

# Climate Change Impacts on California Farmers & Ranchers

*In an industry dependent on the weather and water, California growers are on the front lines of climate change. Climate change is already severely impacting their production and livelihoods, and a growing body of research points to significantly tougher challenges ahead.*

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*"Temperatures were unlike anything we have ever experienced before. Citrus and avocados cannot handle that amount of heat, even our heat-tolerant citrus. We lost fruit like raindrops." - Helen McGrath*

## Flying M Ranch Ventura County

The McGrath family has been farming in Ventura County since 1868. Helen returned to the family farm operation in 2013, and grows 155 acres of avocados and citrus. In July 2018, Flying M Ranch experienced devastating losses due to a record-breaking heat wave. Helen estimates they lost over 50% of the year's crop of avocados and over 70% of their Valencia oranges which they had not yet picked.

"I'd love to stay in farming, but it's hard," Alan Sano says. In 2016, severe drought forced Alan at Sano Farms near Firebaugh and farm manager Jesse Sanchez to fallow 450 acres of their 4,100 acres. During the drought's height from 2014-16, they were allocated five percent of their typical delivery from the local water district one year and nothing for two years in a row. Some of their land has sunk (known as subsidence) because the groundwater below it has been so depleted.

To adapt, Alan and Jesse have diversified from mainly processing tomatoes and almonds into less water-intensive crops such as garbanzo beans and garlic. They converted to subsurface drip irrigation long ago, and are continually looking for ways to improve water use efficiency. When water is short, they fallow annual crops in order to water their nut trees where they have made long-term investments. They also plant cover crops and practice conservation tillage methods to improve soil health so the soil can absorb and hold more water.

## Sano Farms Fresno County



*"By using minimal tillage, the air is clean. The tractors run less in the field, [causing] less dust and less fumes, so it helps to create a healthier environment in the whole system. It helps everybody."*  
- Jesse Sanchez



## Magruder Ranch Mendocino County

Kyle Farmer and his family are continuing a 100-year-old legacy of raising cattle and sheep in Mendocino County at Magruder Ranch. In the span of less than a year between 2017-2018, two fires claimed 45 cows and reduced 6,000 acres of their rangeland to char. Following the fires, Kyle began looking for new leases to move his family's surviving cattle but was challenged to find enough contiguous land to lease. The family now has to haul cattle over long distances between properties.



*"Catastrophic wildfire like the ones my community experienced aren't inevitable. Ranchers can use management techniques like prescribed grazing and prescribed fire to influence the intensity, timing and frequency of fire and safeguard our communities and climate at the same time." - Kyle Farmer*

Since then, Kyle has partnered with two neighboring ranching operations—spanning more than 10,000 acres in total—to spearhead a collaborative grazing project along Highway 101 where several vehicle-related fires have ignited and threatened nearby suburban developments. Using cattle grazing, they reduce the load of combustible grasses.

## A Partial List of Climate Change Impacts on California Agriculture\*

- Decreased water supplies
- Higher crop evapotranspiration demands
- Severe yield losses due to drought-related water stress
- Earlier snowmelt and more winter flooding
- Delayed crop plantings
- Increased risk of soil-borne diseases and rot diseases
- Substantial decline in necessary winter chill hours for many fruit and nut trees
- Increased frequency and intensity of heat waves adversely impacting temperature sensitive vegetable crops
- Reduced fruit quality (such as decreased size and yields), especially impacting high value crops like strawberries and grapes
- Pests emerge earlier in the season and persist longer due to warmer temperatures in the spring and fall
- Early bolting in annual crops and reduced pollination success

\*Selected from a more comprehensive list published by: Pathak, T.B.; Maskey, M.L.; Dahlberg, J.A.; Kearns, F.; Bali, K.M.; Zaccaria, D. Climate Change Trends and Impacts on California Agriculture: A Detailed Review. Agronomy 2018, 8, 25.

The California Climate & Agriculture Network (CalCAN) is a statewide coalition that advances state and federal policy to realize the powerful climate solutions offered by sustainable and organic agriculture.

