

# ALMOND INTELLIGENCE (AI) REPORT:

# ALMONDS AS A SUSTAINABLE SUPERFOOD

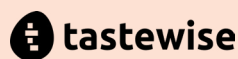
Almonds have earned their superfood status and well-documented healthy halo, with over 200 scientific publications to-date. But as consumers become more attuned to the idea of eating both better for themselves and the planet, almonds can fit into food manufacturers' sustainable sourcing strategies.

Using Tastewise, an AI-powered food trends prediction and intelligence platform, this report examines conversations about food and sustainability while shedding light on the California almond industry's long-term commitment to environmental stewardship.

## What is Tastewise?

Tastewise uses artificial intelligence (AI) to analyze billions of food-related data from its customers, social media, recipes, menus, and more to provide accurate, up-to-date insights in real-time.

The Tastewise insights cited in this report are data from the period spanning February 2023-February 2024.



## SIFTING THROUGH SUSTAINABILITY DISCOURSE ONLINE

"Sustainably Sourced"

**+30%** YOY

"Family Farm"

**+15%** YOY

"Responsibly Produced"

**+15%** YOY

"Food Waste"

**+15%** YOY

Tastewise, Almonds and Sustainability Trend Spotlight Insights. February 2023-February 2024.

Overall, sustainability conversations have increased 11% year over year (YOY), with other terms like "sustainably sourced" growing 30% YOY, and "responsibly produced" growing 15% YOY. Meat and animal-derived foods (fish, beef, chicken, milk) are most often associated with these conversations, but other goods like coffee, chocolate, sugar, berries and tea are emerging in association.<sup>1</sup>

Location-specific highlights like "sustainably sourced Alaskan Cod" are emerging—presenting an opportunity for food or ingredients' origins to be more prominently tied to responsible practices.<sup>1</sup> Over 80% of the world's supply of almonds is grown in California, which is home to some of the country's strictest environmental regulations.<sup>1</sup>

"Family farm" has grown 15% in social discussion YOY,<sup>1</sup> and over 90% of California almond farms are family farms. Additionally, nearly 70% of California almond farms are 100 acres or less, versus the **average U.S. farm size** of 464 acres in 2023.<sup>2</sup>

Social media conversations about food waste have risen 12% YOY,<sup>1</sup> with USDA Economic Research Service reporting that America throws away nearly 60 million tons of food every year.<sup>3</sup> Almonds pose less of a concern for food waste as both a natural and shelf stable food. Less than 1% of almonds are thrown out in the home,<sup>4</sup> and when stored in the recommended conditions, they can last up to two years in the pantry.

## AWARENESS OF REGENERATIVE AGRICULTURE GROWS

"Regenerative Farming" **+18% YOY**  
"Carbon Footprint" **+6% YOY**

"Greenhouse Gas" **+13% YOY**  
"Climate" **+8% YOY**

Tastewise, Almonds and Sustainability Trend Spotlight Insights. February 2023–February 2024.

While the concept of farming to restore and improve soil and ecosystem health has existed for many years, "regenerative farming" has grown 18% in social discussion YOY,<sup>1</sup> and California almond farmers are driving and researching regenerative practices that address important impact areas.

According to Tastewise, conversations about climate-related topics and food have increased at different rates over the past year: greenhouse gas mentions have grown 13% YOY, carbon footprint has grown 6% YOY, and climate has grown 8% YOY. Social conversations raise that those who follow a plant-based diet account for less greenhouse gas emissions than those who eat meat. Menu items that appear in a Tastewise search for claims about reduced greenhouse gas emissions often attribute these improvements to plant-based formulation or improved packaging.<sup>1</sup>

Almonds have a relatively low carbon footprint compared to **other foods** like meat, rice, tofu, milk, oat milk, and tomatoes— they store 18 metric tons of carbon per acre annually.<sup>5</sup> A University of California, Davis lifecycle assessment of California almond production found that almond trees' carbon capture and the use of coproducts offset over 50% of almonds' carbon footprint.<sup>6</sup>

Furthermore, food manufacturers developing plant-based products stand to benefit from almonds' versatility and consumer appeal. Innova Market Insights data shows almonds are the **number one nut of choice** for new product launches with plant-based, vegan and vegetarian claims, and they are a simple and recognizable ingredient on product labels.

## ADDRESSING CALLS FOR RESPONSIBLE WATER MANAGEMENT

"Water Efficient" **+46% YOY**

Tastewise, Almonds and Sustainability Trend Spotlight Insights. February 2023–February 2024.

"Water efficient" has grown 46% in social discussion YOY,<sup>1</sup> but the urgency for water stewardship has been a priority for California almond growers for decades. Research funded by farmers in the 1980s assessed if a then-new irrigation method, microirrigation, could work in almond orchards. By targeting water directly to the trees' roots instead of flooding entire fields, this new approach conserved water and increased yields. Today, over 80% of California almond farms use microirrigation,<sup>7</sup> nearly two times the rate of California farms overall.<sup>8</sup>

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**Farmers have reduced the amount of water needed to grow each almond by 33% since the 1990s, and as of 2022 are three-quarters on their way to their next goal— an additional 20% reduction by 2025.**

