Lucrative But Thirsty Almonds Come Under Fire Amid Drought

By **Matt Weiser**, National Geographic

A decade or so ago, Blue Diamond Growers, the co-op that represents half the almond farmers in California, ran a series of brilliant TV ads. In one, a weather-worn farmer buried to the chest in almonds pleads: “A can a week, that’s all we ask.”

In fact there never was a nut glut: California farmers can’t seem to grow enough almonds. Consumers the world over are scrambling for every tin they can get. They’ve been informed that the almond is a compact protein source with many other health benefits and no apparent downside.

But now California is in the fourth year of severe drought, and it’s the farmers who are scrambling: They’re spending huge sums on any

available water to keep their almond trees alive. That takes about 1 million gallons of water per acre per year, according to research by UC Davis agricultural engineer Blaine Hanson—enough to supply six average California households.

It seems there may be a downside to almonds after all.

"It just doesn't make sense to be growing almonds where it takes so much water," says Tom Stokely, a policy analyst with the California Water Impact Network, a nonprofit group. "We certainly believe the governor should immediately put a halt to planting of new permanent crops."

It's not clear whether Governor Jerry Brown has the legal authority to do that. But it's not likely to happen—because drop for drop, almonds are better than almost any crop at converting water into money.

A Desert Full of Nuts

The locus of almond cultivation is the San Joaquin Valley, an arid region in the state's southern Central Valley. For decades, farmers there have relied on the federal Central Valley Project and California's State Water Project, which import snowmelt from hundreds of miles away in the northern Sierra Nevada.

Over the last decade, California farmers have planted at least 270,000 acres of new almond orchards, an increase of 35 percent. California now produces about 82 percent of the world's almonds. About two-thirds of the crop is exported.

As global demand has soared, the value of the crop has tripled, to $6.4 billion. In 2013, as the drought tightened its grip, almonds became

California's most valuable agricultural product—more valuable, even, than the state's fabled wine grapes.

This year, state and federal agencies cut many farmers off from imported surface water, because there wasn't enough to go around. The poor snowmelt means many reservoirs won't refill. By law, what they do hold must be reserved for those with senior water rights and to maintain natural streamflows for endangered species, like salmon.

Farmers have responded by pumping groundwater at unprecedented rates. Land is subsiding, damaging the storage capacity of aquifers and of critical water infrastructure. Slumping and cracks in the Delta-Mendota Canal, part of the Central Valley Project, mean it can no longer deliver water at its designed rate.

And yet, during the 12 months ending in May 2014, an additional 48,000 acres of new almond orchards were planted across the state.

"They're planting almonds like crazy," says Richard Howitt, an agricultural economist at the University of California, Davis. "I can show you four different new plantings within five miles of my house."

It Sounds Irrational, But Then There's the Money

How is that possible? Almonds command such a high price—now approaching $4 per pound, double the 2011 price—that farmers can afford to get water wherever it's available. They can drill a deeper well or buy from senior water rights holders to the north, in the Sacramento Valley.

Agricultural water in some parts of the state now sells for as much as $2,500 per acre-foot, an amount that only California's wealthiest cities could afford historically.

"I outbid the city of Santa Barbara last year for water," says Shawn Coburn, a farmer based near Firebaugh, in Fresno County. "The mayor got all pissed off and called the governor."

Coburn farms 3,500 acres in three San Joaquin Valley counties. About half that land is planted in almonds.

He once grew cotton, aided by government crop subsidies, on more

than 6,000 acres. With that crop, he could barely afford to pay his employees minimum wage. With almonds, he says, some of his truck drivers earn $50,000 a year, 70 percent of his employees are homeowners, and some have children in college—all without crop subsidies.

"Let the market decide what's needed to be put in the ground," Coburn says. "For our employees and our families, almonds are a success story."

You Can't Fallow An Almond Orchard

Almond orchards cover 12 percent of the irrigated farmland in California and use 8 percent of the irrigation water, the industry says. The difference is evidence that the industry is being efficient with its water and is "using less than what you would say is our fair share," an industry spokesman said last week in a conference call arranged with reporters to address criticisms of almonds.

Almonds consume one and a half times as much water as strawberries or tomatoes, but much less than alfalfa, according to Hanson of UC Davis. But during a drought they pose an added problem that goes beyond their ranking in the water-use sweepstakes.

Whereas annual crops can be left unplanted during a drought, almond trees and other permanent crops still have to be watered or the enormous investment in them will be lost. A typical almond tree takes three years to mature, produces for decades, and requires pretty much the same amount of water every year.

Almonds are not the only perennial crop that has surged in acreage. Over the past decade in California, pistachio plantings have more than doubled. Mandarin oranges have more than tripled. Walnuts are up about 30 percent.

The "demand hardening" caused by this shift from annual to perennial crops means that in a drought there is less water to go around for other users, such as homeowners, firefighters, or fish.

In 2014, for example, wildlife officials estimate 95 percent of the Sacramento River's juvenile winter-run salmon—an endangered species—died before they could migrate downstream to the sea, because there wasn't enough cold water in Shasta Reservoir. Shasta is the state's largest reservoir and also serves the San Joaquin Valley.

Earlier this month, Governor Brown ordered unprecedented new water conservation, requiring urban water agencies to impose 25 percent water cuts and instituting $10,000 fines for agencies that don't comply. He didn't do the same for agricultural water agencies. Farmers have faced steep cuts in their surface water allocations, but if they've been able to buy water they can use as much as they want.

"If you're talking about water as an input to a production process like agriculture, it's very difficult to ask farmers to cut back unless you have some idea they're being really inefficient," says Howitt, the UC

Davis economist. “It’s like asking Starbucks to cut back on the water in coffee.”

One effect of the shift toward almonds and other permanent crops, Howitt says, is that classic California produce such as broccoli, melons and carrots may become harder to find and more expensive. There could be other unintended consequences.

In 2014, state lawmakers adopted a new law to regulate groundwater for the first time. In the coming decade California farmers may begin to face restrictions on how much they can pump.

That’s likely to drive even more demand for surface water diverted from the Sacramento-San Joaquin Delta, says Jay Lund, a professor of environmental engineering at UC Davis—which could push endangered fish like the Delta smelt even closer to extinction.

Lund expects this will also lead to a long-term decline in irrigated acreage in the state, perhaps by as much as 1 million acres. Poor-quality land will go unplanted, and only the most valuable crops—like almonds—will get water.

“They’ll be increasing the economic value of any water you can get out of the Delta,” Lund says. “We’re in for a real storm on that.”

Follow Matt Weiser on Twitter.