

## **Appetite for California almonds still growing, but farmers feel squeeze from new water rules**

*By Candice Wang  
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The California almond has proved resilient under fire.

During the late years of California's most recent drought, from 2015 through 2016, the almond came under attack from a variety of sources, including news outlets such as Mother Jones, Forbes and the New Republic, labeling it a horticultural vampire.

It was, they said, sucking California's groundwater reserves dry, leaving behind brittle, drought-stricken trees and causing the dusty land in San Joaquin County to [cave in](#).

But the nut and the crop have not just survived, but thrived.

The almond has extended its nutty tendrils into nearly every section of the grocery store. An almond weighs just .01 ounces and is slightly larger than a penny, but in multitudes it fills colorful tins of [Blue Diamond](#) salted and roasted almonds. It is used to make Almond Breeze non-dairy milk, almond butter, almond flour, almond crackers, almond granola, almond cereal, almond meal and almond milk yogurt.

Almonds are as popular as ever.

California's 6,800 growers churned out 2.26 billion pounds of almonds last year, amounting to over 80 percent of the world's supply, according to the [California Almond Board](#), a grower-supported nonprofit. And the upward trend is expected to continue, with 2019 production [forecast to grow nearly 10 percent](#), reaching 2.5 billion pounds, according to the U.S. Department of Agriculture's National Agricultural Statistics Service.

Read Next: [An intense process](#): The California almond's journey from orchard to grocery shelf. August 02, 2019 5:30 AM

Now that the drought has passed, almond growers are seeing more surface water flowing down canals, and geologists say groundwater reserves are starting to improve throughout the San Joaquin Valley.

But the almond may not be out of the woods yet.

This time, instead of immediate drought jeopardizing the almond industry, Valley farmers say they're feeling the pinch of water politics, the result of a series of conflicts among the California State Water Resources Control Board, environmentalists and growers.

Farmers face cutbacks to the only two water sources available to them as state water managers roll out a new set of rules: The state's "unimpaired flows" decision, which affects surface supplies, and the Legislature's Sustainable Groundwater Management Act, which governs groundwater.

State water managers and environmentalists say the rules are necessary to avoid a die-out of key fish species in the Stanislaus, Tuolumne and Merced rivers – tributaries of the lower San Joaquin River – and to prevent further damage to aquifers from groundwater overpumping.

But Steve Knell, general manager at the Oakdale Irrigation District in Stanislaus County, said growers are being squeezed from both sides.

"Farming is being attacked at two ends," Knell said. "You're taking their surface water away, and then you're taking away their ability to pump groundwater to replace that surface water."

And almond growers say they worry that the one-two punch may knock them out of business for good.

## **Out in the almond groves**

Under the harsh sun in Manteca, 20 minutes south of Stockton, David Phippen gripped the wheel of his truck, making a hard left down Graves Road. Dust trailed from his tires.

Phippen, a third-generation almond grower, co-owns 1,500 acres of almond trees within the [South San Joaquin Irrigation District](#), and is one of many growers who say they are threatened by the unimpaired flows decision. According to the U.S. [Department of Agriculture](#), an acre produces more than 2,000 pounds of almonds, with yields varying year to year.

[Travaille & Phippen](#), the farm that Phippen manages with his brother Scott and cousin Bud, has top-notch surface water rights, and did not draw upon groundwater for irrigation.

Row upon row of almond trees flickered past, minuscule bulbs of fuzzy green hulls barely visible in the thicket.

The truck stopped next to a concrete canal, about 15 feet across. The water was crystal clear and cold.

“So far, this water is still ours,” Phippen said.

Shading his eyes, he pointed toward the horizon, beyond the acres of almonds, where the hazy outline of mountains blends into the sky.

“Look directly at those mountains that way – they still have snow on them,” Phippen said. “This here is snowmelt. It’s perfect water.”

In 1918, Phippen’s grandfather, Samuel Phippen, arrived in the U.S. from the Netherlands, taking on a succession of jobs, working as a real estate salesman, insurance company owner and, finally, an almond grower on the same ground that Phippen walks upon today.

Phippen has lived his entire life on this farm.

At age 8, he drove a tractor with his brother through the rows of trees late in the evening, spraying pesticides, until his father would yell out to him, “You boys, park those tractors and come on in and do your homework.”

Since before Phippen was born, Travaille & Phippen has had rights to the first 250,000 acre-feet of water that flows from the Stanislaus. Each year, Phippen uses that water, also called surface water, to irrigate his almond orchards.

But that could change, if the state water board’s recent river flow decision proceeds and Phippen can’t turn to groundwater as an alternative.

## **Key water flow decision**

On Dec. 12, the state water board adopted the [unimpaired flows decision](#), which would increase the flow of the Stanislaus, Tuolumne and Merced rivers to 40 percent, mainly to protect fish and wildlife – particularly fall-run Chinook salmon.

Unimpaired flow is the amount of water moving downriver in the absence of dams and other diversions. During drought years, the flow of the San Joaquin River can run as low as 6 percent, which depletes native fish populations.

In 2010, 40,000 salmon returned to the San Joaquin for spawning, according to a news release from the water board. Two years ago, only 10,000 made it.

