

# Update

California State University, Fresno

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## \$29 million gift bolsters ag programs

### Jordan family donation designated to support research and facilities

**A**n unprecedented gift from a most generous family supporting Fresno State agriculture has changed the face of the College of Agricultural Sciences and Technology – literally.

The college now has a new name: the Jordan College of Agricultural Sciences and Technology (JCAST), in recognition of a gift of \$29,442,516 from the Hanabul, Dee and Lowell Jordan family of Hayward, California.

The gift is designated to support ag-related research and facilities at Fresno State. It is the largest donation ever received by the college, noted dean Charles Boyer, who presided with others over a recognition ceremony and reception held in May outside JCAST offices on the Fresno State campus. In fact, Boyer said, the \$29 million in cash is the largest gift ever received by Fresno State and the largest single cash gift to any entity in the entire California State University system.

“We are blessed and honored to receive this generous gift from the

Jordan family,” Boyer said during the reception. “This is a landmark moment for the college – one that will change our college forever and have a positive impact on generations of students.”

Signing off on the check from the Jordan family estate was Dee Jordan, whose husband Hanabul and brother Lowell have both passed away in recent years. Hanabul, known as “Bud,” ran a construction company in the Bay area. The family also owned a cattle ranch in Dublin. The gift came in part from the sale of the cattle ranch.

The Jordans were not acquainted with Fresno State until they met retired agricultural economics Professor Bob Glim in the 1980s. The Glim and Jordan families developed a friendship through their common interest in motorhome travel. Glim helped plan one of the motorhome rallies where he spoke about Fresno State agriculture and distributed raisins. Bud and Dee initially began to financially support the



Fresno State President John Welty and Dee Jordan address the media during an April ceremony recognizing the Jordan family's \$29 million gift to the College of Agricultural Sciences and Technology.

college in 1995 when they gave their first gift of \$20,000 to Glim to support deserving students through Fresno State's Ag One Foundation. Then the Jordans became acquainted with Ag One Executive Director Alcidia Freitas Gomes, who often visited them in Hayward to thank them for their

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A new logo and graphic image, right, was also unveiled during ceremonies recognizing the Jordan's gift to the new Jordan College of Agricultural Sciences and Technology.



C A T I



CALIFORNIA  
AGRICULTURAL  
TECHNOLOGY INSTITUTE

# Students in research

*Some come from afar to help solve agricultural problems close to home*

**M**

any students living outside of the United States have dreamed of some day coming to

America to study, perhaps even earn an advanced degree. That dream became a reality for Baisistha "Bonnie" Saha this past spring when she was awarded a master's degree in food and nutritional sciences at Fresno State.

Bonnie, from India, is one of a number of foreign students who have helped to solve some of California's agricultural problems.

Food science and nutrition Professor Gour Choudhury can attest to that, most recently through Bonnie's work studying the use of food-processing by-products to help produce new, high-



Fresno State graduate student Baisistha "Bonnie" Saha (front center) stands in front of graduate laboratory with other students involved in research. From left, Preetam Sarkar, Vinh Le, Akshay Aswani, Freddie Pacudan and Kaushiki Mahapatra.

collaborative assistance from industry partner Wawona Frozen Foods of Clovis, California.

The goal of the mushroom project was to test the viability of fruit processing by-products as a medium for growing mushrooms. In California fresh fruit processing, typically up to 20 percent of the fruit brought in the front door goes out the back – as culls, wastewater and other fruit parts that cannot be marketed. This by-product is typically trucked away and either disposed of in landfills or used as a soil amendment for agriculture. Either way, the transportation and application costs are high.

specially treated to eliminate organisms that would compete with or destroy the mushroom fungus. Mushrooms also require narrow ranges of temperature and humidity in order to thrive. Under Choudhury's direction, Bonnie worked with a team of graduate students in developing the media and constructing a growing chamber.

"When she started there was no infrastructure for the experiment. She was the first student to put it together," Choudhury said. Initial small-scale trials were successful, but when the team expanded the work, a contaminating agent invaded the media and infected the mushrooms.

They failed to thrive. They didn't grow, and time ran out for Bonnie to start a new experiment.

As part of her thesis project, Bonnie recorded all the work, and with the help of her team, evaluated possible reasons for the problems.

