## Red imported fire ants discovered in Sacramento

An infestation of red imported fire ants was discovered at the California State Fairgrounds in Sacramento, the California Department of Food and Agriculture (CDFA) announced in late October. A visitor from Texas reported suspicious-looking ants while staying at Cal Expo's RV park, leading officials to believe that they were brought in on a vehicle or plants.

CDFA spokesman Steve Lyle said that the 20 mounds found at Cal Expo have been treated and officials are hopeful that the ants will not survive the winter. "We believe this is an isolated incident, and not indicative of the ants' spread to Northern California," Lyle said.

Red imported fire ants are an exotic pest first discovered in California in 1997. Native to South America, they have thoroughly infested the southern United States. Extremely difficult to eradicate, they are notorious for their viciousness, swarming out of mounds when disturbed and furiously biting and stinging victims.

The ants pose a danger to homes and residents, agriculture and wildlife habitat; UC scientists estimate that if they became established in California costs could run between $387 million and $989 million per year (see p. 26).

Suspected red imported fire ant mounds should be reported to 1-888-4FIREANT. For more information go to: www.cdfa.ca.gov/phpps/pdep/rifa/

## Nonnative ants disrupt ecosystems

By replacing native ants, the tiny black Argentine ant — a well-known household pest — could be disrupting natural ecosystems. A study by UC Davis graduate student Caroline Christian, published in *Nature* (October 2001), has shown that when key beneficial species are removed by an invading ant, the destructive effects can reverberate through the ecosystem.

Christian, who is affiliated with the UC Davis Center for Population Biology, studied the fynbos shrublands of South Africa, an area similar in climate and vegetation to the chaparral of California. Wildfires sweep the fynbos every 15 to 30 years, killing most mature plants; new plants grow from seeds buried in the ground by native ants. Christian found that when Argentine ants displace native ants, plants that depend on those ants to bury their seeds do not regenerate after fire.

Seed burial by ants is key to survival for about a third of fynbos plant species, Christian said. When fresh seeds fall, ants are attracted to them and carry them off to bury in their nests. Different ant species specialize in seeds of different sizes: Ants that work cooperatively deal with bigger seeds, while ants that tend to work alone bury smaller ones. If the seeds are not picked up quickly, virtually all are eaten by rodents.

After controlled burning, fynbos areas invaded by Argentine ants showed a tenfold drop in the number of new plants from large-seeded species, compared to uninvaded areas, Christian said. Small-seeded species were much less affected.

**Research conducted in the fynbos shrublands of South Africa, *below*, which is similar to California chaparral in appearance, demonstrates the important role that natives ants play in regenerating vegetation after a fire.**

Amida Johns

## California a supercolony of Argentine ants

In a study published in *Molecular Ecology* (September 2001), scientists from UC Davis and UC San Diego showed that California harbors a huge supercolony of nonnative Argentine ants, extending from Ukiah to beyond the Mexican border.

In Argentina, competition between rival colonies keeps their numbers in check, but most of the California imports recognize each other as family, said Neil Tsutsui, a postdoctoral fellow in the UC Davis Center for Population Biology.

"In ants, usually their biggest competition is within the same species. But here, colonies are so closely related they even exchange workers," said collaborator Andy Suarez, a former UC Davis entomology postdoctoral fellow now at UC Berkeley.

Because they were initiated by a relatively small number of individuals, introduced populations of Argentine ants have reduced genetic diversity and are genetically similar to one another, the scientists found. This close-knit sisterhood allows Argentine ants to form large supercolonies, which then displace native ants and become one of California's leading household and agricultural pests.

Tsutsui and Suarez, working with David Holway and Ted Case at UC San Diego, used a type of DNA fingerprinting to show that Argentine ants in California are genetically similar to ants

along the southern Parana River in Argentina. Efforts to identify natural enemies of the Argentine ant for biological control should focus on this area, Tsutsui said.

