

# ALMONDS: GROWING UP SUSTAINABLE

In addition to providing a safe and stable supply of almonds, California's community of more than 6,800 almond growers is committed to using sustainable agricultural practices that respect the environment, are economically viable and protect their local communities.<sup>1</sup>

Almond Board of California (ABC) has been investing in research since its beginning in 1973 and, to continue to help growers navigate complex challenges, ABC now invests more than **\$2 million a year in independent third-party research** into next-generation farming practices. In 2015, **13 water projects** and **nine honey bee health projects** have already been approved for funding along with nearly 40 others.

## DID YOU KNOW?

California produces more than 80% of the world's almond supply and accounts for 99% of the domestic supply.<sup>2</sup>

## WHY?

California is one of the few places on earth with the Mediterranean climate necessary for growing almonds. The climate, coupled with California's rich soils, water availability and infrastructure, innovative technology and research, make it the ideal place to grow a wide variety of fruits, nuts and vegetables. For that reason, the state's Central Valley is the most efficient and productive almond-growing region in the world.



## A TEAM ON A MISSION

When it comes to following sustainable agricultural practices, California Almond growers and handlers together have been **progressive and are continuously challenging themselves to do more**. The California Almond Sustainability Program (CASP) was established in 2009 in part to better understand the ongoing sustainability practices of growers related to water, air quality, energy and land (nutrient management, pest management and bee health) and to provide continuing education on these topics. Furthermore, recently published Life Cycle Assessment (LCA) research demonstrated that almond trees accumulate and store significant amounts of carbon and that the almond industry is making progress toward becoming carbon neutral or even carbon negative, if production improvements and policy changes go hand in hand.

## WATER MATTERS

All food takes water to grow and produce. That's why efficient water use and irrigation management have always been high priorities for California's almond growers. In fact, innovative farming and production developments over the past two decades have helped almond growers **reduce the amount of water they use per pound of almonds grown by 33%**.<sup>3</sup>

How have they done it? Research shows that:

- More than 70% of almond orchards report using **water-saving micro-irrigation** systems, far above the average reported for California irrigation methods.<sup>4,5</sup>
- More than 80% of growers report using **demand-based irrigation** in their orchards, which means they review weather, soil moisture and the trees' needs to determine irrigation strategies, rather than watering on a predetermined schedule.<sup>4</sup>
- In October 2015, Almond Board and the leading environmental organization Sustainable Conservation launched a new partnership focused on leveraging California's almond orchards for groundwater recharge. Harnessing excess seasonal flood water in a way that can recharge groundwater while not hurting crops benefits the greater community by **returning water to underground aquifers**, which are collectively California's largest water storage system.



# DID YOU KNOW:

## ALMONDS AREN'T AN ESPECIALLY "THIRSTY" CROP

Not only are almonds extraordinary as a versatile ingredient, but contrary to what some have said, they don't require more water than other tree crops. In fact, the University of California reports that most California fruit and nut trees use about the same amount of water.<sup>6</sup>

## MINIMAL WASTE

Part of the reason this is true is that almond trees, and the water used to grow them, actually produce multiple products. In addition to the almond kernel itself, there's the almond hull, which is used to feed livestock, reducing the amount of land and water that would otherwise be used to grow other feed crops. Even the shells of almonds are used as livestock bedding and an alternative fuel to produce electricity.

## CARBON FOOTPRINT

The University of California, Davis LCA research not only demonstrates that almond trees are important for storing carbon, but also that the utilization of coproducts such as hulls, shells and the tree's woody biomass is key to reducing carbon emissions and the industry's environmental impact. The reuse of almond trees' coproducts is key to the industry's progress toward becoming carbon neutral or even carbon negative, if production improvements and policy changes go hand in hand.

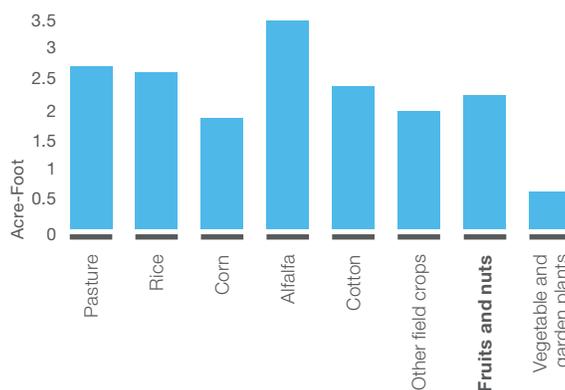
Within the larger context of food, researcher Dr. Alissa Kendall states, "California almonds have a lower carbon footprint than many other nutrient-dense foods."

## FAMILY FARMS

**Over 90%** of California Almond farms are family farms, owned in large part by third- and fourth-generation family farmers.<sup>7</sup> Almond growers recognize the need to carefully manage resources for current and future generations and offer continued work for their employees without negative impacts on their families, neighbors and local communities.



NET WATER USE PER ACRE<sup>8</sup>



### Did you know?

Each fruit of the almond tree has 3 parts, all of which are used.

#### The Shell

Shells are used as an alternate energy source in co-generation plants and as livestock bedding.

#### The Hull

The hull is the dry and fuzzy fruit. Hulls are sold as livestock feed, which reduces the amount of water used to grow other feed crops.

#### The Kernel

is the nutrient-rich almond we eat. Every ounce of almonds—28g or about a handful—contains 6g of energy-packed protein, 4g of hunger-fighting fiber, 13g of "good" unsaturated fat and only 1g of saturated fat.\*



\*Source: Almond Board of California; Learn more at [almonds.com/blog](http://almonds.com/blog)

1. California Almond Sustainability Program definition: Sustainable almond farming utilizes production practices that are economically viable and are based upon scientific research, common sense and a respect for the environment, neighbors and employees. The result is a plentiful, nutritious, safe food product.
2. Almond Board of California and INC (International Nut and Dried Fruit Council), The Cracker 2014.
3. UC Drought Management - Historical Almond ET and Goldhamer, David. 2012. Almond in Group Yield Response to Water. FAO Irrigation and Drainage Paper No. 65, P. Steduto, T.C. Hsiao, E. Fereres, and D. Raes, eds. Food and Agriculture Organization of the United Nations, Rome, Italy, pp. 246-296.
4. California Almond Sustainability Program. Jan. 2014.
5. California Department of Water Resources. California Water Plan Update 2013. Oct. 2014.
6. Larry Schwankl, et al. Understanding Your Orchard's Water Requirements. University of California, Division of Agriculture and Natural Resources. Publication 8212. Feb. 2010
7. 2012 USDA Agricultural Census. <http://www.agcensus.usda.gov/Publications/2012/>.
8. UC Davis Center for Watershed Sciences. California WaterBlog.

For more information about our sustainability efforts, visit [AlmondSustainability.org](http://AlmondSustainability.org)