

# ANR REPORT

University of California ■ Division of Agriculture and Natural Resources

■ **Future challenges to be theme of DANR statewide meeting**  
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■ **Search under way for UC Merced chancellor**  
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■ **Dec. 16 - 31, 1998**

## NRS receives \$1.2 million gift to modernize Angelo Reserve

The NRS has received a \$1.2 million gift from the Richard and Rhoda Goldman Fund to build a center for environmental sciences at the Heath and Marjorie Angelo Coast Range Reserve.

UC Berkeley administers the reserve, located on the south fork of the Eel River in Mendocino County.

The center will include a headquarters building with a library, a computer room, storage space for flora and fauna collections and offices; a laboratory; researcher housing; a greenhouse; and a forest walkway to enhance research in the redwood canopy.

"The Angelo Coast Range Reserve has long been a site for state-of-the-science research on an old-growth watershed," said President *Atkinson*. "The University is proud to be a partner with the Goldman Fund in opening up new research oppor-

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## Novartis commits \$25 million to support biotech research at UCB

UC Berkeley and the Novartis Agricultural Discovery Institute, Inc. have agreed to create a unique long-term agricultural biotechnology research collaboration.

Under the terms of the agreement between Novartis and the department of plant and microbial biology in the College of Natural Resources, Novartis will commit \$25 million over five years to support basic research in the department in the area of agricultural genomics. It will also provide access to proprietary technology and DNA

databases, which will significantly enhance the University's ability to do research at the forefront of plant genomics.

In return, Novartis scientists will work closely with UC Berkeley researchers, and the company will receive first rights to negotiate for a fraction — roughly 30 percent to 40 percent — of the discoveries made in the department. The fraction corresponds approximately to the proportion of the department's total research budget provided by Novartis, and will vary from year to year.

Novartis will pay patent costs, license fees, royalties and all other costs normally associated with the commercialization of research, but the University will own the patents and collect royalties on their use.

"Our first motivation for seeking this alliance is our commitment to provide first-rate graduate education to our students in plant and microbial biology," says CNR Dean *Gordon Rausser*. "Without access to the information technologies, databases and genetic sequences that exist nowhere in the public sector, this commitment cannot be fulfilled."

Novartis, a Swiss-based life sciences company with significant interests in California, is a leader in biotechnology research and invests

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Stories about the people in DANR . . .

## Alexander Glazer's Crusade

Decisive, visionary and accomplished. These words leapt to mind as I talked with *Alexander Glazer* about his plans for the 33-site Natural Reserve System.

The renowned UC Berkeley biochemist and veteran administrator officially stepped into the role of NRS director last January. Within the first 100 days he had launched a crusade to modernize facilities at the reserves and give the system new prestige. Among his first moves: devising a plan to construct cutting-edge centers for environmental sciences at eight of the reserves, each situated in a different part of the state.

Developing the centers is at the heart of Glazer's modernization strategy. He plans to build the centers one at a time through foundation grants and gifts. "The total amount for the eight centers is approximately \$8 million, so there's no way that we can get this from one foundation," Glazer

said. "I would be extremely happy if we could get one complete site set up a year."

Well, he is going to get one of his wishes, at the very least. In October, the Richard and Rhoda Goldman Fund donated \$1.2 million to establish one of these centers for environmental sciences at the Angelo Coast Range Reserve in Mendocino County (see article on left). The center will allow the reserve, which has one of the very few old-growth Douglas fir forests left in Northern California, to expand its research, teaching and outreach programs, including K-12 nature programs.

On a Wednesday morning in late September, several weeks before the Goldman gift was announced, Glazer sat down with *ANR Report* in his office in the UC Office of the

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## Meeting future challenges is focus of DANR Statewide Conference

The Division's first statewide conference since early 1995 promises to be intellectually invigorating and professionally forward-looking.

The theme of the meeting, to be held Feb. 9-10 at the Radisson Hotel in Sacramento, is "UC DANR: Changing in Step with California's Future."

The event is open to all members of the Division.

The conference implements a recommendation made by the organizational strategy teams during the strategic planning process for DANR to hold biennial Divisionwide meetings.

The conference planning committee — made up of representatives of the Agricultural Experiment Station and Cooperative Extension — has prepared an ambitious program. It is designed to facilitate discussion of programmatic issues in the context of the challenges that confront land-grant institutions, the Division and the state as a new century unfolds.

