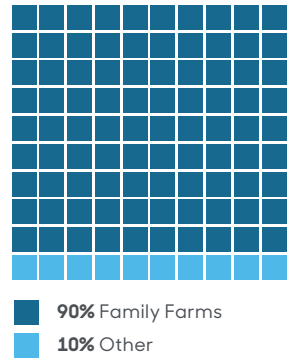


ABOUT OUR COMMUNITY

FARMING ALMONDS

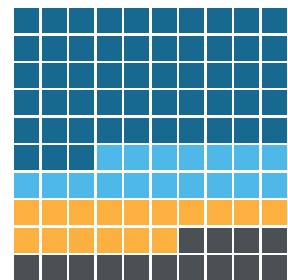
The California almond growing community is driven by family farmers.

California is home to 7,600 almond farms, and 90% of those farms are family farms. Many of them are owned and operated by third- and fourth-generation farmers who live on their land and plan to pass it on to their children and grandchildren.



Nearly 70% of California almond farms are 100 acres or less.

Small or large, California's almond farmers take a long-term view of success based on respect for the land and local communities. Regardless of size, all almond farmers recognize that growth must be matched by an unprecedented commitment to environmental responsibility.



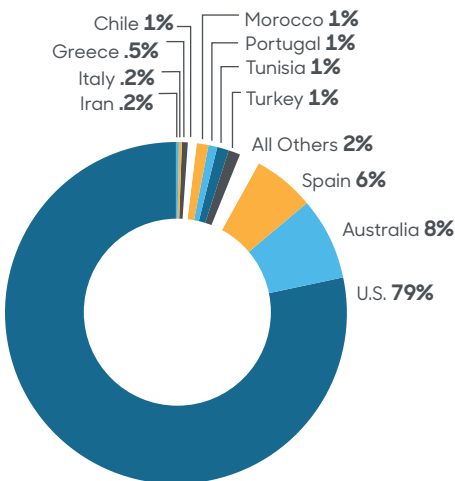
Source: USDA 2017 Census of Agriculture.

CALIFORNIA GROWS NEARLY 80% OF THE WORLD'S ALMONDS

With its Mediterranean climate, California is one of the five places on earth where almonds can grow. And thanks to top agricultural universities and research partners, water infrastructure and great soils, it is the most productive almond-growing region in the world.

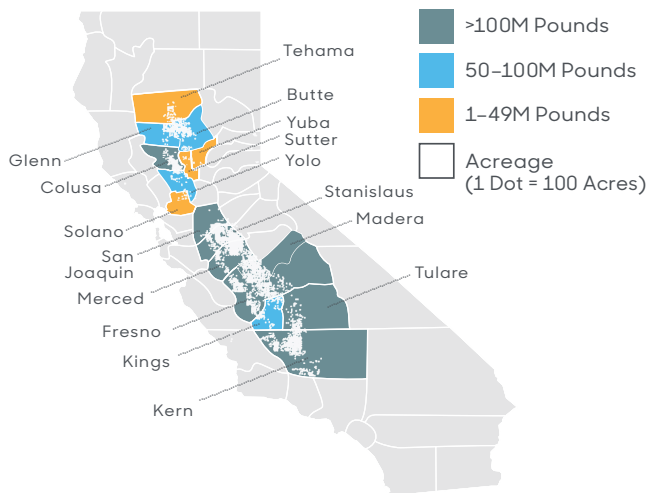
WORLD ALMOND PRODUCTION

CROP YEAR 2021/22*



CALIFORNIA ALMOND PRODUCTION

PRODUCTION BY COUNTY | CROP YEAR 2021/22



Source: Almond Board of California, Almond Board of Australia and International Nut and Dried Fruit Council. *Totals may not add precisely due to rounding.

