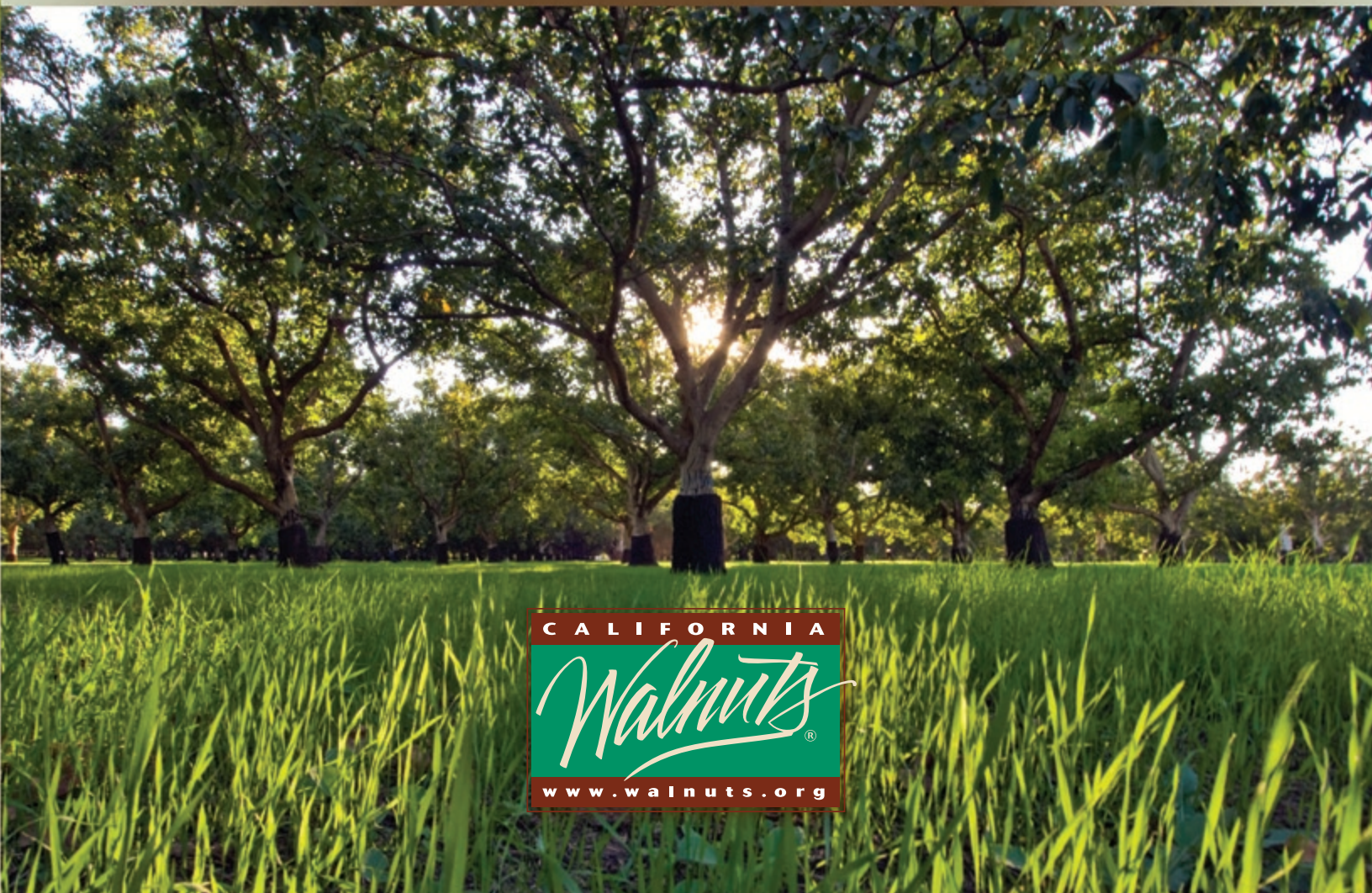


California Walnuts



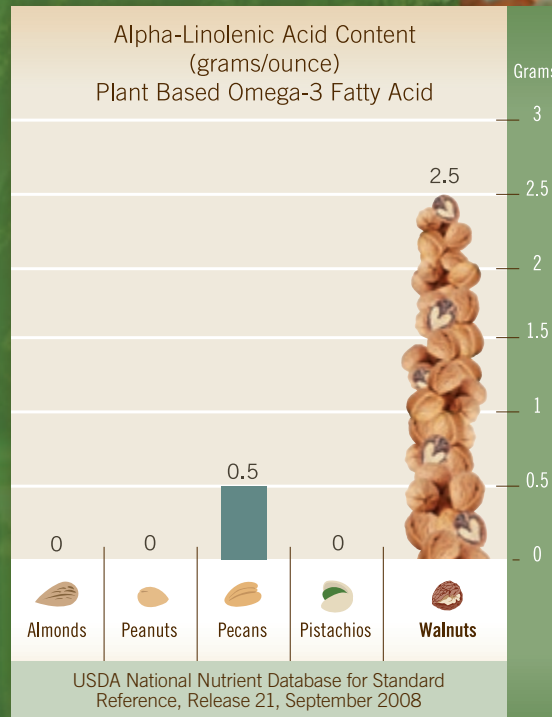
INDUSTRY OVERVIEW



CALIFORNIA WALNUTS AND HEALTH

Walnuts are one of the few whole foods that contribute many beneficial nutrients to the diet. For example, walnuts are a source of good polyunsaturated fat (PUFA) which includes essential alpha-linolenic acid (ALA), the plant form of omega-3 fatty acid. One serving of walnuts contains 18 grams of total fat, of which 13 grams are PUFA and 2.5 grams are ALA.

To date, clinical research has been conducted in the areas of: heart health, diabetes, cognitive function, cancer and bone health. More information on these studies can be found at www.walnuts.org.



Walnuts and Antioxidants

According to evidence-based review, antioxidants help to protect from certain chronic diseases of aging, including cardiovascular, neurological and anticarcinogenic ailments due to their ability to control free radicals—known to negatively influence healthy aging.³

Walnuts contain several antioxidants including selenium (1.4 mcg per ounce), melatonin, gamma-tocopherol (a form of vitamin E) and several polyphenols. In a 2006 study, 1113 different foods were tested and walnuts ranked second only to blackberries in terms of antioxidant content.⁴

Another study examining the levels of antioxidants in various foods, reported at least 10 different antioxidants present in walnuts (802 mg GAE of total phenols per ounce). According to the study, a handful of walnuts has significantly more phenolics (antioxidants) than a glass of apple juice (117 mg), a milk chocolate bar (205 mg), or a glass of red wine (372 mg).⁵

Beneficial Nutrients

In addition to antioxidants and essential ALA/omega-3 fatty acids, an ounce of walnuts provides 2 grams of protein and 8% of the recommended daily intake of fiber. Walnuts are also a good source of magnesium (44.79 mg/oz) and phosphorus (98.09 mg/oz).

Walnuts and Heart Health