The agenda has also been arranged to give participants many opportunities to share their work and ideas with AES and CE colleagues from other disciplines and regions of the state.

The event begins at 11:30 a.m. on Feb. 9 with lunch and a keynote address by Dr. *Scott Peters* of the University of Minnesota, who will speak on "Renewing the Land-Grant Idea for the 21st Century."

The plenary session that follows highlights "Profiles of Exemplary DANR Projects."

At 3:45 p.m. the attendees will disperse into smaller groups for the first of two scheduled breakout sessions. The discussion topics that afternoon will be on air pollution; biodiversity/endangered species; community dynamics; food safety;

genetically engineered plants/animals; water quality/quantity.

A poster session where attendees can discuss their projects begins at 5:30 p.m. and includes a reception. This session will demonstrate the diversity of DANR's research and education programs.

The Feb. 10 program begins at 8 a.m. with a keynote address by Dr. *Roger Benjamin* of the Rand Institute, who will speak on "California in the 21st Century: Emerging Issues and Implications."

The conference's second breakout session will begin at 9 a.m. The topics are: ecosystem management; family dynamics; livestock and range management; nutrition and health; pest management; waste management.

The next segment — "Workgroup: What Is in It for Me?" — will be particularly relevant and informative in light of the Division's new organizational structure. The Transition Team will lead the discussion.

The conference will conclude with an address by Vice President *Gomes*.

Registration forms are available in the conference flyer, distributed last month. To obtain a flyer, contact *Karen Nephew* by email (krnephew@ucdavis.edu). Note that the deadline for making room reservations at the Radisson is Jan. 7.

To reserve space at the poster session, submit the designated form in the conference flyer by Jan. 15. For more information, contact *Mick Canevari* (209/468-2085), *Susan Donahue* (530/538-7201) or *Don Lancaster* (530/233-6400).

A number of workgroups, program planning advisory committees (PPACs) and other planning/programming groups are meeting either before or after the conference. To arrange for meeting space at the Radisson Hotel, call *Linda Manton* in Fresno County (559/456-7259).

## Names in the news

■ *David Zilberman*, chair of the department of agricultural and resource economics in the UC Berkeley College of Natural Resources, has been appointed to the George and Elsie Robinson Chair in Food and Agricultural Resource Economics for a five-year period beginning in January 1999.

■ *Dave Snell*, 4-H youth development advisor in Fresno County, received the National Association of Extension 4-H Agents Distinguished Service Award at the group's annual meeting, held in Louisville, Ky. Snell was recognized for 20 years of outstanding work with the county's youth.

■ *George Bruening*, an internationally recognized authority on plant viruses, whom colleagues describe as "a scientist's scientist," was named by his peers at UC Davis as the 1999 Faculty Research Lecturer.

## University begins search for Merced chancellor

President *Atkinson* has announced the start of a national search for the chancellor of the planned Merced campus.

National advertising for the new position is scheduled to begin this month. The search is expected to be completed at the end of March, with the new chancellor being named by July 1.

The search for a chancellor for the new campus is a key next step in the development of the Merced campus, according to UC Board of Regents chairman *John Davies*. "This is a truly historic moment for the people of the San Joaquin Valley and for students throughout California."

UC Merced will be the 10th campus of the University of California. The campus is expected to open in 2005. Initial duties of the new chancellor will be to recruit a core faculty, recruit professional and support staff and complete the development of campus academic and physical plans.

## Glazer *(from p. 1)*

President building in Oakland for an impromptu interview in which he described some of his goals for the reserve system.

He and his staff had already celebrated one big success: In June the NRS was awarded a \$4-million endowment grant from the David and Lucile Packard Foundation that will generate a much-needed \$200,000 annually for facilities, monitoring and new programs at the reserves.

As Glazer talked about the NRS, its needs and its potential, it became clear that he expects a newly equipped, well-financed reserve system to benefit not only students and scientists but also society at large.

“What do you hope to do for the NRS — and why are you doing it?” I asked.

