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# California

## Technologies bolster water management in orchards

By **TIM HEARDEN**  
Capital Press

RED BLUFF, Calif. — For the last few years, University of California researchers have been promoting new devices called pressure bombs for determining an orchard’s water needs.

But rapid advances in technology have made the pressure bombs — which are also called pressure chambers — almost obsolete, a UC Cooperative Extension adviser said.

Tree monitors and weather gauges connected to on-line data systems and new advances in aerial imagery are alternatives that may gain popularity, said Allan Fulton, an irrigation and water resources adviser in the UCCE’s Red Bluff office.

“What we’ve been looking for are alternatives to the pressure chamber,” Fulton told walnut growers during a Jan. 20 workshop.



Allan Fulton, a University of California Cooperative Extension irrigation and water resources adviser, tells growers to take advantage of emerging technologies in water management.

While relatively inexpensive, costing growers about \$10 an acre, using pressure chambers can be labor-intensive, he said.

“You have to go to the

orchard, and if you don’t get there you have no information,” Fulton said. “Also, it’s just a snapshot. ... I’ve always been encouraging growers to look for tools that

will give you a continuous picture.”

Pressure chambers are like blood-pressure tests for tree leaves. UC-Davis has been using them to measure

plant water stress since the early 1990s, but they became popular with growers in recent years as drought has led to drastic surface water restrictions.

About two years ago, the UC-Davis Fruit and Nut Center launched a website to help growers interpret their readings from the devices to determine how much water their trees need. The extension has weather stations positioned throughout the state to tell growers how hard their trees should normally be working to pull water under the temperature and humidity for that day.

Recently, private companies have introduced devices and systems to give farms an ongoing, automated report on their trees’ needs, and Fulton has been testing them for accuracy.

One such option is dendrometers, which are normally used to monitor the growth of trees but can also measure minute daily expansions and

contractions of tree trunks to provide clues about water stress.

Another system developed by San Francisco-based startup Tule Technologies uses sensors installed above the crop canopy to tell growers how much water their plants are using and even when and how much to apply.

Finally, flyovers can give growers enhanced aerial images of their entire orchards and measure such things as temperature, Fulton said. Higher canopy temperatures are a sign of tree stress, he said.

“One of the values of the flyover system is it’s pretty good at troubleshooting problems in your irrigation system,” Fulton said.

“The pressure chamber is still a good tool, but there are some options now and it’s kind of exciting,” he said. “There’s a lot of good talent out there and I would expect these things to get better over time.”



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## 52,272 IDAHO YOUTHS PARTICIPATE IN 4-H

The University of Idaho 4-H Youth Development program reached 52,272 youths in 2016 with the help of 3,209 volunteers across the state.

In all, Idaho 4-H’ers completed more than 25,000 animal science projects in 2015-16 ranging from beef and birds to sheep and swine.

Idaho 4-H members will find more consistent animal science lesson plans awaiting them in 2017. Animal science projects continue to be the most popular 4-H projects in Idaho, but lesson plans and requirements varied across the state.

A Meat Animal Task Force created by the University of Idaho 4-H Youth Development Program set goals for animal science education. The effort follows national 4-H mission mandates to provide youth programs focused on science, healthy living and citizenship.

The task force goals included setting educational topic areas and lesson plans that drew on research-based information. Idaho 4-H adopted the Ohio Resource Handbooks for beef, sheep, swine and goats to promote consistency across the state.

The task force divided lesson topics into three levels to tailor them to 4-H’ers of different ages. Topics range from facilities management, reproduction, and marketing to record keeping and quality assurance.

Idaho 4-H posted 38 level 1 lessons on its website and plans to add level 2 and 3 lessons as they are completed. Lessons reflect the experience-based focus of 4-H and its emphasis on doing, then reflecting and applying the principles learned.

4-H members and leaders can access lessons and associated handouts on the web, then track those completed and identify skills learned. Lessons are online at [www.uidaho.edu/extension/4h/projects](http://www.uidaho.edu/extension/4h/projects).

University of Idaho 4-H Youth Development recently introduced Level 1 Animal Science lesson plans for use by Idaho 4-H members and volunteers. Thirty-eight Level 1 lessons are currently accessible on the Idaho 4-H website. Level 2 and Level 3 lessons will be used once they have completed the necessary publication process.



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