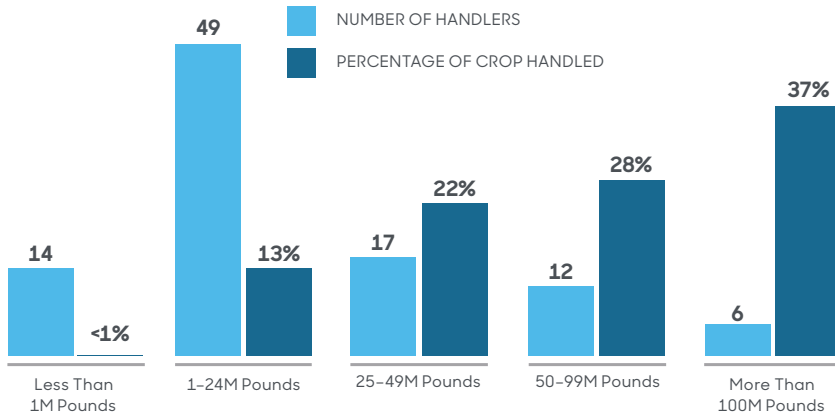


PROCESSING ALMONDS

98 almond handlers process California almonds. Many of these operations are also family-owned.

DISTRIBUTION OF CROP BY HANDLER SIZE

CROP YEAR 2021/22



#1 DESTINATION FOR CALIFORNIA ALMONDS

At 29% share of shipments, the U.S. remained the #1 global destination for California almonds in 2021/22.

EXPORT SHIPMENTS

- In 2021/22, 11.869 billion pounds (or 71%) of California almonds were exported resulting in the second largest export shipments on record.
- India is the #1 export destination for California almonds importing over 350 million pounds.



CASP



A NEW NAME, A NEW LOGO

The nine-module grower self-assessment tool underwent a major overhaul this year, streamlined to improve the user experience and to reflect industry needs. With the improvements came a new name and logo to reflect the changes. The “California Almond Stewardship Platform”—still CASP—is intended to clarify that CASP is not a sustainability certification program for California almonds. Rather, it is a platform that integrates research, education, self-assessments and tools. Individual growers can use the self-assessment to compare their practices to state averages and identify changes they may wish to consider in their own operations. The Almond Board also uses the aggregate data to quantify industry-wide farming practices and to share that story with consumers. Individual grower data remains anonymous and is only accessible to the grower and SureHarvest, a third-party organization that manages and protects the data.

SELF-ASSESSMENTS STREAMLINED TO IMPROVE USER EXPERIENCE

Based on feedback from growers and handlers, the CASP self-assessment modules were reviewed and streamlined to eliminate duplicative questions. In addition, technological adaptations will improve the user experience by reducing the amount of time it takes to complete the program. Changes were also made to reflect how farming practices have evolved in the 13 years since the self-assessment modules were launched (2009). Careful consideration was given to every question retained or eliminated to ensure the quality of the data was maintained. The biggest difference for the user is reduced time to complete the self-assessment.

AGGREGATED ASSESSMENTS DOCUMENT GOALS PROGRESS

In addition to allowing growers to compare their farm practices against industry averages, the aggregated data provides a big-picture look at industry progress in areas such as water use efficiency, adoption of integrated pest management tools, reducing dust during harvest and reducing waste by putting everything grown in the orchard to good use. The aggregated data demonstrates the industry’s progress against the Almond Orchard 2025 Goals. The 2025 Goals (see page 7) were announced in 2018 to help the industry tell the story of how almond farming practices are part of the solution to challenges facing agriculture and food production.

2025 GOALS



Established in 2018, the Almond Orchard 2025 Goals are a tangible example of the California almond community's commitment to continuous improvement. Built on a foundation of past successes, the goals help focus our research and outreach priorities in key areas—water, pest management, zero waste and dust—and provide a roadmap leading toward the industry's future. They also are a way to demonstrate to regulatory officials, food manufacturers and the public how almonds are grown responsibly.