“First of all, there are structural things to attend to,” Glazer said. “For example, we urgently need to be able to offer the facilities and equipment that are appro-

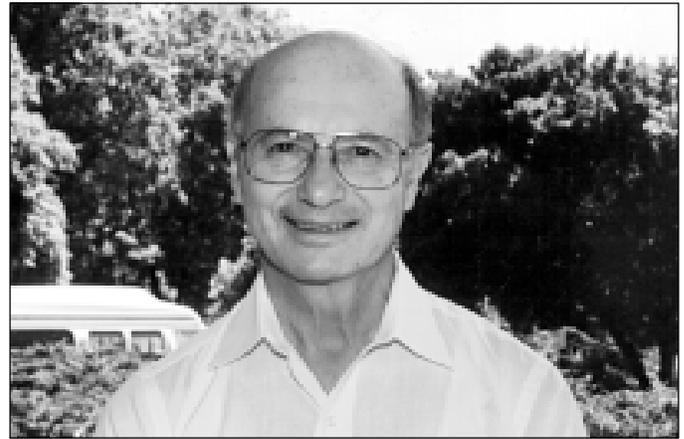
priate to how the environmental sciences and remote sensing are conducted today.

“The reserve system was assembled over the past 33 years, and during that time these sciences have become very quantitative and computer-dependent. That presents a major challenge to our programs and budget. The equipment is very expensive. Do you know how much equipment for a reserve site involved in remote sensing costs now? A lot — over a quarter of a million dollars!

“In addition, during the past five years, a major emphasis on global climate change has developed on the campuses. This new emphasis requires field sites for this type of study, putting more pressure for monitoring and data management on the reserve system, because it was not developed with this in mind.”

“Furthermore, the reserves are doing more environmental education and need better facilities and programs to accommodate these visitors.

“We now have outreach activities at every single re-



Alexander Glazer

serve site. In fact, 16 of our sites have K-12 outreach,” he explained.

Each of the eight centers for environmental sciences that the NRS proposes to build will help it meet these challenges. “Such a center,” Glazer said, “would provide adequate accommodations for students and researchers. It would have a laboratory and meeting room facilities, and it would have housing for the manager or steward.”

“How did the NRS decide where to build the centers — and how many funding proposals have you submitted to foundations so far?” I inquired.

“We asked each of the general campuses to nominate one of their reserves,” Glazer said. (NRS reserves are assigned to the campuses for day-to-day management.) “The cost of the eight centers — it depends on what’s there and the level of use — ranges from a low of about \$100,000 to a high of about \$1.5 million.

“Now, different reserves have different areas of strength, so in preparing our funding applications, we initially went for the two strongest sites — the James and the Angelo reserves. The other sites are also exceptionally strong, but these two sites were very distinctive.

“The James San Jacinto Mountains Reserve, for example, has one of the strongest programs for the use of geographic information systems (GIS) and remote-sensing technologies anywhere in the state.

“The program is internationally recognized. We want to have a center there for these kinds of remote-sensing technologies — to educate managers and graduate students from within the NRS, and also to offer formal classes to students, postdoctoral fellows and faculty from the UC system as a whole.

“Our plan to establish this center could not be more timely. It just so happens that President *Atkinson’s* 1999-2000 budget request to the state includes \$2 million to establish the California Remote-Sensing Initiative Program that would provide access for scholars, public agencies and industry to data collected via remote-sensing techniques. The Macroscopic Environmental Observatory, the proposed name of the James center, would train researchers and educators in this field and highlight the unexplored capabilities of remote-sensing technologies.”

[Editor’s note: The funding application for the James

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### The NRS: an unmatched asset

**F**ounded in 1965, the Natural Reserve System is now one of the University’s most valuable assets — the number and diversity of its 33 reserves are unmatched anywhere in the world.

The NRS provides UC academics and other users with access to more than 120,000 acres of “living laboratories and outdoor classrooms.” UC owns less than 20 percent of the property, managing the rest through various agreements.

The NRS, says Glazer, is “a window on the natural world.” He has written: “Through long-term ecological research and monitoring of our reserves, we learn how to care for our world and support our environmental health.”

According to a recent report, over 70 UC faculty carried out research on NRS sites last year. Some 134 UC courses in 18 different disciplines were taught there. And 6,500 students in grades K-12 from 130 schools throughout California took part in outreach activities.

## Glazer (from p. 3)

center is still being reviewed by the foundation to which it was submitted.]

Glazer's long-term strategy is to shore up the structural *and* the operational underpinnings of the NRS.

"One of my major goals is to change something which is, at the moment, rather diffuse into something that's very clearly organized, and, secondly, to make sure that we get the maximum out of what we have," he said.

Glazer believes that with newer equipment and secure funding the NRS can educate many more natural resource managers than it does now.