"Pink oyster mushroom bags often developed contamination problems with *Trichoderma* species (a competing bacteria) possibly due to the presence of dry pockets in the substrate," she wrote in her report.

Though Bonnie's work didn't produce mushrooms, the overall project is by no means a failure, Choudhury said. The students learned the dangers of contamination and steps they can take to prevent it. And now, Choudhury has recruited another student, Chelsea

*See Students, Page 7*

***"When she started there was no infrastructure for the experiment. She was the first student to put it together."***

value food products such as mushrooms.

Bonnie entered her graduate program in 2007 in the Department of Food Science and Nutrition, aiming for a master's degree. She showed a strong interest in helping to increase efficiency in food production and processing systems but lacked a specific focus for a thesis project. Through her acquaintance with Choudhury she learned of his research project to develop a new type of growth medium for mushrooms.

Choudhury was awarded the research funding by the California State University Agricultural Research Initiative (ARI). He also obtained

If some of the by-product could be used to create growth medium for mushrooms or other high-value food crops, disposal could be redirected toward a higher-value use – creating a win-win situation for agriculture.

Bonnie stepped in with an interest in helping to develop the research parameters for the study, Choudhury said.

"As a graduate student, Bonnie showed interest in developing new products from waste materials," he recalled. "She got very interested in the mushroom project right away."

Establishing a proper medium for mushroom requires substrate materials



## Center for Agricultural Business

# California testimony focuses on water issues

**A**n economics specialist from Fresno State's Center for Agricultural Business (CAB) traveled to Washington D.C. this spring to testify before the U.S. Congress on the state of California's farm economy.

CAB Director Mickey Paggi outlined some of the greatest challenges the state's farm industry faces at a hearing of the Subcommittee on General Farm Commodities and Risk Management, which operates under the House of Representatives Committee on Agriculture.

Paggi summarized the most pressing problems based on information drawn from weather and economic trends, as well as recent research and analysis.

"Arguably, the most important and immediate challenge facing California agriculture is the water shortage," Paggi told the committee, chaired by Rep. Leonard Boswell of Iowa. The lack of adequate rainfall and snow pack has resulted in the lowest average reservoir levels in 17 years and has severely diminished recharge of ground water supplies.

The drought and resulting limits on water deliveries will combine in 2009 to severely restrict water flow from the two largest water storage and conveyance projects in California, Paggi reported. The U.S. Bureau of Reclamation has informed producers in the western San Joaquin Valley that they can expect to receive zero deliveries of water from the federal Central Valley Project (CVP) this year. And that's after receiving only 45 percent of historical allocations last year. The CVP supplies approximately one-fourth

## *CAB Director Paggi goes before congressional committee to outline state agricultural challenges*

of the water used by California farmers.

According to Paggi, a recent study conducted by colleagues at University of California, Davis estimates that these and other cutbacks in water deliveries will result in large areas of California cropland being idled this year. Their latest estimates are for a reduction of about \$710 million in farm revenues, the loss of some 35,000 jobs in farming and support industries, and close to a \$1 billion decline in income associated with those lost jobs.

In towns like Firebaugh and Mendota, rural Fresno County communities with farm-based economies, unemployment is reportedly at or above 40 percent, Paggi said.

In what may be the perfect economic storm, the water shortage has combined with the worst national recession in 26 years to force the tightening of credit markets – making access to investments in new wells and water-saving technologies even more difficult. In addition, as the recession has reached global proportions, a decline in demand of agricultural exports has contributed to a collapse in commodity prices.

"Few if any agricultural products have not seen negative effects from the current economic environment," Paggi said.

Solutions to the water problem must involve a three-phased approach, he stated. It will require development of increased water storage capacity, enhanced conveyance capacity, and adoption of greater conservation practices among all water users.

"To implement these solutions will require a public-private sector partnership at the local, state and federal levels. In addition, consideration must be given to modifications of existing endangered species act provisions," he said.

Another issue Paggi reported on is agricultural labor. In a recent poll of grape and tree fruit industry leaders, immigration reform ranked as the number-one priority issue for 2009, he noted. Statistics show that California grape, tree fruit and berry farmers employ about 450,000 workers during peak harvest season and 300,000 during the off-peak period. Recent reports have indicated that as many as 85 percent of these workers remain undocumented.

