

# Here's everything you get with a handful of almonds



Almonds offer many benefits – from health and nutrition to contributing to climate solutions, zero waste and a range of regenerative agriculture practices. Almonds fit into simple, sustainable lifestyles as a responsibly grown food and ingredient.

## Getting the most out of every drop

California almonds are a responsibly grown, zero-waste food and a crop whose water is responsibly managed.

- Almond farmers have reduced the amount of water used to grow each pound of almonds by 33% since the 1990s, through the adoption of water saving technology such as drip irrigation.<sup>1</sup>
- In 2018, they set a goal of an additional 20% reduction of water by 2025 and, as of 2022, had already achieved three-quarters of that goal.<sup>2</sup>

### FOUR CROPS FOR EVERY DROP



- Water used to grow almonds actually grows four products: the kernel you eat, which grows in a shell, protected by a hull, on a tree that is typically productive for 20-25 years.

### WITH ALMONDS, NOTHING GOES TO WASTE



The trees store carbon and can be transformed to electricity or ground up to feed the soil at the end of their lives.



The shells become livestock bedding.



And the hulls are nutritious dairy feed, reducing the water needed to grow other feed crops.

Hulls for dairy feed can replace alfalfa hay pound to pound up to 20% in feed formulation. This reduces the acreage needed to grow alfalfa hay by 386,000 acres and saves the equivalent of 440 billion gallons of water.<sup>3</sup> That's equal to:



667,180 Olympic swimming pools<sup>4</sup>



4 million U.S. households' annual water use<sup>5</sup>



Clear Lake's (CA) water volume<sup>6</sup>

## Climate smart farming and biodiversity

Practices like whole orchard recycling, cover crops, and no till farming create regenerative systems and build back biodiversity.

### ALMOND TREES STORE A LOT OF CARBON

Almond trees capture and store carbon dioxide, a greenhouse gas, in the wood and the roots. This storage accumulates as the tree grows, which supports reducing emissions and environmental impact.

When you look at carbon stored in all the almond trees growing in California in 2022 (1.63 million acres), this equates to 30 million metric tons of stored carbon.<sup>7</sup> This is equivalent to the annual emissions of:



24 million cars<sup>8</sup>



3134 Boeing 737s<sup>9</sup>



29 coal-fired power plants<sup>8</sup>

Compared to other fruit and nut trees grown in California, almonds store one of the highest amounts of carbon per acre. An acre of California almond trees captures and stores 18 metric tons of carbon annually<sup>7</sup> – each one equal to removing 15 cars from the road each year.<sup>8</sup>

### ALMONDS HAVE A LOW CARBON FOOTPRINT

Almonds have a lower carbon footprint than many other foods.



Based on the UC Davis LCA, this is where almonds fit versus other foods. Almonds have a carbon footprint of 1.9kgCO<sub>2</sub>e.<sup>10</sup>

### WHOLE ORCHARD RECYCLING



- Almond orchards are a no-till environment for their 20-25-year lifespan.
- At the end of their productive lives, a new practice is for whole almond trees to be ground up and incorporated back into the soil, extending carbon sequestration by storing it in the soil.<sup>11</sup>
- Since this practice was introduced (2017), nearly half of almond growers replanting their orchards have adopted this new practice.<sup>12</sup>

Farms that use whole orchard recycling sequester 2.4 tons of carbon per acre,<sup>11</sup> equivalent to living car-free for a year.<sup>13</sup>

### Whole orchard recycling helps farmers too, increasing<sup>11</sup>:

- Soil organic matter by **42%**
- Water holding capacity by **32%**
- Orchard cumulative yield over 5 years by **19%**

Composting adds carbon back into the soil and over **30%** of orchards have added compost since 2019.<sup>12</sup>

### BUILDING BIODIVERSITY



- Cover crops are important for soil quality, pest management and insect biodiversity. 40% of orchards had cover crops in 2021, almost half a million acres.<sup>12</sup>
- More than 170,000 acres of almond farms are Bee Friendly certified through the Pollinator Partnership. This represents 86% of all Bee-Friendly certified U.S. farms.<sup>14</sup>
- California almond farmers are on track to increase the use of environmentally friendly pest management practices by 25% by 2025.<sup>2</sup>

### Did you know?

California is only **1 of 5** Mediterranean climates on earth, essential to growing almonds.

