

CALIFORNIA almonds



THE OFFICIAL NEWSLETTER OF THE ALMOND BOARD OF CALIFORNIA

IRRIGATION SCHEDULING OPTIMIZES WATER USE



Utilizing data to fine-tune irrigation timing cuts down on water use for Josh Bergman (right) and his father, John Bergman, Bergman Farms, LLC.

INCREASINGLY DRY CONDITIONS and court-ordered restrictions on some water deliveries will be taking a serious toll on California agriculture this season, emphasizing the need to optimize available irrigation water to bring home what promises to be another record-breaking almond crop. Deficit irrigation strategies were discussed in the [June issue](#) of *California Almonds*. These and other water-saving techniques for almond growers, developed through research supported by the Almond Board of California, are discussed at a [UC-Davis Web portal](#).

Among the methods for irrigation scheduling outlined at this site is evapotranspiration (ET) scheduling and soil moisture monitoring. According to the UC researchers, using both techniques together can further improve irrigation scheduling.

Three years ago, Tulare almond grower Josh Bergman, a field representative for [Sierra Gold Nurseries](#), added a monitoring system that combines soil moisture monitoring and ET scheduling to optimize the water delivered to almond orchards under his management.

The system consists of gypsum block soil moisture sensors installed at different depths and in different locations in the orchards, which are all under fan-jet microirrigation. The soil sensors are wired to a data-logger box, which reads and stores information from them every hour. Bergman's consultant, Joe O'Brien of Valley Tech Agricultural Laboratory Services in Tulare, installed and monitors the system.



"I visit the box once a week and analyze the information," O'Brien says. "It tells me how much water is in the soil at various depths—12 inches, 24 inches, 36 inches. The system also monitors flow through the irrigation hose, which tells us how many hours a week the system is run, and we measure acre-inch per field that went on." This is all related back to the ET information on [CIMIS](#), California Irrigation Management Information System. [Waterright](#) is another useful Web site. Additionally, Bergman can get current feedback by looking through a window on the box.

"Seeing moisture at 36 inches helps us to plan ahead, especially as harvest approaches," Bergman says.

"Using this system we learn more every year," he adds. "For instance, we've found that we've been putting on more water than we anticipated to reach yield goals. We are also able to follow the profile as we irrigate, so I know how the irrigation water is progressing. If the water is not reaching down deep enough, we've been applying sulfuric acid to improve water penetration of the soil."

Although nearly all of the acres under Bergman's management are on wells, he notes that "in dry years, we see these wells getting weaker and don't want to waste any of the water. The goal with Valley Tech is to provide trees with what they need without excess or deprivation. The soil moisture sensors and data logger do just that."

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