



Jack Kelly Clark, UC Statewide IPM Program

**New irrigation recommendations, based on more up-to-date models, use real-time data on rainfall, evapotranspiration rates and other factors to ensure that irrigation water does not damage crops such as, above, tomatoes.**

First, a leaching fraction is chosen, based on the extra water that must be applied to avoid yield loss in the most sensitive crop grown by area farmers; then rainfall is calculated for the area. Using these two figures, the maximum salinity level of the irrigation source can be read off the table. The new guidelines mean that regulators may accept higher salinity readings at any particular point in a river, allowing somewhat more saline discharge waters from growers or other users (such as cities) upstream.

If adopted, the workgroup's recommendations will potentially result in more saline water used in agriculture. Any changes in salinity recommendations are likely to be met with concerns about future water supplies, long-term damage to soils and other issues.

Letey is expecting some resistance to the workgroup's recommendations. "Oh, absolutely, I expect it," he says. "People will say 'You have to convince me', and that's as it should be. But if we can get by with less water, that's a good thing." — Hazel White and Janet White

## Science briefs

### Tree-killing pathogen traced back to California

Genetic detective work by an international group of researchers may have solved a decades-long mystery of the source of a devastating tree-killing fungus that has hit six of the world's seven continents.

In a Sept. 1 *Phytopathology* study, California emerged as the top suspect for the pathogen, *Seiridium cardinale*, that is the cause of cypress canker disease. *S. cardinale* was first identified as causing the disease in California's San Joaquin Valley in 1928. The fungus has made its way since to Europe, Asia, New Zealand, Australia, South America and Africa. In many regions, it has infected and killed up to 95% of iconic native trees in the cypress family, including junipers and some cedars.

"When Monterey cypress trees are planted in Monterey or along the coast, they are resistant to the disease," said Matteo Garbelotto, UC Cooperative Extension specialist, Berkeley, and an author of the study. "That suggests that in coastal areas, the environment is unfavorable for development of infections, despite the pathogen having been in California for a long time. The pathogen emerges when we place the tree in a foreign environment."

Garbelotto said that chemical treatments for cypress canker disease may become available in the near future, but they are costly and their effects on the environment are not clear so prevention is preferable.

The fungus kills a tree by entering through cracks in its bark, producing toxins that wreak havoc with its flow of sap and choke off its supply of water and nutrients. The disease has left an indelible mark throughout southern Europe.

For more info, go to: <http://newscenter.berkeley.edu/2011/09/01/cypress-canker-pathogen-traced-to-california>.

— Sarah Yang



Robert Danz, Italian National Center for Research

Italian cypress trees near Siena, in Italy's Tuscany region, show symptoms of cypress canker disease. Researchers have traced the origin of the pathogen responsible for the disease back to California.



Alberto Panconesi, Italian National Center for Research

An optical microscope image shows *Seiridium cardinale*, the fungal pathogen responsible for a global pandemic of cypress canker disease.

The researchers used DNA fingerprinting techniques to analyze 96 *S. cardinale* isolates of diseased tree samples from seven Mediterranean countries, eight California counties, Chile and New Zealand. The paper reports that strains of the pathogen with identical DNA profiles were found hundreds to thousands of miles apart, an indication that humans are moving the pathogen, most likely through the trade of infected plants.