California's growing environment is one of the most regulated in the world, with strict laws protecting the environment, worker and food safety.

There are 7,600 almond farmers in California: 90% are family farms, and 70% of orchards are 100 acres or less.<sup>15</sup>

## Nutrition and a long shelf life

Ounce for ounce, almonds are the tree nut highest in protein, fiber, calcium, vitamin E, riboflavin, and niacin.<sup>16</sup> Comparing an ounce (28g) of almonds to the same weight of other popular recommended foods reveals where almonds may be a more efficient way to consume certain nutrients.

- To get 6 grams of protein as provided by 1 portion of almonds, you need:
  - 4.8 times as much quinoa
  - 2.3 times as many chickpeas
- To get 50% of the daily value of vitamin E as provided by 1 portion of almonds, you need:
  - 16.9 times as much cooked asparagus
  - 12.5 times as much spinach
- To get 77mg of magnesium as provided by 1 portion of almonds, you need:
  - 3.8 times as much cooked black beans
  - 9 times as much tofu
- To get 13g of good unsaturated fats as provided by 1 portion of almonds, you need:
  - 3.9 times as much avocado
  - 6.3 times as much salmon
- To get 13% of daily fiber as provided by 1 portion of almonds, you need:
  - 5.7 times as many bananas
  - 13.3 times as much raw pineapple

America throws away nearly 60 million tons of food every year – that's almost 40% of the entire U.S. food supply.<sup>17</sup> Almonds are a shelf stable food. Less than 1% of almonds are thrown out in the home and they can last up to two years in your pantry.<sup>18</sup>

California almonds are a low carbon, low waste and water-efficient ingredient that consumers crave and you can feel good about.

<sup>1</sup> University of California, 2010. Food and Agriculture Organization of the United Nations, 2012. Almond Board of California, 1990-94, 2000-14.  
<sup>2</sup> CASP Almond Orchard 2025 Goals MidPoint, SureHarvest, November 2022.  
<sup>3</sup> UC Davis Department of Agricultural and Resource Economics, 2020 Sample Cost Study Alfalfa Hay and Organic Alfalfa Hay  
<sup>4</sup> Phinizy Center for Water Sciences, 2023. An Olympic size swimming pool holds about 660,000 gallons.  
<sup>5</sup> Environmental Protection Agency, How We Use Water, 2023. The average US household uses 109,500 gallons annually.  
<sup>6</sup> Lake Lubbers, 2023. Clear Lake's water volume is 1.16 million acre-feet or 376 billion gallons.  
<sup>7</sup> California Air Resources Board, An Inventory of Ecosystem Carbon in California's Natural & Working Lands, 2018 Edition (Updated 2020), p. 41  
<sup>8</sup> U.S. Environmental Protection Agency, Greenhouse Gas Equivalencies Calculator, July 2023.  
<sup>9</sup> Reuters. Boeing jets emissions data highlights industry's green challenge, April 2021. Assumes industry average 25-year operable lifespan.  
<sup>10</sup> A scalable and spatiotemporally resolved agricultural life cycle assessment of California almonds Elias Marvinney, Alissa Kendall  
<sup>11</sup> Ernad Jahanzad, et al. Orchard recycling improves climate change adaptation and mitigation potential of almond production systems. PLoS ONE, March 2020  
<sup>12</sup> California Almond Stewardship Platform, 2022  
<sup>13</sup> Seth Wynnes, et al. The climate mitigation gap: education and government recommendations miss the most effective individual actions. Environmental Research Letters.  
<sup>14</sup> Pollinator Partnership  
<sup>15</sup> United States Department of Agriculture, 2017 Census of Agriculture.  
<sup>16</sup> U.S. Department of Agriculture, Agricultural Research Service, USDA National Nutrient Database for Standard Reference, Release 28, 2015: <http://www.ars.usda.gov/ba/bhnrc/ndl>.  
<sup>17</sup> USDA Economic Research Service  
<sup>18</sup> United States Department of Agriculture