According to state scientists, as much as 90 percent of the natural flows of some tributaries are diverted to farms and cities. To revive fish species such as salmon, steelhead and Delta smelt, scientists say more water needs to flow naturally to the Pacific.

But even as salmon populations were decimated over the years, almond growers flourished in the South San Joaquin Valley, drawing on both surface water, sourced from the Stanislaus, Merced and Tuolumne rivers, and groundwater wells.

The unimpaired flows decision will sharply reduce these growers' surface water rights, and they are determined to fight back.

Less than a month later, on Jan. 10, a coalition of five irrigation districts, led by the San Joaquin Tributaries Authority, [filed a lawsuit](#) challenging the water board's decision. They were joined by the city of San Francisco, which also pulls water from the tributaries that flow into the lower San Joaquin.

If the unimpaired flows decision were to proceed, the canal Phippen stood in front of wouldn't provide enough water for his almond operation.

Phippen views the unimpaired flows decision as a severe threat to his family's future.

"I can't grow almonds without water," Phippen said. "It's the most serious threat to my grandchildren that I can think of."

### **The problem with groundwater**

The alternative to surface water is [groundwater](#), which lies a few feet below the earth's surface in a spongy, clay-like material, and can be accessed via pumping.

However, pumping groundwater has been heavily criticized, for two reasons.

First, each time farmers pump groundwater from the aquifer, or the underground bedrock that stores groundwater, the clay's water storage ability weakens.

Michelle Sneed, a hydrologist at the U.S. Geological Survey, likens a healthy aquifer to a haphazard pile of dishes. The messier the pile, the more pockets of air between the dishes. In this case, the pockets of air between the dishes represent water storage space between the grains of clay in the aquifer.

Each time the groundwater is sucked out for irrigation, the "dishes" become more and more orderly, over time becoming a neat stack, drastically reducing storage space.

"Even if the water level goes up, it won't go back into that random orientation," Sneed said. "That's what causes the land subsidence."

In the San Joaquin Valley, stretches of the landscape have sunk more than 50 feet in a few decades via the phenomenon called land subsidence, damaging highways and canals, at a cost of \$100 million since the 1960s, according to [NASA](#).

"We can't undo what's been done," Sneed said.

Second, the California Legislature passed the Sustainable Groundwater Management Act, or SGMA, in 2014, requiring all irrigation districts by 2020-22 to draft plans to achieve sustainable management within 20 years

Over the next few decades, many districts, especially those that have been sucking their aquifers dry due to limited surface water rights, will be restricted from pumping groundwater.

“That farmer south of Fresno who’s using the aquifer and knows that SGMA is taking away his ability to use that aquifer, he is scared to death,” Phippen said.

According to Mike Wade, executive director at the California Farm Water Coalition, some farmers are going to lose their water supply as a result of both SGMA and the unimpaired flows decision.

“There’s a potential of 500,000 to 1 million acres of farmland that won’t have a sustainable water supply and may come out of production,” Wade said.

### **‘You can only grow so many’**

As a senior policy adviser at Sacramento-based nonprofit Friends of the River, Ron Stork has watched the agricultural water battles play out for years.

In his view, “People have been living without common sense for a while.”

With a background in plant science and expertise in flood management, Stork specializes in rivers all over California, advocating for dam removal and preservation of native species. The unimpaired flows decision, for Stork, represents hope.

In Sacramento, Stork lives near the downtown headquarters of Blue Diamond, the world’s largest tree nut company and cooperative.

“Sometimes the odor of cooking almonds wafts over,” Stork said. “There’s nothing the matter with almonds – I like eating almonds, they smell good. But you can only grow so many.”

Each year, San Joaquin Valley growers use 2 million acre-feet of water more than they have, according to Stork. When the surface water runs out, they turn immediately to groundwater pumping.

John Monroe, an almond grower in Arbuckle, an hour’s drive north of Sacramento, said the San Joaquin Valley is in crisis.

“The San Joaquin is absolutely overdrafting,” Monroe said. “Agriculture in total and urban users and environmental users are wanting 150 percent of the available water.”

“You can’t use more water than you have forever,” Stork said. “But if you’re simple, that’s where you’re at.”

Almonds are problematic in California for two main reasons, according to Stork.

First, as permanent orchard crops, almond trees have a 25-year life cycle. Throughout those years, growers must commit to a yearly irrigation schedule. Tomato growers, for example, have the flexibility to forgo seeding tomatoes during a drought year, and perhaps put down a dry farming crop such as wheat or cotton instead. Almond growers are tied to their thirsty crop for over two decades.

The Southern San Joaquin Valley is tethered to the inflexibility of permanent crops, from walnuts to pistachios to almonds.

The second issue is simple, Stork said: There are too many acres of almonds in California.

When asked how the state can curtail almond farmers, he said, “They will have to stop. This is just being responsible adults here.”

Additionally, Stork said, the mindset of the growers contributes to the rigidity of their position on the unimpaired flows decision.

“That’s the way the farmers think down there – that we’re diverting more water for the salmon,” Stork said. “But it’s water from the river that’s diverted to their fields. The more interesting thing is the concept that water left in its natural course is somehow artificial.”

