California Nut Crop Expansion

Food & Water Watch July 2022

The Climate Crisis

- Warmer temperatures mean crops require more water to make up for the additional water lost via evapotranspiration.[1]
- The Public Policy Institute of California estimated that crop water demands increased by 8 percent in 2021 – in response to average temperatures that year being nearly 3.5 degrees Fahrenheit above the average annual temperature during the 20th century.[2]
- Because surface water is drying up during the drought, state and federal water projects are delivering less and less water to farmers. Insufficient surface water, lack of groundwater regulations and advancing technology have led large agribusinesses to pump groundwater at an alarming rate for years.[3]
- Groundwater accounts for 30 percent of water used by California agriculture in wet years, and a staggering 80 percent of water in dry years.[4]

Almond and Pistachio Acreage Trends

- An estimated 1,640,000 acres were dedicated to almonds in 2021 in California according to the USDA (1,320,000 acres producing almonds, and 320,000 not yet bearing acres).[5]
- Despite dwindling water supplies and years of intense droughts,[6] thirsty almond acreage in California has increased steadily since the 1990s.
    - Undeterred by the significant 2012-2016 drought, almond acreage exploded by nearly 78 percent from 2010 to 2022.[7]
- According to 2021 USDA Census data, 409,000 acres were pistachio bearing acres – a 64 percent increase in bearing acres compared to 2017.[8]
- Total almond and pistachio bearing and non-bearing acres in 2021 amounted to more than 2,700 square miles.[9]
- Almond and pistachio orchards are permanent and need to be watered year-round, which is becoming increasingly difficult with limited water resources.[10]

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[1] Cook, Benjamin I. et al. "Unprecedented 21st century drought risk in the American Southwest and Central Plains." *Science Advances*. Vol. 1. No. 1. February 2015 at 2 and 3.
[2] Escriva-Bou, Alvar et al. Public Policy Institute of California. [Policy Brief]. "Drought and California's Agriculture." April 2022 at 1.
[3] Stokstad, Eric. "Droughts exposed California's thirst for groundwater. Now, the state hopes to refill its aquifers." *Science*. April 16, 2020; Cagle, Susie. "Everything you need to know about California's historic water law." *Guardian*. February 27, 2020.
[4] Bernacchi, Leigh A. et al. "A glass half empty: Limited voices, limited groundwater security for California." *Science of the Total Environment*. Vol. 738. May 2020 at 2.
[5] United States Agricultural Department (USDA). National Agricultural Statistics Service (NASS). "2021 California Almond Acreage Report." April 28, 2022 at 1.
[6] Chea, Terence. "California drought takes toll on world's top almond producer." *Associated Press*. August 17, 2021.
[7] USDA. NASS. "2021 California Almond Acreage Report." April 28, 2022 at 8.
[8] FWW analysis of USDA. NASS. Quick Stats. Accessed May 2022.
[9] *Ibid*.
[10] *Ibid*.

- Small farmers who do not have senior water rights or the capital to drill deeper wells to pump large amounts of groundwater must make difficult decisions with their limited water.[11]
- The continuation of the intense drought in 2022, high water prices and a myriad of other factors are prompting some farmers to reconsider their water allocation towards the thirsty crop.[12]

How much water?

- According to a 2015 report from the Congressional Research Service, almonds and pistachios require an average of 3.5 acre-feet of water (about 1.1 million gallons) applied per acre of nut trees annually.[13]
- Almond and pistachio bearing acres in 2021 required an estimated **523 billion more gallons of water** for irrigation than bearing acres in 2017.
    - This is equivalent to 790,000 Olympic swimming pools full of irrigation water.
    - Based on California Department of Water Resources data on average gallons of water per day per public water system connection in the San Joaquin River hydrologic region, the water required for this nut crop expansion could supply nearly **4 million household connections with enough water for an entire yea**r.[14]
- This growth is concerning because almonds are not only a thirsty crop, but a long-term commitment.
    - In 2021, a reported 400,000 acres were fallowed statewide as farmers had to make difficult decisions with limited water.[15]
    - An estimated 58 percent of California's almonds were exported in 2020 – essentially exporting **880 billion gallons** of the state's already limited water supply.[16]

[11] Kasler, Dale and Ryan Sabalow. "California drought enters dangerous territory. What's ahead for fish, farms and cities." *Sacramento Bee*. May 27, 2021; Bonaccorso, Nicole. "Almond farmers in California tear up crops amidst drought." *Weather Channel.* June 4, 2021

[12] Kahn, Debra et al. "Weekly Agriculture." *Politico*. May 31, 2022.

[13] Johnson, Renee and Betsy A. Cody. Congressional Research Service. "California Agricultural Production and Irrigated Water Use." R44093. June 20, 2015 at 18.

[14] FWW analysis of USDA. NASS. Quick Stats. Accessed May 2022; State Water Resources Control Board. "Safe Drinking Water Plan for California." Report to the Legislature in Compliance with the Health and Safety Code Section 116355. September 2021 at 198 to 200.

[15] Hooker, Brad. "Study: As heat rises, California's crops need more water." *AgriPulse.* April 20, 2022.

[16] FWW analysis of California Department of Food and Agriculture. "California Agricultural Exports 2020-2021." 2021 at 14; USDA. NASS. "2021 California Almond Objective Measurement Report." July 12, 2021 at 4; Johnson and Cody (2015) at 17.