**August 15 – Introduction to Pumping Plant Design**, from 8 a.m. to noon. For irrigation pumping plant designers and operators. Presenters Tim Jacobsen and Ed Norum from CIT will discuss pump performance characteristics, specifying pumps to meet design requirements, appurtenant components, VFD and high efficiency motors. No fee. Continental breakfast will be served.

**September 10 – Frost Protection Systems**, from 8 to 9:30 a.m. For growers of crops susceptible to frost damage. Presenters will discuss available technology, characterizing susceptibility, designing systems, operational considerations, and plant physiology. No fee. Continental breakfast will be served.

**October 8 – Winterizing Irrigation Systems**, from 8 to 9:30 a.m. For irrigation system managers. Presenters will discuss flushing, disinfection, component removal and storage, and protection from freezing, pest damage, storm damage, theft and vandalism, and the environment. No fee. Continental breakfast will be served.

The Friant demonstration garden features an indoor classroom and meeting room complete with maps and photographs of the area.



plants and trees carefully arranged, as well as the dam and river below.

As a means to educate area residents and students, Creel is developing curricula that will coincide with and supplement elementary classroom materials. She plans to speak with school science coordinators and faculty throughout Fresno and Madera counties

garden and hopes that more students and community members will make the effort to visit.

“There’s been some very favorable responses that come directly to the interpreters,” she said. For more information or to arrange a school field trip, call the state parks office at Millerton Lake, at 559-822-2332.

## Former technician Brown falls to leukemia

**K**enneth R. Brown, a former student employee of the Center for Irrigation Technology (CIT), succumbed to leukemia on May 13, 2002, in Delta Junction, Alaska.

Ken worked at CIT from 1989-91 as a field research assistant, spending most of his time on the San Joaquin

Valley’s West Side in data collection for drain water reuse studies.

Shortly after receiving a degree in agronomy, he and his wife Sue moved to Alaska. At the time of his death he was managing an industrial supply business in Delta Junction. He leaves behind his wife, Sue, and a long list of friends in Alaska and the lower 48 states.

## Viticulture and Enology Research Center

# New barrel house will enhance research

### Leading manufacturer of oak barrels considers Fresno State winery top 'investment' opportunity

**A** state-of-the-art barrel house that is the first of its kind on a U.S. college campus is near completion at the California State University, Fresno Winery. The project results from a nearly quarter-million dollar gift from the Boswell Foundation and World Cooperage, the top producer of American, French and Eastern European oak barrels in the wine industry.

The \$230,000 donation will help to complete an enclosed 1,600-square-foot, 30-foot-high structure and will include a state of the art humidity control system designed by Refrigeration Technology Inc. of Cloverdale as a partial donation. The Caglia Family contributed to the barrel house through their donation of electrical work valued at \$65,000.

The barrel house will hold 150 barrels of wine – approximately 9,000 gallons.

The new facility and winery operate under the university's Agricultural Foundation, the Viticulture and Enology Department and the Viticulture and Enology Research Center (VERC). The barrel house will provide a venue for education and research on the effects of



Celebrating the barrel room gift to Fresno State's winery are, from left, CAST Dean Dan Bartell; Fresno State President John Welty; VERC Director Robert Wample; and Brad Boswell, president, and Amie Boswell Dewane, marketing manager, of World Cooperage.

oak in the wine-making process, as well as for training in production methods.

VERC Director Robert Wample was among several university leaders who officially received Boswell family members and their gift at a recent ceremony at the winery. Wample said the barrel house not only will benefit the region's grape and wine industry through research, but it also will enhance student learning opportunities.

"It will provide students with a



world," Bartell said.

World Cooperage president Brad Boswell and other family members who are trustees of the Boswell Foundation arranged the donation to Fresno State for

***"Students will learn how to manage a barrel room and be given a chance to research the effects of oak in the wine-making process."***

better education and they will have more skills entering the work force," he said. "Students will learn how to manage a barrel room and be given a chance to research the effects of oak in the wine-making process."

Dan Bartell, dean of Fresno State's College of Agricultural Sciences and Technology, agreed.

"This is yet another outstanding example of how the industry has stepped up to help us provide excellent learning opportunities for our students and strengthen our position as the most comprehensive viticulture and enology program in the United States, if not the

what will be called the "World Cooperage Barrel House."

The company is one of the top producers of American, French and Eastern European oak barrels in the wine industry. Founded in 1912, the World Cooperage owns and operates stave mills in France, Bulgaria and Missouri; markets its products in more than 20 countries; and produces more than 50 percent of the barrels made in the world. The company works with a variety of wood sources and conducts experiments and studies with research specialists, winemakers, master distillers and

*See Room, Page 7*

### Upcoming events

**August 6** – Grape Day 2002 at California State University, Fresno. Features presentations and exhibits for growers and vintners. For more info call (559) 278-2089.

**August 29** – 3rd Annual Viticulture and Enology Welcome Back Barbecue at California State University, Fresno President John Welty's residence. For details, contact Cynthia Wood at [cynthiaw@csufresno.edu](mailto:cynthiaw@csufresno.edu).

