



# Agricultural and Resource Economics ARE UPDATE

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## Special Issue: Implications of the Drought for California Agriculture

California is no stranger to drought, yet each drought is different, bringing unique consequences and adaptations. This past year was exceptionally hot and dry, and no sector has been affected more than agriculture. In this special issue of *ARE Update*, we explore aspects of the current drought and what it means for California agriculture.

In the first article, John Abatzoglou, a climatology professor at UC Merced, sets the stage by characterizing this drought relative to historic droughts. The article confirms that the 2020–21 drought has been unusually severe overall and has affected pastures and Northern California more than other recent droughts. Abatzoglou documents changes in evaporative demand, showing just how thirsty the atmosphere has been this last year. In doing so, the article also provides great perspective for thinking about future droughts and water scarcity under climate change.

California farmers and ranchers make adaptations in response to drought that mitigate negative impacts on food

supply chains, prices, and farm revenues. In the second article by Daniel Sumner, Carlyn Marsh, Quaid Moore, Scott Somerville, and Josué Medellín-Azuara, the authors document acreage and livestock responses by farmers and ranchers. They highlight adaptations like using additional groundwater, cutting other acreage to keep trees and vines alive, and shifting water to crops that yield a higher expected net revenue per drop. They also provide data on land reallocation and cropland left unplanted.

In our third article, Daniel Sumner, Elizabeth Fraysse, Scott Somerville, and Josué Medellín-Azuara show that, despite a severe drought and hundreds of thousands of acres of field cropland left idle this year, effects across regions and crops are uneven. Many crops, especially coastal fruits and vegetables, have had little reduction in supply in this drought. Indeed, in 2021, California farm revenue may actually rise, not fall. The authors explain that this is because of price increases driven by global supply and demand conditions, such as high feed grain and oilseed prices in the

Midwest, higher beef and milk prices, and strong demand for tree nuts, fruits, and vegetables.

The final article rounds out the issue by discussing how we can improve our water system to better adapt to future droughts. Ellen Bruno uses the findings in the previous articles to evaluate how improvements in economic policy governing irrigation water would allow us to make better use of the water we have. She considers policies for both surface and groundwater and argues that we can move water more effectively from year to year through more effective use of groundwater storage. Even if droughts do not increase in the future, warmer winters mean we will need to improve storage to deal with less snowpack.

### Special Issue Editors

Ellen M. Bruno  
Daniel A. Sumner

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