Eating a handful of walnuts tastes great, and is a heart-healthy addition to your diet. For over a decade, researchers have shown diverse benefits of this whole food through many clinical studies. Due to the strength of evidence supporting cardiovascular health, the U.S. Food and Drug Administration approved the first ever qualified health claim for a whole food in March of 2004: "Supportive but not conclusive research shows that eating 1.5 ounces of walnuts per day, as part of a low saturated fat and low cholesterol diet, and not resulting in increased caloric intake may reduce the risk of coronary heart disease."

Chronic internal inflammation is a key component in heart disease. Pennsylvania State University research published in the *Journal of Nutrition*¹ showed that subjects who ate a diet that included walnuts, walnut oil and flaxseed oil daily reduced C-reactive Protein (CRP) and harmful plaque adhesion molecules, two

significant markers of inflammation in arteries. Subjects also exhibited decreased lipid and lipoprotein levels and vascular anti-inflammatory effects.

Walnuts and Diabetes

Walnuts can be a nutritious choice for people with diabetes. A study published in 2004 reported the effect of a moderate-fat diet, inclusive of walnuts, on blood lipid profiles in patients with type-2 diabetes. This study included 58 men and women, comparing three groups: 1) low fat, 2) modified low fat, and 3) modified low fat, inclusive of 30g of walnuts (8–10 nuts) per day. The walnut group achieved a 10% reduction in LDL cholesterol and a greater increase in HDL (good) cholesterol levels than the other two treatment groups. The researchers concluded that adding walnuts improved the blood lipid levels of the patients with type-2 diabetes and increased important polyunsaturated fat in the diet.²

¹ J Nutr. 2004 Nov;134(11):2991-7.

² Including Walnuts in a Low-Fat/Modified-Fat Diet Improves HDL Cholesterol-to-Total Cholesterol Ratios in Patients With Type 2 Diabetes. *Diabetes Care*. 2004 Dec;27(12):2777-83.

³ Functional foods, herbs and nutraceuticals: towards biochemical mechanisms of healthy aging. *Biogerontology*. 2004;5(5):275–89.

