

# Saving water without hurting peach production

November 21 2012

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Infrared thermometer mounted on a pole for measuring peach tree canopy temperature under regulated deficit irrigation. Stressed leaves have a higher temperature than nonstressed leaves. Photo by Dong Wang

U.S. Department of Agriculture (USDA) scientists are helping peach growers make the most of dwindling water supplies in California's San Joaquin Valley.

Agricultural Research Service (ARS) scientist James E. Ayars at the [San Joaquin Valley](#) Agricultural Sciences Center in Parlier, Calif., has found a way to reduce the amount of water given post-harvest to early-season peaches so that the reduction has a minimal effect on yield and [fruit](#)

[quality](#). ARS is USDA's principal intramural scientific research agency, and the research supports the USDA priority of promoting international food security.

The valley has about 25,000 acres of peach orchards that must be irrigated throughout the summer. Early-season peaches are normally harvested in May, but require most of their water from June through September, a time when temperatures and demands for water are at their highest. Snow packs in the [Sierra Nevada](#) have traditionally been a sufficient water source for growers, but earlier snowmelts have made water more precious with each summer. Wells that supply the valley have had to reach deeper to meet increasing demands.

Ayars and ARS scientist Dong Wang, also based at Parlier, irrigated a 4-acre plot of early-season peach trees from March to the May harvest. From June to September, they gave the trees either 25 percent of the amount of water they'd normally receive, 50 percent of the normal amount, or 100 percent. The scientists measured soil water content once a week to be sure that even with periodic rainfall, trees were given appropriate deficit-[irrigation](#) treatments. They also used three types of [irrigation systems](#): microspray, subsurface drip irrigation, and furrow irrigation, in which water is distributed in shallow canal-like rows near the trees. Defective fruit were counted and removed after each harvest.

The results showed that reducing post-harvest irrigation levels to 25 percent of the normal amount had negative effects on yield and fruit quality, but that giving 50 percent less [water](#) than normal had minimal effects on the following year's quality and yield. The subsurface drip irrigation systems tended to have the lowest yields within a given year, but differences were generally not statistically significant. The researchers also found that trees needed less pruning and maintenance because the [deficit irrigation](#) slowed plant growth.

The results of this study have been submitted to the scientific journal *HortScience* for publication.

**More information:** Read more about this research in the November/December 2012 issue of Agricultural Research magazine: [www.ars.usda.gov/is/AR/archive/nov12/peach1112.htm](http://www.ars.usda.gov/is/AR/archive/nov12/peach1112.htm)

Provided by United States Department of Agriculture

Citation: Saving water without hurting peach production (2012, November 21) retrieved 21 June 2024 from <https://phys.org/news/2012-11-peach-production.html>

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