"Is that important?" he asked rhetorically. "It's extraordinarily important," he continued passionately. "If you ask what is one of the single major needs of the next 50 years, it's people who understand how to manage natural resources in a complex environment. That's the kind of people we train.

"Even today, the need is so acute that every government agency that deals with

natural resource management is faced with problems it doesn't know how to address. For instance, land-management practices developed by federal agencies are frequently not implemented by other levels of government — rural county governments, for example — simply because there is insufficient educational interface to translate these scientific outcomes into concepts that people in local government feel comfortable with, that they can present to their planning committees for implementation.

"If we can provide the infrastructure and support, we can probably train four or five times as many students as we're training now on NRS sites," he said.

In addition, in Glazer's view, the NRS staff deserves nothing less than a system that can achieve results equal to their high level of commitment.

"NRS managers and stewards, the staff of the systemwide NRS office and a lot of the faculty are exceptionally dedicated. It's like a different universe — you don't often meet people

like this in the conventional campus structure," he said.

Glazer has arrived at a critical moment for the NRS. For one thing, it has run out of donated properties to sell to fund its operations.

"There's no danger that the NRS will not be supported, but there are good and not-so-good ways of doing it," he said.

So, besides soliciting external funds, Glazer is trying to secure more money for the NRS from within the University. As a first step, he's drawing attention to the significant contributions made by NRS reserves to campus department teaching programs — and figuring out what it all adds up to in dollars and cents.

"If the NRS were a department, and you took the aggregate of what is taught and the intensive use of facilities, I can document that we teach about as much as the University would pay a department \$5 million for. Of course, we don't get anywhere near this much — we get half of that money," he said.

"Unfortunately, much of the other documentation we

need doesn't exist. For example, if NRS classes were listed in campus catalogs, I would be able to rip out the two pages listing the courses taught at NRS from each catalog and say, 'OK here is the listing for the NRS, and you show me the listing for some department to which you're giving less than \$5 million. The comparison would be very valuable to us.'"

Earlier this year Glazer sought to remedy the situation by asking the members of the NRS Universitywide Advisory Committee to make sure that their departments include NRS-taught classes in their catalog listings.

"So now for the first time, the NRS will be adequately listed," Glazer said.

Another one of his goals is to expand the NRS's outreach program. In conjunction with the staff of *Karl Pister*, who heads up President Atkinson's Outreach Action Plan, Glazer is launching a small pilot program to train teachers who will then be able to use the reserve system to train students.

"Why develop a program for teachers?" I asked.

"The reserves have minimal staffing, and we are not able to fund additional positions just for outreach," Glazer said. "We are trying to see if there is a way of building up the level of expertise among the teachers themselves so that they can serve as supplementary staff."

The budget, he said, is modest. "We intend to test the model we've developed. We think we know how to do this, but I'd like to run it in real life."

The pilot program for the two-year project is scheduled to begin next summer.

— *Gabriele Kassner*

## A lifetime of accomplishment

**A**lexander Glazer has a long string of academic, scientific and administrative achievements to draw on as he carries out his plans for the NRS.

Born in Poland, he was educated in Australia, earning bachelor's and master's degrees at the University of Sydney.

He came to the United States to pursue a doctorate in biochemistry, which he received from the University of Utah in 1960. Four years later, he joined the UC faculty, teaching in the department of biological chemistry at UCLA School of Medicine.

In 1976, he moved to the department of microbiology and immunology on the

Berkeley campus, where he served as department chair from 1977 to 1982.

In the 1980s, Glazer participated in the reorganization of the biological sciences at UCB and headed a department with five divisions. He also served on a committee that raised \$75 million for the biosciences. At the time Glazer was named to lead the NRS, he was co-chair of the department of molecular and cell biology.

An active researcher, Glazer studies the conversion of light energy to chemical potential, a fundamental problem in photosynthesis, and develops methods for genomic analysis.

## Case studies on soil quality receive support from Kearney Foundation

By *Angela Zabel*

**T**he Kearney Foundation of Soil Science, a DANR systemwide program, has funded three new soil-quality case studies. Each project involves intensive team-oriented research examining the effects of long-term soil management — management techniques and field practices that are used for more than five years — on soil quality. The scenarios being investigated include organic farming, low-input farming, conventional agriculture and reclaimed wastewater irrigation.

■ *Jeff Mitchell*, CE vegetable crops specialist at the Kearney Agricultural Center, is principal investigator for a case study entitled “Development of a Soil Quality Index: Applications in California’s Central Valley.”