⁴ Content of Redox-active Compounds (ie, antioxidants) in Foods Consumed in the United States. *Am J Clin Nutr*. 2006 Jul;84(1):95–135.

⁵ Walnut Polyphenolics Inhibit J Nutr. 2001 Nov;131(11):2837-42.

GROWING AND PROCESSING

Each step in the process from propagation, to harvest, to packer, and finally to market is handled with care and attention.

Walnut production takes commitment and patience, and orchards are dedicated only to walnut production. After a walnut sapling is planted, it takes five to seven years for it to grow into an adult tree suitable for harvesting. Although many varieties of walnuts are grown in California, six account for over 75 percent of total production: Hartley, Chandler, Serr, Vina, Franquette and Howard.

Harvesting begins in late August when the drying green hulls start to split allowing the inshell walnuts to be removed and continues until late November. First the orchard floor is swept clean. Mechanical shakers vigorously shake each tree and thousands of walnuts fall to the ground. The walnuts are carefully swept into windrows to allow mechanical harvesters to pick them up for cleaning.



California Walnuts Meet Strict Quality Control Standards

California walnuts are produced under stringent quality controls that exceed California inspection standards, reputed to be the world's toughest. Handlers also meet individual customers' standards and specifications. Many cutting-edge technologies are harnessed during the process in a sustained effort to bring consumers walnuts of uncompromising quality.

The walnuts are grown and processed under the strict regulation of the California Walnut Board, USDA/DFA and the US Food and Drug Administration (FDA). A food safety control program and quality control regime (HAACP) is in place that meets the standards imposed by all regulatory authorities.

Packaging

California walnuts are produced in a wide variety of sizes, color grades and combinations of sizes and colors to meet the specifications of any industrial formulation. Commercial product meets the same high standards of quality as those sold directly to the consumer. As a general rule, pieces and halves are available in 25 lb. (11.25 kg) corrugated boxes with or without polylined bags. Smaller kernel sizes are usually available in 30 lb. (13.25 kg) boxes. Suppliers also ship in 1,000–2,000 lb. (907–1814 kg) containers, #10 tins, and other industrial sizes.

Storage

Store walnuts in low moisture, (55 to 65 percent relative humidity), and low temperature 32–38 degrees F (0–3.3 degrees C) conditions. To ensure maximum shelf life and freshness, keep walnuts in an odor-free environment. Walnuts keep well in refrigerated conditions away from excessive heat, moisture and light.

Processing

The outer green husk is removed by a huller and the nut is mechanically dehydrated (air dried) to optimum 8.0 percent moisture level. This prevents deterioration of the nut and protects its quality during storage. Walnuts are stored until needed for cracking. California walnuts are protected from contamination because of the nut's double envelope of hull and shell while on the tree.

Walnut Packing

Walnuts are transported to a packing plant where they are graded into two distinctive markets, inshell and shelled.

Inshell Walnuts

Following drying, sizing of the inshell nut occurs. Inshell walnuts are sized as jumbo, large, medium, or baby according to USDA standards.

Shelled Walnuts

Walnuts for both consumer and industrial use are removed from storage as needed and sent to the shelling department where they are mechanically cracked. The shelled material is screened. Kernels are screened into a series of sizes, air-separated from shells, and moved to electronic color graders and shell sorters. Finally they are hand-sorted by trained sorters and certified by for quality and USDA Standards and then are ready for packing.

Once shelled, walnut kernels are physically inspected to ensure an end-product that is clean, well-dried, and of specified color, as determined in comparison to the official walnut color chart. Tolerances for total and special defects are specified for each grade. Laboratory tests, both chemical and microbiological are conducted to meet strict regulatory agency requirements.

WALNUT HISTORY: THE ROYAL NUT

Walnuts are the oldest tree food known to man, dating back to 7000 B.C. The Romans called walnuts *Juglans regia*, "Jupiter's royal acorn."

Early history indicates that walnuts came from ancient Persia, where they were reserved for royalty. Thus, the walnut is often known as the "Persian Walnut." Walnuts were traded along the Silk Road route between Asia and the Middle East. Caravans carried walnuts to far off lands and eventually through sea trade, the popularity of the walnut spread around the world. English merchant marines transported the product for trade to ports around the world and they became known as "English Walnuts." England, in fact, never grew walnuts commercially.

The outer shell provided a natural protective layer helping to maintain the quality of the nut. Today the nut trade continues to be a well-established, ordered, and structured business, and the California walnut is well known as the top quality walnut for the world.