"The development of a program to establish a legal and reliable agricultural workforce is critical to the California agricultural economy," Paggi said.

Food safety issues also are posing greater threats to agricultural economy, he reported. For example, a recent outbreak of salmonella 'Saintpaul' was initially attributed to fresh tomato consumption. Ultimately the outbreak strain was traced to Serrano peppers grown on a farm in Tamaulipas, Mexico, but because of the initial reports and media attention, retail tomato sales

*See Testimony, Page 7*



## Upcoming Events

**Nov. 10** – 28th Annual Agribusiness Management Conference at the Radisson Hotel and Conference Center in Fresno, California. For details, call 559-278-4405.

For more information on these and other upcoming events related to agricultural business and labor issues, visit the Center for Agricultural Business website at <http://cati.csufresno.edu/cab>.

## Center for Irrigation Technology

# Seeking to reclaim West Side soils

## *CIT research team eyes subsurface drip as means to enhance soil properties*

**F**alling profit margins for cotton grown in the West Side of California's San Joaquin Valley have forced growers to seek alternative, higher-value crops to help revitalize their returns.

Unfortunately, most higher-value crops that growers could turn to, such as tomatoes or melons, are not nearly as comfortable as cotton in the soils of the West Side. Across thousands of acres, the buildup of salt, selenium, boron and other chemicals has made the soil nearly inhospitable to salt sensitive field and row crops.

In an attempt to help reclaim some of those lands for vegetable crop growing, a research team from Fresno State's Center for Irrigation Technology (CIT) is exploring new methods for changing the chemical properties of the soil through subsurface drip irrigation.

"Transitioning from cotton to vegetable production and from flood to drip irrigation presents some new challenges," stated CIT soil scientist Florence Cassel Sharma, who is leading the research effort along with assistant plant science professor Dave Goorahoo. "Vegetable crops are more sensitive to salinity and more susceptible to disease



Soil scientist Florence Cassel Sharma gets help from student research technicians Casey Arnold (left) and Prasad Yadavali in setting up irrigation system for application of soil amendments via subsurface drip tape.

and deficiency when grown under saline-sodic soil conditions."

Processing tomato yields decrease when soil salinity increases, and soil calcium deficiency can result in blossom end-rot of tomatoes, she noted.

According to Cassel Sharma, reclamation of saline-sodic soils has traditionally involved application of soil amendments high in calcium to increase available calcium to plants, or applying greater amounts of water in order to leach the salts down below the root zone. This has been done through surface systems such as flood and furrow irrigation. With increasing restrictions on water use on the West Side, however, growers are being forced to try new methods which have the potential for greater water-use efficiency.

"The challenge is how to address the reclamation of saline-sodic soils in the

root zone by utilizing subsurface drip tape as the avenue for application," Goorahoo said.

Little research has been conducted on soil amendments through subsurface drip systems, the researchers noted, but the potential benefits are significant, even more so with the added potential of water savings.

The research team is examining two specific reclamation alternatives that could create an improved environment around the drip tape: One is the application of calcium fertilizer through the drip tubing (fertigation); the second is adjusting the pH of the water with acid (acidification). Both treatments are attempts to alter the soil chemical properties in order to make the proper nutrients more available to the crops.

This research will provide important information on the effects – positive or negative – of each reclamation method on tomato yield, blossom-end rot, soil calcium availability, plant calcium uptake, and infiltration rate.

The researchers hope to increase processing tomato yields significantly with effective soil amendment, Cassel Sharma said.

The project is in its first season this summer; results are expected next year. For details, contact Cassel Sharma at [fcasselss@csufresno.edu](mailto:fcasselss@csufresno.edu) or Goorahoo at [dgooraho@csufresno.edu](mailto:dgooraho@csufresno.edu).

## Upcoming events

**July 15** – Agricultural Pumping Efficiency Program (APEP) Municipal Pump and Well Efficiency Workshop from 8:30 a.m. to 12:30 p.m. at the Southern California Edison AgTAC in Tulare. For details call (800) 772-4822.

**July 22** – APEP Municipal Pump and Well Efficiency Workshop from 8:30 a.m. to 12:30 p.m. in San Luis Obispo. For details call (800) 845-6038.