MIDWAY THROUGH THE JOURNEY TO 2025, THERE ARE MANY TANGIBLE SIGNS OF GROWER ACTIONS UP AND DOWN CALIFORNIA'S CENTRAL VALLEY. HERE ARE A FEW EXAMPLES:



FURTHER REDUCING THE WATER USED TO GROW ALMONDS

SIGN OF PROGRESS: MANAGING WITH LESS

Improvements in efficiency of water use resulted in the industry achieving a 15% improvement from the baseline—reaching 75% of the goal (20% improvement by 2025) midway through the seven-year journey. The multi-year drought in the West has accelerated industry efforts to grow each pound of almonds with less water, including funding a major multi-year research project using remote sensing technology to better define how much water almond trees need to reach the next level of water use efficiency.



ACHIEVING ZERO WASTE IN OUR ORCHARDS

SIGN OF PROGRESS: HULL FOOD INGREDIENT IDEATION

The almond hull is like the part of a peach or apricot that we eat. Working with Mattson, North America's most successful independent developer of new foods and beverages for the retail and restaurant industries, the Almond Board is developing new food product prototypes using ground almond hulls as an ingredient in protein bars and other novel food items. The addition of almond hulls more than doubles the fiber content and cuts the total carbohydrates in half compared to popular protein bars.



INCREASING ADOPTION OF ENVIRONMENTALLY FRIENDLY PEST MANAGEMENT TOOLS

SIGN OF PROGRESS: LEAFFOOTED BUG MATING DISRUPTION

With the rise of leaffooted bug damage showing up in almond kernels at the handler, the bottom line of growers is at stake. Research funded by the Almond Board of California and conducted at UC Riverside is expanding environmentally friendly integrated pest management tools for combating the pest, including the development of a pheromone for traps and mating disruption.



IMPROVING LOCAL AIR QUALITY DURING ALMOND HARVEST

SIGN OF PROGRESS: LOW-DUST EQUIPMENT INCENTIVES

Equipment manufacturers have developed new low-dust harvesting equipment but new equipment can be cost prohibitive for farmers, especially small family operations. Partnering with allied organizations, the Almond Board funded necessary research and helped secure federal and state incentives to defray these costs. According to the San Joaquin Air Pollution Control District, their Low Dust Harvester program has co-funded replacement of 182 units at a cost of nearly \$15 million, reducing 1,299 tons of fugitive PM2.5 to date.

For more information on the Almond Orchard 2025 Goals, visit Almonds.com/Goals

INNOVATION THROUGH RESEARCH

Rooted in research and founded in fact, the Almond Board of California supports the almond community by investing in independent scientific research.

Since 1973, the Almond Board of California’s research-focused committees have guided the investment of \$109 million, working with leading universities and experts to uncover the positive impacts of almonds on human health, improve food safety and yields and optimize farming practices.

Together these programs help California almond farmers and processors provide almond lovers around the world with a safe, wholesome and sustainable product.

STRATEGIC AG INNOVATION COMMITTEE

FOUNDED: 1973

Research delivering new tools and management practices to growers, supporting our sustainability journey and informing regulations

For more about farming innovation and sustainability, see pages 10-13.

NUTRITION RESEARCH COMMITTEE

FOUNDED: 1995

Expanding our understanding of the health benefit portfolio of almonds in support of growing global demand

For more about almonds’ impact on human health, see pages 14-15.

ALMOND QUALITY, FOOD SAFETY + SERVICES COMMITTEE

FOUNDED: 2001

Ensuring we produce a safe, high-quality food, continuing almonds’ legacy as the gold standard among food products

For more on almond quality and safety, see page 16.

ORCHARD OF THE FUTURE

California’s almond farmers are committed to responsible stewardship of the land for the benefit of our families, communities and everyone who loves to eat almonds. We have supported that commitment with nearly 50 years of investment in research to improve farming practices, reduce environmental impacts and increase profitability.

A STRATEGIC APPROACH

The Almond Board of California-funded production and environmental research is directed by the industry, for the industry. Guiding that investment are three distinct workgroups—Production Stewardship, Pollination and Biomass—each composed of growers, processors and allied industry stakeholders. Based on research priorities set by the Strategic Ag Innovation Committee (SAIC), the workgroups review research proposals, track progress and set long-term research strategies.