The study includes diversified annual row crop farms in western Fresno County, one of the world’s most productive agricultural regions. This large agricultural output is made possible through intensive irrigation, as well as pesticide and fertilizer use. The production of high-value crops, such as tomatoes, cotton and garlic, has led to less organic matter being added to the soil, more aggressive tilling and a reported decline in soil quality.

To combat this trend, the West Side On-farm Demonstration Project (also known as the Biologically Integrated Farming Systems, or BIFS, Project) was initiated. The project evaluates management practices and monitors on-farm demonstrations of soil-building practices, and has the additional objective of exchanging information among the involved farmers.

The objective of Mitchell’s research, partially conducted at BIFS, is to develop an indexing system for quantifying farmer-observed differences in soil quality, which will then serve as a guide to the amelioration of soil management practices and improvement of soil quality in the region.

■ Just outside of Bakersfield lies a 5,100-acre field site that has been irrigated with reclaimed wastewater for more than 70 years. Barley, corn, cotton, alfalfa, sorghum and permanent pasture are the main crops grown here. The site has had the same cultural practices since the 1920s.

A case study, “Sustainability of Long-term Reclaimed Wastewater Irrigated Cropland: A Field Evaluation of Soil Quality,” headed by *Andrew Chang* (UC Riverside), is focusing on determining whether wastewater pollutants have affected soil quality at this site. The sustainability of the soils is being investigated in terms of crop production, soil properties and environmental quality maintenance.

■ Conventional agricultural practices such as irrigation and fertilization have caused groundwater pollution and salinity problems in the past, necessitating a re-evaluation of soil

management techniques. The use of organic (manure and cover crop) and low-input (cover crop and reduced fertilizer nitrogen) treatments has resulted in widely varied soil production and quality.

The UC Davis Sustainable Agricultural Farming System (SAFS), The West Side BIFS and the UC Davis Long-term Research on Agricultural Systems (LTRAS) projects contain field plots on soils that have been managed in fundamentally different ways for more than five years. For example, at SAFS the farming-system treatments have included organic, low-input, conventional four-year rotation and conventional two-year rotation treatments, with crop rotation and fertilizer/pesticide additions varying among each treatment.

*William Horwath* (UC Davis) is principal investigator for a case study entitled “Assessing Soil Organic Matter Changes and Nutrient Sequestration during the Transition from Conventional to Low-input Organic Farming Systems.”

Soil organic matter (SOM) is well known to be important to cropping system sustainability, in that it improves nutrient storage and soil structure. The objectives of this study are to determine any change in SOM quality during the transition from conventional to low-input organic agriculture, and to establish soil quality criteria that encourage the implementation of farming techniques that promote SOM maintenance.

Summaries of the objectives and methodologies for these case studies are posted on the Kearney Foundation website, (<http://www.cnr.berkeley.edu/~gsposito/Kearney>).

### Natural resources conference in March to concentrate on salmon

**T**he sixth Natural Resources Continuing Conference will give DANR advisors, specialists, faculty and others an opportunity to learn more about California salmon and inland fishes March 9-11 at the Bodega Marine Laboratory.

“Issues related to salmon are important to many aspects of California’s economy,” said Sea Grant marine fishery specialist *Chris Dewees*. “Coho salmon and steelhead in our coastal streams are already listed under the Endangered Species Act, and the three remaining unlisted runs of Chinook salmon in the Central Valley are proposed for listing. Water-policy changes affecting California agriculture are occurring as a result.”

The Sea Grant Extension Program, in conjunction with the Integrated Hardwood Range Management Program, organized the event. Updates on salmonid research and field trips to a local watershed and ecological reserve surrounding Bodega Marine Lab will be included.

Limited Renewable Resources Extension Act funding is available to CE advisors to offset room and board costs at BML. For an agenda and registration materials contact *Jill Frommelt* (530/752-5797; [jwfrommelt@ucdavis.edu](mailto:jwfrommelt@ucdavis.edu)).