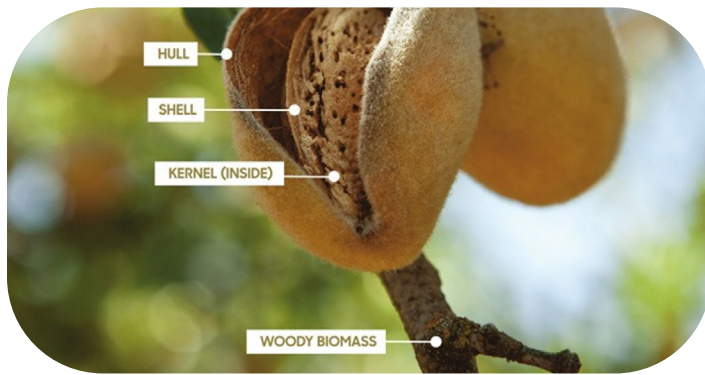
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It's also important to keep in mind that almond trees use around the same amount of water as other California fruit and nut trees. Plants require more energy, and thus more water, to create

protein than sugars. That's why almonds— which provide 6 g of plant-based protein, 4 g of fiber, 13 g of unsaturated fat, seven essential nutrients and only 1 g of saturated fat— have slightly higher irrigation needs than fruits and vegetables.

Another element that sets almonds apart is that the water used to grow them produces four co-products. The kernels (nuts) are enjoyed by consumers worldwide, the shells become livestock bedding, the trees store tons of carbon each year, and the hulls are nutritious dairy feed.

Put into perspective, all of California's almond hulls are used for dairy feed, replacing alfalfa hay pound-to-pound up to 20% in dairy cows' diets. This reduces the acreage needed to grow alfalfa hay by 386,000 acres,<sup>9</sup> saving the equivalent of 440 billion gallons of water. That's equal to the annual water use of 4 million U.S. households.<sup>10</sup>



## SUPPORTING HEALTHY SOIL AND POLLINATORS

"Soil Quality"  
**+30% YOY**

"Biodiversity"  
**+13% YOY**

"Bee Friendly"  
**+16% YOY**

Conversations about soil quality have grown by 30% YOY.<sup>1</sup> Almond orchards are a no-till environment for their 25-year lifespan, and over 30% of farms add compost to their soils<sup>11</sup> to improve its health and sequester carbon. Recycling orchards at the end of their life is another key regenerative farming practice that research has shown improves soil carbon by 58%, soil nitrogen by 17%, organic matter by 42%, soil aggregation by 19%, and water holding capacity by 32%. What's more, it improves 5-year cumulative yield by 19%.<sup>12</sup>

Bee Friendly has grown 16% in social discussion YOY, and biodiversity has grown 13% YOY.<sup>1</sup> Unsurprisingly, honey and bee pollen are the top-ranked foods in relation to bee-friendly social media discussions. But between February and March, California almond orchards are honeybees' first natural food source of the year, which puts the onus on farmers to ensure that their orchards are safe for bees. Almond pollen has nutritional value for honeybees: it contains all 10 amino acids their diets require,<sup>13</sup> and the nectar contains a naturally occurring compound, amygdalin, which reduces the viruses and gut parasites that attack bees.<sup>14</sup>

However, farmers keep close relationships with their beekeepers and have implemented additional practices that support both honeybee and native pollinator health. Through Pollinator Partnership's Bee Friendly Farming program, more than 170,000 acres of almonds are recognized as bee-friendly for providing diverse forage and habitat for pollinators. Almonds represent 86% of all bee-friendly certified U.S. farms.<sup>15</sup>

This report illuminates the intersection between consumer demand for sustainable practices and the California almond industry's continuous farming improvements. As consumers prioritize personal and planetary health, almonds can be a versatile and sustainable ingredient choice for food manufacturers.

Tastewise, Almonds and Sustainability Trend Spotlight Insights. February 2023-February 2024.

<sup>1</sup> Tastewise, Almonds and Sustainability Trend Spotlight Insights. February 2023-February 2024.

<sup>2</sup> USDA, Economic Research Service using data from USDA, National Agricultural Statistics Service, Census of Agriculture (through 2022) and Farms and Land in Farms: 2023 Summary (February 2024.)

<sup>3</sup> United States Department of Agriculture Economic Research Service.

<sup>4</sup> United States Department of Agriculture.

<sup>5</sup> California Air Resources Board. An Inventory of Ecosystem Carbon in California's Natural & Working Lands. 2020.

<sup>6</sup> Alissa Kendall, et al. Life Cycle-Based Assessment of Energy Use and Greenhouse Gas Emissions in Almond Production. Part 1: Analytical Framework and Baseline Results. Journal of Industrial Ecology. 2015

<sup>7</sup> California Almond Stewardship Platform. November 2023

<sup>8</sup> California Department of Water Resources. Agricultural Water Use Efficiency: A Resource Management Strategy of the California Water Plan. July 2016.

<sup>9</sup> UC Davis, Department of Agricultural and Resource Economics. Sample Cost Study Alfalfa Hay and Organic Alfalfa Hay, 2020.

<sup>10</sup> United States Environmental Protection Agency. How We Use Water, 2023. The average US household uses 109,500 gallons annually.

<sup>11</sup> California Almond Stewardship Platform. November 2023.

<sup>12</sup> Emad Jahanzad, et al. Orchard recycling improves climate change adaptation and mitigation potential of almond production systems. PLoS ONE. March 2020

<sup>13</sup> Ramesh Sagili, Oregon State University, Department of Horticulture.

<sup>14</sup> JP Tauber, et al. Colony-level effects of amygdalin on honeybees and their microbes. Insects. 2020.

<sup>15</sup> Pollinator Partnership. January 2023.