Many of the farmers hold what are called pre-1914 water rights, or rights to surface water that were established before the state started regulating water rights in 1914, according to Peter Rietkerk, general manager at the South San Joaquin Irrigation District. The growers with pre-1914 water rights are referred to as senior water right holders, and the state water board typically has limited jurisdiction over these rights.

David Phippen is one of those senior water right holders, and his property has had rights to the first 250,000 acre-feet of the Stanislaus River for over 100 years.

“The conflict fundamentally is that the farmers stole the water fair and square in their judgment back in the 1900s,” Stork said. “I’m sorry, but back in the 1800s, they stole it fair and square using gold miner rules: ‘Thems that gets there first gets the gold.’”

Stork hopes to collaborate with the growers.

“We all have to live together on this planet here,” Stork said. “We’re going to have to work this out.”

## **Seeking a solution**

Is it plausible to reduce the acreage of almonds in California by requiring growers to dry farm crops such as wheat and cotton?

“No,” said Phippen, parking the truck next to a pile of almond hulls at least 80 feet tall.

Phippen turned in the driver's seat. "I can look you in the eye and tell you, if I grow wheat on this ground, I'm going to go out of business," he said.

"As water becomes so precious and the land becomes so expensive and the taxes become so great, it's becoming an expensive state to farm."

Cotton, a dry crop that requires very little water to produce, has thousands of acres in Texas, Georgia, and Arkansas. The cost of one pound of cotton is around 75 cents while one pound of almonds may bring around \$3. Farmers say dry crops like cotton and wheat simply aren't profitable enough, .

"The ground is too expensive for that," Phippen said. "You are forced to grow the highest yielding kind of crop."

From 2016 to 2017, almond acreage expanded by 90,000 acres, to a total of 1.3 million acres.

In Phippen's eyes, California is "full of environmental folks."

"There's a whole bunch of them," Phippen said. "The Environmental Defense Fund, the Sierra Club ... I should be able to recite them all to you, but I can't, because I don't like any of them."

Although Phippen said he spends thousands of dollars each year on improving the efficiency of his irrigation technology, uses solar energy to power his hulling and shelling facilities, and now produces one-third more almonds per gallon of water than his father did, he believes environmentalists have never taken into account the growers' efforts.

"Farmers have to think like an environmentalist," Phippen said. "I'm endorsing green energy and drip irrigation. I think I am a doggone environmentalist."

### **'The target is on our back'**

In 2014, Mother Jones magazine published a story with the headline "[It Takes How Much Water to Grow an Almond?!](#)" paired with a [harrowing infographic](#).

However, it is no longer about how much water a single almond requires to grow – 1 gallon.

"All they heard was those mean almond farmers used a gallon for every kernel, oh my God!" Phippen said. "We've seen that what it takes to irrigate an almond orchard is significantly even with any other tree crop."

Walnuts suck up nearly 5 gallons of water per nut. Pistachios take three-quarters of a gallon. One tomato drinks 3.3 gallons.

"So do you want to ban fruit? Do you want to ban nuts?" Phippen said.

The underlying problem is the 6,800 almond growers in California, their collective [1.3 million acres](#), and the effect of the unimpaired flows decision and SGMA on South San Joaquin Valley farmland.

Farmers like Phippen and Monroe invest thousands each year in dual-line drip irrigation, which localizes water only to the roots of the almond tree, and releases moisture only when a soil moisture probe signals it to. Irrigation has reached nearly 90 percent efficiency.

Despite these advancements, there is still not enough water for everyone in California.

As the weather becomes hotter and more drought-prone, growers say they're approaching a breaking point, and the unimpaired flows decision only adds to the stress.

Phippen estimates that his irrigation district, the South San Joaquin, will be in litigation for the rest of his life. But he's going to fight until the end.

"The target is on our back," Phippen said. "There isn't a farmer in California, from dairy to cotton to walnut, who doesn't know that a red dot is on our back."

*This story was changed Aug. 4, 2019, to correct the number of acres of almond trees in California and the average number of pounds produced per acre.*

Video links:

Blue Diamond almond grower John Monroe speaks about the journey of the California almond at Done-Again Farm in Arbuckle, Wednesday, June 26, 2019. By Daniel Kim

<https://www.sacbee.com/news/state/california/water-and-drought/article233372352.html>

Get a spectacular soaring view above Sacramento Valley's blooming almond orchards. John Hannon shot this spectacular aerial view of blooming almond orchards in the Sacramento Valley. It's from the Arbuckle area in Colusa County. Did you know California grows more than 80 percent of the world's supply of almonds? By John Hannon/Sacramento Valley Water

<https://www.sacbee.com/news/state/california/article227404944.html>

Sacramento Bee story link:

<https://www.sacbee.com/news/local/environment/article231906623.html>

*FOR Addendum: Wheat and other small-grain crops like barley or oats can be dry farmed on winter rain. Cotton is a summer crop that requires water during the growing season. Unlike almonds, cotton acreage can be fallowed, however. Some varieties of summer crops can be harvested after short seasons, reducing the annual water requirements of the acreage on which they are grown.*