

**Uprooted almond trees** are removed from Baker Farming in Los Banos, Calif., in February. Some farmers are taking down trees because they don't have enough water to keep them all alive.



# HIGH AND DRY

JUSTIN SULLIVAN/GETTY IMAGES

## California's historic drought is a gut punch to farmers, businesses and consumers

By Matt Alderton

**T**HE SIERRA NEVADA is as naked as a jaybird.

During a typical spring, the mountains are covered with a thick pelt of milk-white snow. This year, however — the third year in a three-year drought — they're mostly bald, looking down on California's Central Valley with a sorry shrug. As of April 1, the Sierra Nevada snowpack was at 32 percent of average water content, according to the California Department of Water Resources. Although a marked improvement from 14

percent two months prior, it's the lowest level since 1988, when snowpack was just 29 percent of its normal amount.

That's a problem. Sierra Nevada snowmelt furnishes approximately 35 percent of California's usable water, and Central Valley farmers depend on the snow to irrigate their crops. When bad things happen to California's \$44.7 billion farm industry, which produces about 60 percent of fruit and tree nuts and half the vegetables in the U.S., the rest of the nation feels it in higher prices and lower supplies.

"If you look at the snowpack today

versus what it would be normally, we're at record lows," said Richard Waycott, president and CEO of the Almond Board of California. "As a result, a lot of our growers are facing very difficult decisions."

One such grower is 64-year-old farmer Joe Del Bosque, owner of Del Bosque Farms in Firebaugh, Calif. Because his farm is located in a federal water district south of the Sacramento-San Joaquin River Delta, where water allocations have been set at zero since February, he receives no public water. Instead, he has to buy water from

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WALLY SKALIJ/AP

**Joe Del Bosque**, in hat, talks with California Gov. Jerry Brown, far left, President Obama and Del Bosque's wife Maria as the group tours the Del Bosques' farm in Los Banos, Calif., in February. The entire state is experiencing drought, but Del Bosque's home county of Merced is classified by the U.S. Drought Monitor as being in "exceptional" drought, the most severe category.

other farmers. That means he has less water, more expenses and fewer revenues for his business, which supports 20 full-time and 300 seasonal workers.

"There's impact to the farm, but there's also very serious impact to our employees," Del Bosque said. "If we don't grow crops, they don't work."

The drought has forced Del Bosque to idle approximately 25 percent of his 2,000-acre farm, including 250 acres of tomato and 200 acres of cantaloupe. Leaving acreage fallow, he said, allows him to concentrate his limited water supply on permanent crops such as almonds and asparagus. Because asparagus crowns take three years to mature and almond trees up to six, letting those crops wither would cripple his business for years to come.

"We have to protect those crops," Del Bosque explained. Unfortunately, protecting those crops might mean sacrificing jobs. While cantaloupes must be harvested by hand, almonds can be harvested by machine.

In that way, the drought is a high-stakes game of dominoes. Farmers like Del Bosque are the first to fall, but won't be the last. Ultimately, everyone from the workers they pay to the consumers they

feed could suffer the symptoms of thirst.

### AN EXTREME EVENT

Damages and losses caused by extreme drought have prompted the U.S. Department of Agriculture to designate all of California's 58 counties as natural disaster areas as of May 7. Unlike in most natural disasters, however, there isn't just one cause for the drought. There are many.

One is climate. Every year California has a wet season and a dry season. The dearth of snow during this year's wet season portends an even drier dry season.

"There's no question that this is an extreme event," said Noah Diffenbaugh, an associate professor at Stanford University's School of Earth Sciences. "Snow levels ... have been extremely low in California, so as we head into the normal dry season — starting from that place of low snowpack — dry conditions will increase the risk of impacts from the drought."

Other factors contributing to the drought, according to Peter Gleick, president and co-founder of the Pacific Institute, an Oakland, Calif.-based think tank focused on water issues, include:

- ▶ **Low rainfall**, which has resulted in dry soil and empty reservoirs;
- ▶ **Rapid population growth**, which has increased demand for water;
- ▶ **Rising temperatures and sea level** from climate change, which have compounded stress on the water supply;

▶ **And environmental degradation**, which has persuaded federal regulators to divert more freshwater from farms to fragile ecosystems, such as salmon runs along the Sacramento River.

The last point is a source of major contention. Although Mother Nature caused the drought, many farmers argue that Uncle Sam is exacerbating it.

"There are many conflicting interests," Gleick acknowledged, "but one thing we can all agree on is that we all want a sustainable California. We all want a healthy agricultural economy, reliable water for our industries and cities and a strong environment. The question is: How do we get them?"