In partnership with the Almond Board of California’s Research and Innovation staff, these groups oversee research across seven core topic areas—each integral to high-yield almond production and on-farm sustainability.



PRECISION IRRIGATION

Building and vetting cutting-edge tools to improve almond irrigation for most efficient use of water across all of California’s orchards.



BEE HEALTH + POLLINATORS

Supporting pollinator health year-round and informing bloom-specific practices for optimal yields.



SOIL HEALTH + NUTRIENT MANAGEMENT

Improving soil quality through cover crops and organic inputs and increasing fertilizer precision for improved orchard health.



BIOMASS + COPRODUCTS

Developing new, value-added uses for almond hulls, shells and woody biomass and bringing them from the lab to reality.



VARIETIES + ROOTSTOCKS

Developing and evaluating almond rootstocks and varieties via traditional breeding for key attributes like drought tolerance and pest resistance.



INTEGRATED PEST MANAGEMENT

Considering pest biology to develop new approaches to control insects, disease, weeds and more.



HARVEST

Re-envisioning almond harvest to reduce dust and improve efficiency.

[Almonds.com/ResearchDatabase](https://www.almonds.com/researchdatabase)

Find reports and updates from all the Almond Board of California-funded research.

WATER WISE



BY 2025, THE ALMOND COMMUNITY COMMITS TO **REDUCE THE AMOUNT OF WATER USED TO GROW A POUND OF ALMONDS BY AN ADDITIONAL 20%.**

With its Mediterranean climate, California is one of the five places on earth where almonds can grow—a key reason why farmers are committed to using water in the most responsible way possible. It’s also why 83% of almond orchards use efficient microirrigation¹; a driving force behind the 33% reduction in the amount of water needed to grow each pound of almonds between the 1990s and 2010s². But we know there is still more to be done, and that’s why we’re doing it—rooted in research that drives further water conservation in almonds and across all of agriculture.



PRECISION IRRIGATION

Farmers use data and modeling to help them decide how much and when to irrigate their trees, and the Almond Board of California is funding research to increase the precision of that information. From validating private-sector technology to developing new approaches, options like remote sensing and tree sensors will help farmers conserve water while still supporting tree health and optimal crop yields. Researchers are also creating and validating tools that assess variability within individual orchards, accounting for things like soil, tree varieties, plant health and average yields. With this, farmers and irrigation companies will be able to design irrigation systems that can meet hyper-local needs and save water.



REGENERATING SOILS FOR WATER CONSERVATION

Improving soil health is an important agricultural practice for several reasons—water conservation included. In almond production, farmers can add organic matter to the soil by planting cover crops between the tree rows or, when replanting an orchard, recycling the old tree material back into the soil. In addition to benefits like carbon sequestration and improved yields, adding organic matter helps the soil hold water molecules higher in the soil profile, in line with almond trees’ root zones. Research is exploring precisely how these practices can decrease irrigation frequency in almond production.

1. California Almond Stewardship Platform. Nov. 2022. 2. University of California, 2010. Food and Agriculture Organization of the United Nations, 2012. Almond Board of California, 1990-94, 2000-14.

CIRCULAR ECONOMY



BY 2025, THE ALMOND COMMUNITY COMMITS TO **ACHIEVE ZERO WASTE IN OUR ORCHARDS** BY PUTTING EVERYTHING WE GROW TO OPTIMAL USE.

Almonds grow in a shell, protected by a hull, on a tree. Traditionally, these have been used for livestock bedding, dairy feed and electricity generation, but the almond community is spurring innovation for higher value and even more sustainable uses. We've funded research in areas like recycled plastics, biofuels and regenerative agriculture, and are assessing the value proposition of possible new product streams for almond hulls and shells. This market development approach includes funding projects to spur development of these market opportunities, expanding from laboratory to actual market viability.