JULY 2002



# CIMIS

California  
Irrigation  
Management  
Information  
System

## Dial-Up/Telnet data retrieval options to end

As you may already know, the California Irrigation Management Information System (CIMIS) has been going through major redevelopment projects to make accessibility and retrieval of its data easier and more reliable. One such project was CIMIS's migration from the old Dial-Up/Telnet system to the Internet system.

As reported in the winter issue of "Update," the migration was completed and the new web site released to the public on October 1, 2001. The address for the new web site is the following: <http://www.cimis.water.ca.gov/>.

Since the release of the new web site, CIMIS has been running both the Telnet and Internet systems in parallel while testing the reliability of the new system. Now that we are confident in the reliability the web system, CIMIS has decided to terminate the Dial-Up/Telnet system as of July 1, 2002. CIMIS has

Visit the CIMIS home page at the following address:  
<http://www.cimis.water.ca.gov>

provided information on this development to its registered users via letters, notices on both the Telnet and Internet systems, and articles in Department of Water Resources (DWR) publications. The CIMIS staff will be assisting users in addressing any difficulties they might encounter in using the new system.

CIMIS also understands that some users use computer programs for automated access and retrieval of data from its ftp site at [aviion.water.ca.gov](http://aviion.water.ca.gov). This ftp site is automatically linked to the Dial-Up/Telnet system. Therefore, users will not be able to access and retrieve data from [aviion.water.ca.gov](http://aviion.water.ca.gov) after July 1, 2002.

To help ease this problem, CIMIS has created a new ftp site that is linked

to the web site to replace the previous ftp site. The address for the new ftp site is [ftpcimis.water.ca.gov](http://ftpcimis.water.ca.gov).

Under the "pub" directory, two subdirectories, "daily" and "hourly," have been created. As the names imply, "daily" stores daily data, whereas "hourly" stores hourly data for the previous seven days. There is also a README.TXT file under the "pub" directory that describes the formats of hourly and daily data files.

The CIMIS staff encourages you to visit our new web and ftp sites. If you have any difficulties or comments, please contact us at the addresses listed here or at additional contact addresses listed on our new web site.

By working together we can make CIMIS an efficient tool in the management of California's precious water resources.

## For more CIMIS information...

CIMIS information is published quarterly in the CATI *Update* newsletter. Articles are provided by the California Department of Water Resources, CIMIS program staff.

For more information about CIMIS or its programs, contact any of the following representatives at these offices:

Northern District  
Jamie Dubay  
(530) 529-7367  
[dubay@water.ca.gov](mailto:dubay@water.ca.gov)

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Southern District  
Sergio Fierro  
(818) 543-4652  
[sergiof@water.ca.gov](mailto:sergiof@water.ca.gov)

If you are unable to reach a CIMIS representative near you, call the CIMIS Helpline at 1-800-922-4647.

### Weekly ETo Comparisons for Fresno Fresno: 03/01/02- 05/31/02

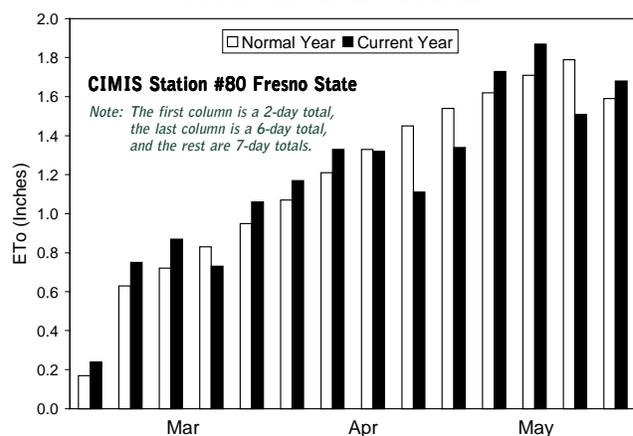


Chart shows ETo variation from normal over last three months.

## Room: Additional barrels will expand winery production

from Page 5

universities throughout the world, researching all elements that contribute flavor and aroma to wine.

Along with the donation to complete the barrel house, World Cooperage also will supply barrels and other materials for the production of premium quality wines. Boswell said their family foundation chose Fresno State for the donation because it is the only university in the nation that operates a commercial winery.

“Funding a new barrel house at Fresno State was an opportunity for our family to give back to an industry that we are very proud to be a part of,” Boswell said.

Fresno State is the only university in the nation that is licensed to produce, bottle and sell wine commercially. For the past three years, the program has received top honors at the California State Fair Wine Competition.

# DOV: System reduces risks of labor shortage, rain damage

from Page 3

raisins are harvested by a crew of three to four workers using a custom-designed harvester. The harvester travels along the row middles underneath the trellis system and shakes the canes, dropping the raisins into a hopper.

The two DOV systems cost from \$4,500 to \$7,000 per acre to establish, depending on the irrigation system used, Williams said, while a traditionally-configured raisin grape vineyard costs about \$2,600 per acre to establish. Yields from the two DOV systems examined ranged from five to six tons per acre (due in part to the increased planting densities), compared to two tons per acre from the traditional system.