**July 23** – APEP – USDA National Resource Conservation Service dairy workshop on

operational efficiency from 9 a.m. to 1 p.m. in Madera. For details call (559) 674-2108.

**July 30** – APEP City of Gustine Municipal Pump and Well Efficiency Workshop from 8:30 a.m. to 12:30 p.m. in Gustine, California. For details call (800) 845-6038.

**Aug. 23** – APEP Agricultural Irrigation Scheduling Workshop featuring the Wateright web-based scheduling program, from 8:30 a.m. to noon at the Southern California Edison



## Viticulture and Enology Research Center

# Getting a grip on grape yield predictions

### *VERC research team considers new assumptions in exploring new methods for estimating yields*

**A** team of university viticulture researchers is seeking to develop a more accurate mathematical model for predicting wine grape crop yields.

The effort has been spawned in part by recent, significant errors in predicting statewide wine grape yields, noted Robert Wample, director of Fresno State's Viticulture and Enology Research Center (VERC) and leader of the project.

"The inability to accurately predict grape crop yield is a multi-million dollar a year problem for the U.S. wine and grape industry, according to industry experts," Wample said in outlining reasons for the research. In 2005, for example, the official wine grape yield prediction was off by approximately 30 percent, and in more recent years, 30- to 50-percent errors in yield estimates have occurred, according to industry reports.

Errant yield predictions cause significant problems for the grower and for the winery, Wample said.

"For the grower, it results in not being able to accurately and efficiently plan the harvesting process. For the winery, the problem is in insuring sufficient fermenting capacity, chemicals, storage space, including barrels and ultimately glass for bottling and planning to market the resulting wines."

Conventional methods for estimating crop yield for grapes include counting clusters from selected areas of the vineyard and recording the number of berries of each cluster and the weight of each cluster. This data is then extrapolated using established formulas based on number of vines per acre, number of acres, and other information to obtain estimated yield per vineyard. There are variations of this basic method, but most of them rely on what might be a faulty assumption, Wample suggested.

***"When sampling data such as grape clusters which grow over time, the use of competition models must be considered."***

"When sampling data such as grape clusters which grow over time, the use of competition models must be considered," he said. "The usual assumption of spatial dependence is that neighboring measurements tend to be alike, that is, positively correlated. In fact, due to plant competition for nutrients and light,

sizes of neighboring clusters may be negatively correlated."

To test this idea, the research team, rather than taking random samples from various vine locations, will collect and examine samples taken in close proximity. The difference of cluster counts and size for adjacent vines will be used as the test statistic.

To help determine the viability of the new approach, researchers will assess cost and accuracy of current cluster counting methods and new technologies for cluster counting; determine relationship between cluster counting sampling density and yield accuracy and variance; and develop a

test vineyard site-specific mathematical model for yield estimation.

Wample hopes that development of a new mathematical model and associated statistical methods will help to improve yield estimates.

"Our goal is to obtain yield estimates accurate to within five percent," he said. "Anticipated results are improved vineyard and winery operations management. The yield model, once validated, could be used as a computational engine in a simulation model to forecast yield for various climatology and vineyard management scenarios."

Potential commercial applications of the research include incorporation of the yield model into existing vineyard management software packages and development of a stand-alone application program for use by growers and wineries."

For more information on this research project, contact Wample at [robert\\_wample@csufresno.edu](mailto:robert_wample@csufresno.edu).



Graduate research technician Erik Mallea examines berry cluster on the Fresno State university farm.

JULY 2009



# CIMIS

California  
Irrigation  
Management  
Information  
System

## Stations improve quality of remotely sensed data

California Irrigation Management Information System (CIMIS) has been providing estimates of reference evapotranspiration (ET<sub>o</sub>) and weather parameters at its automated weather stations since 1982.

ET<sub>o</sub> is evaporation plus transpiration from grass surfaces on which the stations stand. Crop coefficients (K<sub>c</sub>) are developed through research and used to calculate actual evapotranspiration for specific crops. For more information on ET<sub>o</sub> and K<sub>c</sub>, please visit the CIMIS web site (in green box above).