### SOPHIE'S CHOICE

Although she doesn't have all the solutions, third-generation farmer Aubrey Bettencourt is face-to-face with many of the problems. Water restrictions have forced her family's farm, Bettencourt Family Farm in Hanford, Calif., to lay off two of seven full-time employees and fallow 500 out of 700 acres to save valuable walnut and almond trees.

"How do you pick what fields you're going to keep?" asked Bettencourt, 27, who also serves as executive director of the California Water Alliance, a coalition of Central Valley farmers advocating for agricultural water rights. "One farmer told me,

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— Joe Del Bosque,  
Del Bosque Farms

**Many California farmers** are drilling wells to find more water for their crops in the midst of a historic drought; those in the state's Central Valley have been cut off from water that comes from federal reservoirs. Jose Marquez, left, Israel Garcia and John Hicks drill a well in Mendota, Calif., in April.



JUSTIN SULLIVAN/GETTY IMAGES

**Although a February storm** dropped as much as 6 inches of rain in parts of California, it wasn't enough to end — or even ease — the drought.



SCOTT SMITH/AP

"Trying to decide what 200 acres of trees to rip out is like trying to decide which kids not to feed tonight." At our farm, making the decision to let people go was like trying to decide which uncles we were never going to see again; they're part of our family."

Bettencourt isn't the only farmer letting workers go. In fact, unemployment is on the rise throughout the Central Valley, where farming and food processing provide nearly 40 percent of all

jobs. In January, unemployment in Central Valley counties averaged 12.8 percent; state and national averages, meanwhile, were 8.1 percent and 6.6 percent, respectively.

Especially hard hit are migrant workers, said Daniel Sumner, director of the University of California Agricultural Issues Center. "Some of the highest poverty rates in the United States are in rural California," he said, adding that unemployment currently exceeds 20 percent in some

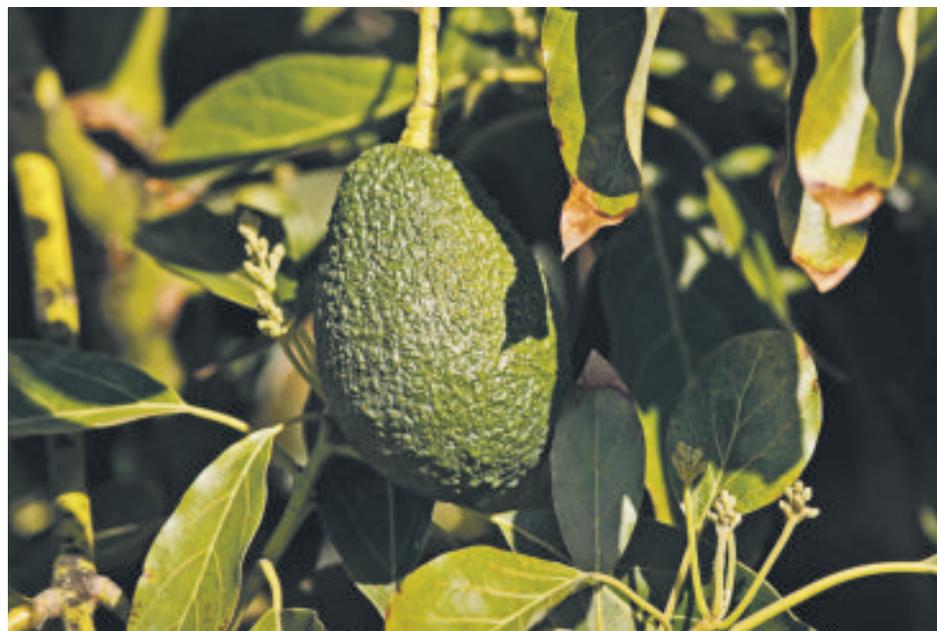
Central Valley towns.

"Often very recent immigrants from Mexico, these typically are people who have very low incomes and low education levels. They're hired farm workers who may get 1,500 hours a year at \$10 an hour. If they keep their job, they're only going to get 1,200 hours this year, or 1,000 hours. Wages are low to begin with. Most of their kids already are on school lunch programs. Now you hit them with a loss of work. They're going to be in really rough shape," he said.

Dairy farmer Lucas Deniz hasn't laid off employees but he recently faced his own "Sophie's Choice." His farm, Deniz Dairy in Petaluma, Calif., relies on rainwater to grow grass on which cows can graze. Two months without precipitation this winter forced Deniz to spend upwards of \$10,000 on hay. Meanwhile, the 600-foot well he uses to water his cows has just 15 feet of water in it; drilling a second one will cost \$80,000, he said.

The financial stress is so great that Deniz recently had to downsize his herd. "We've sold off 100 head just to cut down on feed costs," he said. "We've sold older cows in the past to make our herd younger, but this year for the first time we had to sell heifers (younger cows). That's your

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DAVID MCNEW/GETTY IMAGES

**Ongoing drought** is already pushing the prices of California crops higher. Avocado prices, for example, jumped from \$1.09 per pound in the last week of April to \$1.21 per pound in the first week of May, according to the U.S. Department of Agriculture.

future. It's a tough pill to swallow."