Earlier research by Suarez and the same colleagues traced the rapid decline of coast horned lizards in California to indirect impacts of invading Argentine ants. The invaders displaced indigenous ants, the lizard's favored food source. They are not a palatable substitute.

In related research published in several journals, the four scientists also showed that the loss of genetic diversity in introduced populations led to reduced aggression among the ants, allowing the formation of the supercolony in which queens and workers mix freely among separate nests. The invaders wipe out indigenous ants through sheer numbers.

## SOD found on UC Berkeley campus

A pathogen that has devastated wide swaths of California's oak trees has been discovered on the grounds of UC Berkeley, campus officials announced Oct. 31, 2001. The microbe responsible for sudden oak death (SOD) has infected three host species, including two California bay trees near the Faculty Glade. The infection has not been detected in any of the oak trees on campus, suggesting that it arrived recently.

Matteo Garbelotto of the UC Berkeley College of Natural Resources noticed the infections while walking through campus. Subsequent tests confirmed that the infections were caused by *Phytophthora ramorum* (see *California Agriculture*, January-February 2001). Garbelotto and UC Davis associate professor Dave Rizzo, in conjunction with the California Oak Mortality Task Force, were recently awarded a $1 million grant from the San Francisco-based Gordon and Betty Moore Foundation, to study *P. ramorum*.

Approximately 50 campus groundskeepers, gardeners, arborists and horticulturists from UC Berkeley's Botanical Garden have received training to identify signs of SOD infection. They are canvassing the campus and gathering samples of suspicious vegetation. Disease management will include regular monitoring of the campus grounds and preventative treatments with fungicides. Areas surrounding the campus also will be surveyed through a joint effort between UC Berkeley and the Alameda County Agricultural Commission.

There are at least 10 known tree and plant species that are susceptible to the *P. ramorum* pathogen. The highly contagious microbe is a brown algae related to the species responsible for Ireland's potato famine of the mid-1800s. Its ability to infect a wide array of plant life through soil, water and air has made it particularly difficult to control.

SOD was first noticed in Marin County in 1995 and has since felled tens of thousands of coast live oaks, black oaks and tan oaks in the state. Infections have recently been discovered along Crow Canyon Road in Alameda County and near Lake Madigan in Solano County.

Marc Dantzker

**Nonnative Argentine ant workers nurture scale insects in exchange for the sweet honeydew they excrete. By protecting scale, aphids and other homoptera from potential predators, Argentine ants promote populations increases among these agricultural pests.**

## Mondavi gift benefits UC Davis wine and food sciences

On Sept. 19, 2001, Robert and Margrit Mondavi announced a personal gift of $25 million to UC Davis to establish the Robert Mondavi Institute for Wine and Food Science. The gift will be combined with campus funds and other private contributions to create new state-of-the-art research and teaching facilities, to house the UC Davis College of Agriculture and Natural Resources departments of viticulture, enology, and food science and technology.

The institute will include an academic building of approximately 75,000 square feet for classrooms, laboratories, offices and meeting rooms. A 13,000-square-foot plant for food-processing, and a 36,000-square-foot building for a new campus teaching and research winery, also will be constructed within the proposed institute. Current plans call for the institute to be located on Old Davis Road; groundbreaking is expected in 2004.

The gift is the largest private contribution ever to UC Davis and represents one of the most generous single gifts from an individual donor in UC history. The Mondavis also donated $10 million to name the UC Davis campus's Center for the Performing Arts, which is currently under construction.

*— Compiled from U.C. and other news sources*

Tony Novelozo/Axiom

**A $25 million gift from Robert and Margrit Mondavi will allow UC Davis to build a new facility combining viticulture, enology, and food science and technology. Graduate student Fiona Hutchinson pours peanuts into a machine that coats them with an edible covering made from whey proteins, a byproduct of cheese processing. The coating prolongs freshness while utilizing a dairy byproduct that has long been a waste disposal headache for cheese processors.**