Although CIMIS is one of the largest agro-meteorological weather station networks in the world, the data from its stations represent only a small fraction of microclimates in the state, resulting in significant data gaps. Recognizing this, CIMIS, in cooperation with University of California Davis (UCD) remote sensing scientists, has

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

been developing a model that couples remotely sensed satellite data with point measurements from the CIMIS stations to provide daily maps of ET<sub>o</sub> for the entire State. This product is currently being beta tested by the Department of Water Resources (DWR) staff and will soon be released to the public.

Remote sensing as a science has made remarkable advances in recent years, enabling scientists to obtain spatially distributed estimates of ET<sub>o</sub> and other products. The accuracies of these products, however, depend on the models used and atmospheric conditions at the time of data acquisition.

The specific model that CIMIS and UCD developed derives solar radiation data from the satellite and interpolates some weather parameters measured at

the stations. The model uses spatial data interpolation methods that depend on the density of the stations. The more stations there are in a given area, the more accurate will the interpolated parameters be. Therefore, using remotely sensed data from satellites does not reduce the significance of CIMIS stations. On the contrary, using the new remote sensing model will necessitate additional installations for better results.

CIMIS data users are, therefore, encouraged to invest in new stations in their area to keep receiving accurate ET<sub>o</sub> values. At present, a fully equipped CIMIS station costs about \$6000, and DWR does not provide funding for the purchase of stations. DWR, however, provides technical assistance and maintenance of the stations. If interested, please contact CIMIS staff listed at left below for detailed information about installation of a new CIMIS station and alternative sources of funding.

## 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  
Mark D. Rivera  
(530) 529-7301  
[mriviera@water.ca.gov](mailto:mriviera@water.ca.gov)

Central District  
Jan Carey  
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San Joaquin District  
Steve Ewert  
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Southern District  
Sergio Fierro  
(818) 543-4652  
[sergiof@water.ca.gov](mailto:sergiof@water.ca.gov)

### Weekly ET<sub>o</sub> Comparisons for Fresno

CIMIS Station #80 at Fresno State 03/01/09 – 05/31/09

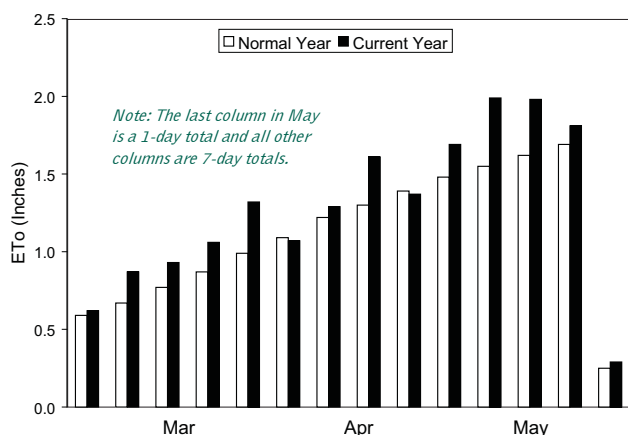


Chart shows ET<sub>o</sub> variation from normal over last three months.

## Students: Research offers high-level training for industry problem solving

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Venable, to continue the work with a different base media that might be less susceptible to contamination – pistachio hulls and shells left from processing.

Based on Bonnie's work, Chelsea was able to avoid some steps that may have led to contamination and has found success.

"Our second student is getting all kinds of mushrooms," Choudhury said. "What we have seen is a steady improvement in methodology, and in a step-by-step process, we hope to have a final product that we can prescribe to industry," he said.

According to Choudhury, engaging students in research benefits the industry and the university at all levels. Not only does industry receive support in solving key problems, students get high-level training that will prepare them to step into industry positions with tested skills.

"We are advancing graduate education at Fresno State while solving industry problems. That's one of the benefits of applied research," he said.

Plant science Professor James Farrar also assisted in this project. For more information on mushroom research, contact Choudhury at [gchoudhury@csufresno.edu](mailto:gchoudhury@csufresno.edu).

## Viticulture, wine study program back in U.S.

An international summer study program is back in the United States this month, with students and faculty from California, Canada and Europe sharing ideas, experiences and information about viticulture and enology during an intensive, four-week course being held at Fresno State and other locations in California.

The second annual Wine and Viticulture Program Summer School will be hosted this year by California State University, San Luis Obispo. Last year it was hosted by the Engineering School of Enology at Changins, part of the larger Universities of Applied Sciences of Western Switzerland. Eight Fresno State students participated.