# COMING UP

## JANUARY

### Nutrition Issues in Substance Abuse and Recovery

Jan. 6-7; Pleasant Hill; Mary Lavender Fujii (925/646-6540)

### S. Sacramento Valley Processing Tomato Production Meeting

Jan. 7; Woodland; G. Miyao, M. Murray, M. Cahn, K. Brittan, J. Orr (530/666-8143; emmiyao@ucdavis.edu)

### Sugarbeet Workgroup

Jan. 14; UC Davis; Steve Kaffka (530/752-8108)

### Sugarbeet Research Review

Jan. 15; UC Davis; Steve Kaffka (530/752-8108)

### \*Nat'l Silverleaf Whitefly Conference

Jan. 31-Feb. 2; Albuquerque; Lisa Arth (909/787-7292)

## FEBRUARY

### DANR Statewide Conference (open to all DANR members)

Feb. 9-10; Sacramento; Karen Nephew (krnephew@ucdavis.edu)

### Small Grains Workgroup Meeting

Feb. 10; Sacramento (in conjunction with the DANR Statewide Conference) Lee Jackson (530/752-0701)

### Varietal Winegrape Production

Feb. 17-19; UC Davis; Sharon Munowitch (530/757-8899)

## MARCH

### \*6th Natural Resources Continuing Conference

March 9-11; Bodega Marine Lab Jill Frommelt (530/752-5797)

### 4-H Center for Youth Development Annual Spring Conference

March 16-17; Pomona; Charlene Logan (530/754-8433)

### Pomology-Extension Continuing Conference (PECC)

March 25-26; Modesto; Joe Connell (530/538-7201)

### 29th California Nematology Conf.

March 29; Yuba City, Debbie Roberts (530/757-8899)

\* New listing

To list events, call 510/987-0631 or send to ANR Report

## Funding alert

Reminder: Jan. 15 is the deadline for submitting proposals for Western SARE grants. The call for proposals can be read online (<http://ext.usu.edu/wsare/>).

## Novartis (from p. 1)

more than \$2.5 billion in research and development annually. Through an independent charitable foundation called the Novartis Research Foundation, the company earlier this year announced a \$600 million investment worldwide over the next 10 years in plant genomics. The first step was creation of the Novartis Agricultural Discovery Institute, whose main campus will be in San Diego.

Two years ago CNR set out to design a new approach to research collaborations with the private sector to augment the individual agreements faculty currently enter into with private companies. The goal was not simply to raise funds to support research, but to identify a private sector partner who would make a significant intellectual contribution to the University and support research in the public interest.

The department solicited proposals for research collaborations from six companies, of which four responded. Novartis' proposal stood out from the others because of the company's interest in safeguarding academic freedom.

"We wanted access to intellectual capital that would not only complement our own, but allow us also to preserve and enhance our values and our culture," Rausser says. "Hence, our insistence on the unrestricted funding provided by the Novartis agreement." The alliance is also notable, he says, because "it will establish a public-private relationship that allows the Berkeley campus to capture a more significant portion of the value created by public research university/private company research agreements."

## Monsanto gives rights for corn biotechnology to UC Berkeley

The Monsanto Company has donated to the College of Natural Resources at UC Berkeley any rights that may flow from Monsanto's pending U.S. patent applications for the agrobacterium method for corn seed transformation.

On Nov. 30, Monsanto signed a memorandum of understanding with UC Berkeley that designates it as the recipient of this technology, known as agrobacterium-mediated transformation technology. The move came after the U.S. Department of Justice's Antitrust Division directed Monsanto to divest some of its corn biotechnology as a condition of acquiring DeKalb Genetics Corporation.

The agrobacterium technology is used to introduce desirable genetic traits such as insect resistance into corn and is one of the two major methods for genetically engineering crops.

If Monsanto wins its pending patent to the technology, UC Berkeley can sublicense the technology as a way to generate funds.

## Angelo Reserve (from p. 1)

tunities for scientists and new learning opportunities for students, from kindergarten through college. This outstanding gift will benefit generations of Californians, and we are very grateful."

The reserve includes 4,395 acres owned by the University and is buffered by more than 3,500 acres managed in partnership with the Bureau of Land Management. As one of the most diverse sites within the NRS, the reserve encompasses four aquatic and at least 26 terrestrial habitat types.

### ANR REPORT

DIVISION OF AGRICULTURE AND NATURAL RESOURCES: Serving California through the creation, development and application of knowledge in agricultural, natural and human resources.

Send news items and comments to Gabriele Kassner, ANR Report editor, Office of Governmental & External Relations, 1111 Franklin St., 6th Floor, Oakland, CA 94607-5200. Telephone: 510/987-0631; fax: 510/465-2659; email: gabriele.kassner@ucop.edu

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