Operating costs per acre were higher in the DOV systems, but the greater yields provided up to 10 times the net return per acre.

DOV systems also offer other advantages over conventional raisin production methods, Williams noted. Since the drying grapes are under a canopy and not on the ground, they are not so susceptible to rain-related damage such as disease, mold or imbedded sand, or to overexposure from the sun.

Labor availability is not a significant issue with the DOV system, he added.

“Total labor hours are approxi-

mately equal to the traditional dried-on-the-ground system,” he said. “However, the labor hours are more evenly distributed throughout the year, allowing for a smaller, better-trained work force to be employed on a more continuous basis.”

The economic analysis reveals that producer-developed and financed technologies can enhance a producer’s financial position while reducing risk, Williams said. But in many cases the cost of adopting new technologies is prohibitive to the typical producer.

Another issue for the industry to consider in the development of new technologies is the risk of overproduction, Williams noted. Significant production increases without increased market outlets will only drive product prices down.

“This highlights the need for continued market expansion domestically and abroad,” he said.

Details of William’s study are available in his complete report, entitled “An Economic and Capital Budget Analysis of Alternative Raisin Production Systems.” The report will be available on the CAB website at [cati.csufresno.edu/cab](http://cati.csufresno.edu/cab) later this month. To request a print copy, use the publications order form below.

## CATI on the Web!

For timely information about CATI, its research projects or centers, or to view text of research publications, visit us at [cati.csufresno.edu](http://cati.csufresno.edu).

Center for Agricultural Business (CAB) – [cati.csufresno.edu/cab](http://cati.csufresno.edu/cab)

Center for Food Science and Nutrition Research (CFSNR) – [cati.csufresno.edu/cfsnr](http://cati.csufresno.edu/cfsnr)

Center for Irrigation Technology (CIT) – [cati.csufresno.edu/cit](http://cati.csufresno.edu/cit)

Viticulture and Enology Research Center (VERC) – [cati.csufresno.edu/verc](http://cati.csufresno.edu/verc)

Agricultural Technology Information Network (ATI-Net) – [cati.csufresno.edu/atinet](http://cati.csufresno.edu/atinet)

## Publications available

Update: Summer 2002

(These publications may be viewed in their entirety on CATI’s World Wide Web pages, located at [cati.csufresno.edu](http://cati.csufresno.edu). Single print copies are also available by mail at no charge.)

**An Economic and Capital Budget Analysis of Alternative Raisin Production Systems**, by R. Lynn Williams, et al. Pub. #020501.

### Ordering Information:

Check the publication(s) desired and mail or fax form to:

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# Ozone: Conference will focus research efforts

from Page 1

cost of \$5 billion," Dormedy said in outlining the need for continuing research for better disinfectants.

Most food-borne illnesses are caused by microorganisms, including such well-known species as *Salmonella* and *E. Coli*, Dormedy noted. Such organisms are often present in meats, poultry and other food products upon arrival at processing facilities. Even in the cleanest facilities, however, "microbial hazards can only be minimized, not wholly prevented or eliminated," she said.

Ozone, or O<sub>3</sub>, is a form of oxygen that has proved effective in destroying microorganisms. While it has been used for years as a disinfectant in many industries, its use has been limited in food processing. That changed in 1997,



Student technicians prepare food samples for treatment at Fresno State Food Science Laboratory.

when a national expert panel declared ozone as Generally Recognized as Safe (GRAS) for use on foods.

"This has increased the interest in ozone as an alternative for chlorine in the food industry," Dormedy said.

Fresno State's Ozone Research Program has focused on the application of ozone for direct and indirect disinfection of fruits and vegetables, meat and poultry. To help bring researchers from other

areas together to share knowledge and ideas, Dormedy has teamed with the private industry firm of G&L AgriTec of Three Rivers, California, to sponsor the Ozone III conference, to be held Oct. 28-30 at the Radisson Hotel in Fresno.

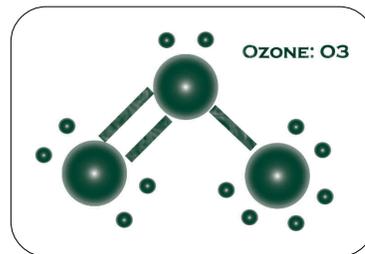
The conference theme will be "Agricultural and Food Processing Applications of Ozone as an Antimicrobial Agent." Anticipated topics for oral and poster presentations include case studies, experimental results of ozone generation, and biocidal efficacy in food and agricultural applications.

Subject categories include ozone's roles in agricultural security, food safety and quality, water reuse, advanced technology, synergistic combinations, and legislative impacts on use of ozone.

Administrative support for the Ozone Research Program is through the California

Agricultural Technology Institute's Center for Food Science and Nutrition Research (CFSNR).

For registration or other information on the conference, visit the Ozone Research Program website at <http://www.cati.csufresno.edu/ozone>.



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