California Origins

The walnut was first cultivated in California by the Franciscan Fathers in the 1700s. The earliest walnuts to enter California were known as "mission" walnuts. Unlike today's walnuts, these first entries were small with hard shells.

The trees flourished in the Mediterranean-like climate zones of California, and by the 1870s modern walnut production had begun with orchard plantings in southern California, near Santa Barbara. In the next

70 years the center of California's walnut production shifted with successful plantings in the central and northern parts of the state. Many of today's improved cultivars are descendants of early plantings.

California Walnut Industry

The first commercial plantings began in 1867 when Joseph Sexton, an orchardist and nurseryman in the Santa Barbara County town of Goleta, planted English walnuts.

For several years, walnuts were predominantly planted in the southern areas of California, accounting for 65% of all bearing acreage.

Some 70 years after Sexton's first planting, the center of California walnut production moved northward to the Central Valley area in one of the most dramatic horticultural moves in history. Better growing areas, improved irrigation, and better pest control methods in the north resulted in greater yields, which gradually increased each year.

Today, the Central Valley of California is the state's prime walnut growing region. Its mild climate and deep fertile soils provide ideal growing conditions for the California walnut.

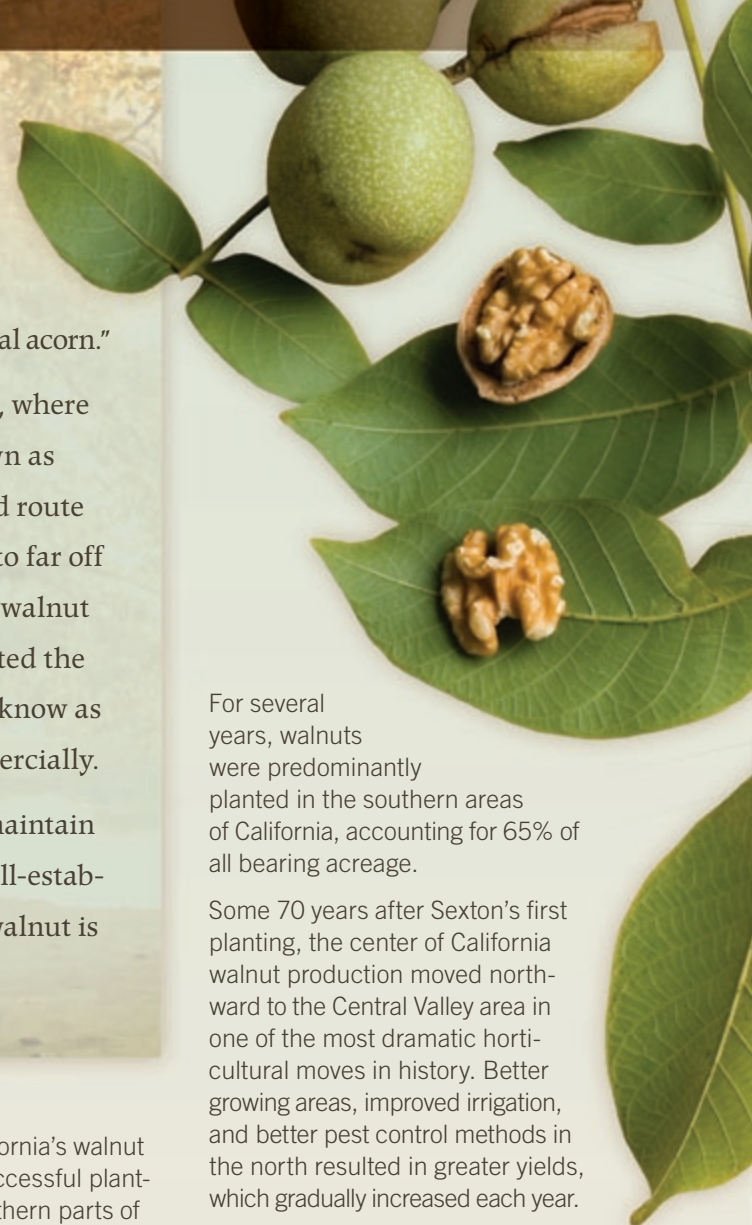
California walnuts account for 99 percent of the commercial US supply and two-thirds of world trade.

Non-Discrimination Statement

In accordance with USDA, the California Walnut Board and California Walnut Commission prohibit discrimination in all programs and activities on the basis of race, color, national origin, age, disability, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program.

To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). California Walnut Board and California Walnut Commission are equal opportunity employers and providers.

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