**FARM TO TABLE**

According to the California Farm Water Coalition, California farmers will leave an estimated 800,000 acres of farmland fallow this year. Although the drought's impact begins in the fields, it promises to reach far beyond them.

Consider, for example, Del Bosque's fallow cantaloupe fields. "Those 200 acres of cantaloupe could be as much as \$1 million gross revenue that I will lose," Del Bosque said.

The money eludes not only his coffers, but also those of local businesses where he might have spent it. "A lot of small businesses depend on farms," Del Bosque said.

"You have hardware stores, for instance, tire stores, equipment dealers. Even restaurants feel it. It's an impact that ripples throughout local communities."

And throughout the supply chain. "When there are fewer nuts or rice to package, there are fewer people needed in processing plants, fewer packers and fewer truckers," explained Don Wen, Northern California market leader in PricewaterhouseCoopers' private company services

practice.

Of course, the food supply itself is affected. Fallow fields mean fewer crops, which strains the public safety net, according to Bonnie Weigel, president and CEO of FOOD Share, a regional food bank in Oxnard, Calif.

"Sixty percent of the food we deliver are fresh fruits and vegetables. We are completely dependent on the agricultural community," said Weigel. FOOD Share saw a 20 percent decline in donated produce during the first quarter of 2014.

"It's not because the (farmers) don't want to give it to us; it's because they just don't have it."

Because California provides approximately half the nation's fresh produce, the impact will

be felt at supermarkets across the country, according to Tim Richards, an agribusiness professor at Arizona State University.

A 20 percent reduction in agricultural output from California will cause double-digit price increases in several commodities, including lettuce (34 percent), avocados (28 percent), broccoli (22 percent), tomatoes (18 percent), grapes

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— Bonnie Weigel, FOOD Share

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**DROUGHT'S IMPACT**

**CALIFORNIA CROPS**

As of May 7, the USDA had declared all of California to be in a drought. Farmers in that state are eligible for emergency aid.

**TOP-VALUED CALIFORNIA CROPS, 2012**



**THE TOP 14 AGRICULTURAL COUNTIES** in California each produced more than \$1 billion worth of crops in 2012. The state is tops in cash farm receipts, earning 11.3 percent of all receipts in the U.S.



SOURCE: USDA, CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE ILLUSTRATION, KATHLEEN RUDELL; PHOTOS, THINKSTOCK



**U.S. Department of Agriculture** researchers in California are trying to develop drought-resistant plants. Plant scientist Caleb Knepper, left, examines spinach plants that are undergoing drought-tolerance testing at the USDA Agriculture Research Service farms in Salinas.



PHOTOS BY JAY DUNN/THE SALINAS CALIFORNIAN

(17 percent), peppers (16 percent), berries (14 percent) and packaged salad (12 percent), Richards found in a recent predictive analysis of retail food prices nationwide.

"Everybody should brace for higher food prices," Wen said. "It may not be immediate ... but if this drought continues, the impact will last many, many years."

TaCreacia Blunt of Orlando is bracing already. "I

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— Don Wen, PricewaterhouseCoopers

notice it instantly (when food prices rise) because we're on a budget," said Blunt, 40, a single mom of four. "If I buy lettuce and other produce items, and they've all gone up a few cents, it adds up at the checkout counter."

Blunt is mitigating the impact of the drought on her grocery bill by planting a garden in her backyard. "It's going to cut my bill drastically because a big part of my grocery shopping is fresh produce," she said.

#### QUENCHING FARMERS' THIRST

The impact is clear. What's not is the solution. One piece of the puzzle is conservation.

Waycott said investments in drip irrigation and soil-moisture monitoring have helped almond growers increase yields by 33 percent over the last 20 years without increasing water consumption. Wen expects an influx of venture capital for the purpose of developing agricultural innovations

such as portable desalination technologies and farming drones, which could help farms use water more efficiently.

Ultimately, though, the most effective long-term thirst-quencher will be infrastructure, according to Sumner. Agricultural and environmental advocates alike are urging investment from state and federal governments in new water storage systems, including dams, reservoirs and aquifers that will allow California to capture water in wet years for use in dry years.

Whatever the solution, the time to implement it is now, according to Gleick. "There are subtle indications we're entering an El Niño, and El Niños can, but don't always, bring a lot of rain to California," he said. "So, it's possible next year will be a wet year ... However, we're not good at forecasting one year out, so I think we have to assume the worst. If we plan for a wet year, and it's dry, we're going to be in a lot of pain." ●