HULLS AS A FOOD INGREDIENT

Working with renowned Bay Area food technology company Mattson, the Almond Board of California is exploring the use of almond hulls as a food ingredient. With nutritional value in the form of fiber, vitamins and minerals, together with a unique flavor profile—mildly bitter with desirable fruity and vanilla notes—promising uses include bakery products, coffee and nutritional bars made with almond hulls. In this multifunctional assessment, Mattson conceived six unique ideas for almond hulls as a food ingredient and prepared proof of concepts for the most promising options. Finding more diverse uses for almond coproducts will also add more value back to the industry financially and reduce our carbon footprint.



WHOLE ORCHARD RECYCLING

Like forests, almond orchards capture and store carbon dioxide over their 25-year lifespans in a process known as sequestration. At the end of their productive lives, whole almond trees are ground up and incorporated back into the soil, a climate-smart approach that improves soil health, water efficiency and yields in subsequent orchards. Farms that use this practice capture and store 2.4 tons of carbon per acre,¹ each one equivalent to living car-free for a year.²

1. Erhad Jahanzad, et al. Orchard recycling improves climate change adaptation and mitigation potential of almond production systems. PLoS ONE. March 2020. 2. Seth Wynnes, et al. The climate mitigation gap: education and government recommendations miss the most effective individual actions. Environmental Research Letters. 2017.

POLLINATION PARTNERS

Bees and almonds: a partnership designed by nature. When almond trees bloom, bees get their first nutritious food source¹ of the year as they pollinate our orchards, consistently leaving stronger than when they arrive.² While bees are only with us for two months of the year, we work to support their health all year long because what's healthy for bees supports healthy, high-yielding almond farms.



FARMER BEST PRACTICES

Developed in collaboration with partners beyond our industry and widely adopted by almond farmers, the Almond Board of California's Honey Bee Best Management Practices serve as a guide for almonds and other crops for protecting bee health on-farm. Many almond farmers are taking their bee-friendly practices a step further by planting blooming cover crops and hedgerows, guided by the Almond Board of California's Cover Crop Best Management Practices, adding supplemental nutrition and habitat on-farm for all pollinators.



RESEARCH FOR HEALTHIER BEES

The Almond Board of California has led bee health research efforts since 1995, helping farmers provide safe habitats for bees before, during and after almond pollination. We also work with experts to collaboratively solve the complex set of challenges bees face: varroa mites, other pests and diseases, lack of floral resources, limited genetic diversity and pesticide exposure. These efforts have led to a new management approach for varroa mites, a deadly pest for bees. By storing hives indoors at precise temperatures, beekeepers can break the pest's reproductive cycle, stopping infestations more effectively than traditional miticide treatments, saving beekeepers time and money.

BEYOND BEES: SUPPORTING NATIVE POLLINATORS

By planting blooming cover crops and hedgerows in or near their orchards, almond growers can provide supplemental nutrition and habitat for all pollinators. These are three popular programs farmers use:

166,000 ACRES OF ALMOND ORCHARDS CERTIFIED AS BEE FRIENDLY³



99,000 ACRES OF ALMOND ORCHARDS PLANTED WITH POLLINATOR HABITAT SINCE 2013⁴



20 ALMOND FARMS ENROLLED IN SEED PROGRAMS SUPPORTING MONARCH BUTTERFLY HABITAT⁵



1. Ramesh Sagili. Department of Horticulture, Oregon State University. 2. Ellen Topitzhofer, et al. Assessment of Pollen Diversity Available to Honey Bees in Major Cropping Systems During Pollination in the Western United States. Journal of Economic Entomology. 2019. 3. Pollinator Partnership. October 2022. 4. Project Apis m. October 2022. 5. Monarch Joint Venture. October 2022.



BUILDING TRUST

People love almonds for their nutrition and versatility. Building upon that "health halo," the Almond Board of California's Sustainability Communications program works to build trust in California almonds by highlighting the farmers who grow them and the responsible practices used in their production.

This program uses a mix of advertising, public relations and partnerships, and supports the Almond Board of California's global marketing regions when issues arise.

MEDIA PARTNERS

In 2022 the Almond Board of California collaborated with the *New York Times*, *Men's Health UK* and *Women's Health UK* to produce articles, videos and custom illustrations highlighting the almond community's responsible growing practices.

