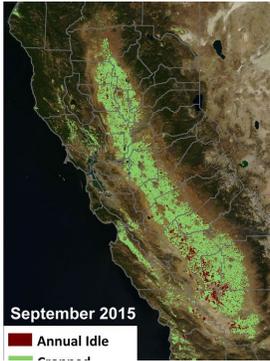


Researchers track parched farmland from space

Natalie Jacewicz 10:52 a.m. PDT October 27, 2015



(Photo: Provided)

The drought has left few nooks of California un-browned. Formerly lush lawns crack underfoot. Riverbeds splay naked under the sun. And, in some parts of the state, crop fields lie fallow. Now these farmlands are ready for their close-up — from space.

As farmers prioritize certain crops and forsake others, a patchwork of barren fields segments the state, particularly in the Central Valley. Researchers at California State University, Monterey Bay, have teamed with NASA to understand the dimensions of that patchwork quilt.

Forrest Melton of CSUMB leads a group of researchers who interpret satellite data to better understand the ground below. They've found that 2 million acres of California's Central Valley lay fallow in the 2015 summer season, over a half million more than in 2011. NASA released the findings last week, partnering with the U.S. Department of Agriculture, the U.S. Geological Survey, and the California Department of Water Resources.

"It's one of the key measures of drought impacts in California," Melton said.

The team's measurements depend on high-tech space satellites and tiny chemical reactions playing out in the plants miles below.

"The NASA and USGS satellites we use in our analysis measure light being reflected off Earth's surface," explained Melton.

Green plants emit a specific wavelength of light because of the photosynthetic process they use to store food. The satellites detect these light waves and allow scientists to distinguish between plants and everything else. Researchers confine their searches to farmland using data from county agricultural commissions.

Norm Groot, executive director of the Monterey County Farm Bureau, suggested that such satellite technology could be used to "determine how much top soil is at risk for wind erosion" and estimate economic impacts of fallow land.

Though Groot noted that Monterey County has relatively little fallow land, NASA's satellite technology may have wide economic impact, flooding the state with real-time drought data for the first time.

"Previously, information was not available within the year to quantify which counties were being impacted, and how severe the impacts were on crop production," Melton said.

The USDA tracks fallow ground in an annual report called the Cropland Data Layer. But unlike the NASA data, which only distinguishes between fallow and farmed land, "the CDL provides an annual map of crops grown across the state," according to Lee Johnson, who also collaborates on CSUMB-NASA projects.

The exact distribution of each crop — 1,000 strawberry acres here, 2,000 acres of artichokes there—contains market-sensitive information and therefore can't be shared in real time.

"If the complete Cropland Data Layer were available during the growing season, it might affect the trading of commodities and their prices," Melton said.

This reporting delay begets delays. Because farmers and officials do not have access to a public, cumulative number of fallow grounds, they must sometimes wait for months before having enough data to qualify for state and federal aid.

But the NASA data could be released monthly. And that frequency, according to Melton, could speed the process of allocating funds.

If so, data from space could make a difference in people's homes. Melton said he wants his work to "provide relief to impacted farmers, farm workers and their families."

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