The Swiss institution first initiated talks about developing the program in 2007 with Director Robert Wample of the Viticulture and Enology Research Center (VERC). A key program goal is "to bridge the gap between North America and Europe and facilitate students from the 'new' and 'old' winemaking worlds to come and work together, share ideas and learn from each other."

Three of the participating universities are alternating host duties. Next year it will be Changins again, and in 2011 Fresno State.

During the four week course, spanning from June 22 to July 17 this summer, 28 students are attending classes at Cal Poly and touring the Napa-Sonoma, Lodi and Fresno wine grape growing regions.

The Fresno area visit will include visits to both large and small vineyard and winery operations, and tours of table and raisin grape production facilities.

## Testimony: Water solutions will require public, private collaboration

from Page 3

dropped more than 50 percent and caused a loss to the industry of \$100 million.

"These events suggest the need for an examination of FDA programs and policies with a view toward discovering what can be done to prevent future unsubstantiated warnings and related market disruptions," Paggi said.

The House Agriculture Committee hosts a variety of subcommittee hearings regularly in order to obtain information

for use in crafting agriculture-related legislation. Researchers, economists, and industry leaders are typically called to represent different industry and geographic areas.

"Hopefully my appearing before the committee has raised awareness about some of the problems facing California agriculture and will stimulate action at the federal level toward a meaningful dialogue about possible solutions," Paggi said after the hearing.

### ARI/CATI on the Web!

The California State University Agricultural Research Initiative (ARI) oversees applied agricultural, agribusiness and natural resources research on behalf of California agriculture. For information on our research and project results, visit our website at <http://ari.calstate.edu>.

The California Agricultural Technology Institute (CATI) administers ARI funding and oversees additional applied agricultural research. For more information about CATI and its research centers, visit us at <http://cati.csufresno.edu>, or at our centers:

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)



# Gift: Relationships key to college support

from Page 1

ongoing support, bringing them updates on scholarship recipients, news from the college, and samples of student-produced food products from the Fresno State farm market.

After Bud passed away in 2002, Dee maintained a strong interest in the college and its students, visiting the campus numerous times and attending Ag One and Fresno State events. When the sale of the Dublin ranch property was completed, Dee decided that Fresno State agriculture would be one of her top support priorities.

After the gift was made official in April, Fresno State President John Welty formally petitioned the California State University Board of Trustees to rename the college in honor of the Jordans. During the renaming ceremony held in May, Welty acknowledged the many Fresno State staff, faculty and supporters who have ventured into the community to promote the good things that are happening in the college of agriculture. The Jordan gift is just one of many that demonstrate the importance of relationships that develop through these efforts.

"Although the Jordans didn't live in our region, they connected to the university through our people," Welty said. "They believed in what Fresno



Fresno State's Ag One Executive Director Alcidia Freitas Gomes (center) places a Paramount pin on Dee Jordan, representing the highest level of recognition Fresno State offers to supporters of the university.

State was accomplishing, and this gift assures we will continue to advance."

The gift is designated for facilities and research. Roughly two-thirds will go toward facilities and one-third invested to ensure long-term support of research. No specific building or buildings are designed at this time.

"During the fall, various groups in the college will be asked to provide input for possible components for the

building," Boyer said. "We anticipate having the vision for what it will house by the end of 2009. At this time professional designers and architects will be used to develop specific plans." Overall planning and construction will take three to four years, Boyer said. A site has not been determined, though there are a number of older ag-related buildings that may be candidates for replacement.

Through research supported by the California Agricultural Technology Institute (CATI) and the California State University Agricultural Research Initiative (ARI), Fresno State has come to be recognized as one of the premier applied agricultural research campuses of the CSU system. That fact was not lost on the Jordans as they considered supporting Fresno State.

With this gift, the Jordan college becomes one of several that have a family name as a permanent mark in front of the title. That signifies something special, Boyer noted.

"It demonstrates the support for the mission and vision of the college," he said. "Someone believed in what we are doing to the point of making a significant donation to help us succeed."

In the event of incorrect address information or extra copies to your workplace, please return this address label by mail or fax with your requested changes. CATI fax number is (559) 278-4849.

## Update

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