

SPOTLIGHT ON:

# WATER

## Making Every Drop Count



### PRECISION IRRIGATION TECHNOLOGY: EXPLAINED

One tool almond farmers use to ensure they are irrigating just enough to meet the needs of their trees and the developing crop is the pressure chamber. It tells farmers whether there is sufficient water available in the soil or if the tree is stressed.

#### HERE'S HOW IT WORKS:

- 1 A leaf is selected in the lower tree canopy during the middle of the day and placed in a small foil bag.
- 2 Once removed from the tree, the leaf (still inside the bag) is placed into a small, pressurized chamber.
- 3 Similar to measuring blood pressure in humans, the machine exerts pressure on the leaf. When water is forced out of the end of the leaf's stem, a pressure reading is taken.
- 4 The pressure readings correlate with ranges of plant stress that farmers use to determine how "thirsty" their trees are, helping them precisely decide when to irrigate.

## On-Farm Improvements

In 1982, the California almond community began investing in research to determine if a new irrigation method—microirrigation—could work in almond orchards. The results were positive and, by targeting water applications directly to the trees' roots instead of uniformly across the field, farmers conserved water and created other operational efficiencies. As this technology was adopted and other farming practices were improved, farmers reduced the amount of water needed to grow a pound of almonds by 33%.<sup>1</sup>

Today 77% of California almond orchards use microirrigation<sup>2</sup> and, as older orchards are replaced, we expect that number to grow. While almond farmers have made great strides in irrigation efficiency, there's more everyone can do. In addition to funding water research—totaling 221 projects to date—ABC and irrigation experts have developed the Almond Irrigation Improvement Continuum. Supported by dedicated ABC staff, the Continuum outlines a path to improvement for every almond farmer in five key management areas.

The almond community is also working to find solutions for water sustainability in California more broadly. An analysis of soil characteristics found that 675,000 acres of California almond orchards have moderately good or better soil suitability for groundwater recharge.<sup>3</sup> Combined with access to excess stormwater in wet years, these farms would be good sites for replenishing underground aquifers, California's largest water storage system.

### AHEAD OF THE CURVE

Almond farmers are leading adoption of efficient irrigation technology.



**CALIFORNIA ALMOND IRRIGATION METHOD<sup>3</sup>**

- 77% microirrigation
- 10% sprinkler
- 13% flood



**CALIFORNIA STATEWIDE IRRIGATION METHOD<sup>4</sup>**

- 42% microirrigation
- 15% sprinkler
- 43% flood



**Meet Heith Baughman**  
ALMOND FARMER, BAKERSFIELD

"By adopting practices outlined in the Almond Irrigation Improvement Continuum, I'm using 10% less water, my power bill has dropped significantly, and I've addressed disease problems in my orchard. What's more, by fine-tuning my approach, I've increased crop yields significantly, all while becoming a better steward and manager of this important resource."



**REDUCING THE AMOUNT OF WATER NEEDED TO GROW A POUND OF ALMONDS BY 20%**



1. University of California, 2010. Food and Agriculture Organization of the United Nations, 2012. Almond Board of California, 1990-94, 2000  
2. Land IQ. Groundwater Recharge Suitability Analysis. November 2015. 3. California Almond Sustainability Program. August 2019.  
4. California Department of Water Resources. California Water Plan Update 2013: Volume 3, Chapter 2.