

Trends in California Farmland Sales Prices and the Impacts of Drought

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This paper describes the trends in the California farmland market across counties and crop types over the past two decades. We explored the trends in farmland sales transactions and farmland values during drought events. The number of parcels sold and farmland value increased following the major drought periods in California between 2001 and 2021.

Land has many uses, with agriculture being one of the most important. Monitoring changes in the farmland market can improve our understanding of the performance of the agricultural sector and the financial well-being of agricultural producers. Farmland values across the United States are on the rise. The value of farmland can be explained by several factors, especially urban development pressures, and agricultural constraints, such as irrigation restrictions caused by water scarcity and deteriorated water quality, and concerns about the impact of climate change on agricultural productivity.

Publicly accessible data on farmland can be found via the U.S. Department of Agriculture's National Agricultural Statistics Service (NASS) and the NASS June Area Survey. However, the self-reported property values from both sources could have an inherent bias. Using a novel data set on farmland sales prices, this paper provides descriptive evidence of trends in the California farmland market over the past two decades (2001–2021), which encompasses multiple drought events.

Trends in California Farmland Sale Prices

We began with farmland parcels in California that were associated with

cultivated field crops, orchards, and vineyards and that were sold between 2001 and 2021. We analyzed a sample of 40,086 observations representing 28,239 farmland parcels in California obtained from ATTOM Data Solutions, a private data vendor that collects farmland-assessed values and sales prices. All values are adjusted for inflation (2021 dollars) using the annual Consumer Price Index.

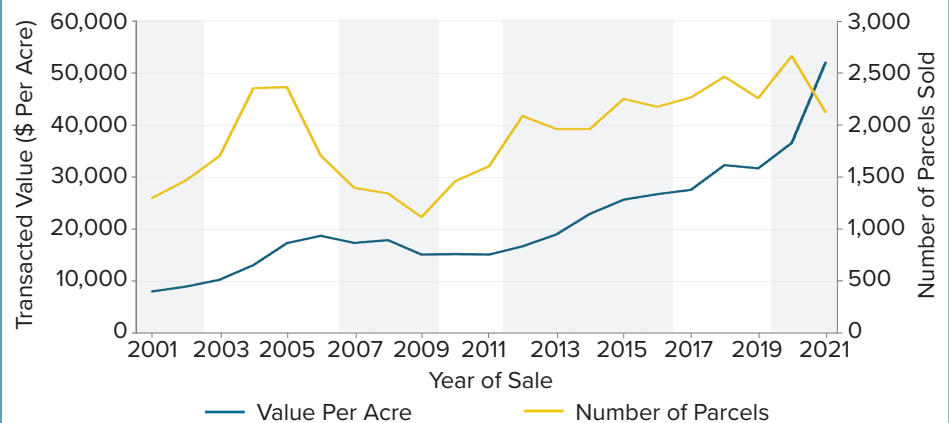
Farmland markets are often characterized as thin markets, with a small number of transactions compared to other real estate markets. The number of farm parcels sold annually in California between 2001 and 2021 ranged from a minimum of 1,120 to a maximum of 2,664, with an average of 1,908. The average farmland sales price has increased by roughly 538% in the past 21 years, from \$8,150 per acre in 2001 to \$52,021 in 2021. The yearly total acreage of sold farmland has also undergone a significant change over these years. For example, in 2009, a total of 116,092 acres of agricultural land was sold, while in 2019,

a total of 348,464 acres of agricultural land was sold—more than a three-fold increase in a decade.

We explored changes to the farmland market during four major drought periods, including 2001–2002, 2007–2009, 2012–2016, and 2020–2021. After major droughts, there was an increase in the number of parcels of farmland sold. For example, in 2004 and 2005, the number of parcels sold increased by 69% compared to 2002; in 2011, the increase was 49% compared to sales in 2009; and in 2020, the increase was 20% compared to sales in 2016. Figure 1 presents a summary of the recent trends in California farmland sales prices and the number of parcels sold.

In the past two decades, the number of parcels sold in the central and southern parts of the San Joaquin Valley has increased. In our sample of farms sold in California from 2001–2021, 34% were sold for between \$16,000 and \$17,000 per acre. The largest volume of sales occurred in Fresno County (with a total of 591,944 acres sold over

Figure 1. Recent Trends in Farmland Sale Prices and the Number of Parcels Sold, 2001–2021



Source: Authors' calculations based on data from ATTOM Data Solutions for the years 2001–2021. Note: The figure shows the recent trends in farmland sale price (blue line) and the number of sales (yellow line). Transacted value is in 2021 U.S. dollars. In the background of the graphs, we highlight the major droughts in California: 2001–2002, 2007–2009, 2012–2016, and 2020–2021.

21 years), Tulare County (403,813 acres), Kern County (385,576 acres), Humboldt County (315,592 acres), Monterey County (262,159 acres), and Merced County (221,432 acres). Napa County had the highest average farmland value per acre of \$120,204, with 13,613 acres sold. Santa Clara County had the second-highest average farmland value of \$75,627 per acre, with 12,209 acres sold. Farmland in Santa

Cruz, Sonoma, San Bernardino, Santa Barbara, and Ventura counties sold for a range of \$50,000–\$55,000 per acre. A total of 77,380 acres were sold in Sonoma County, followed by Santa Barbara County (65,700 acres), Ventura County (55,532 acres), San Bernardino County (8,179 acres), and Santa Cruz County (3,777 acres). Together, these five counties accounted for 6% of all farmland sold in California.

Spatial Variations in Farmland Prices by Crop

The farmland market is summarized in Table 1 by analyzing crops grown from 2008 through 2021. We merged the farmland sales data with the annual Cropland Data Layer (CDL) available at a 30-by-30-meter resolution for 2008 through 2021. We aggregated the farmland sales by county and crop type and excluded farmland sales associated with non-cultivated crops, such as fallowed land and natural vegetation (9,630 parcels). Orchards (and other tree crops) accounted for about 51% of all cultivated farmland sold, followed by field crops and grains (18%), vineyards (15%), pasture and alfalfa (10%), vegetables (4%), and cotton (2%).

Figure 2 shows the spatial variation in farmland sales prices based on crop types across counties in California. Napa County has the highest average farmland values (\$201,000 per acre) associated with vineyards, followed by Sonoma County (\$111,266 per acre), Mendocino County (\$89,288 per acre), and Ventura and Santa Clara counties, (\$62,000–\$63,000 per acre).

Farmland associated with orchards (and other tree crops) sold for \$196,117 per acre in Napa County, followed by Sonoma County (\$145,893 per acre), and Santa Clara and San Bernardino counties, (\$91,000–\$95,000 per acre).

Farmland associated with field crops and grains sold for more than \$100,000 per acre in San Bernardino, San Diego, Santa Cruz, Santa Clara, and Mendocino counties. Sonoma County had the highest farmland value for pasture and alfalfa at \$168,115 per acre, followed by Santa Clara County (\$89,786 per acre), San Benito and Monterey counties (\$61,400 per acre), and Ventura and Colusa counties, with prices between \$52,000–\$55,000 per acre.

Vegetable-related farmland in San Mateo County sold for the highest

Table 1. Summary Statistics: California’s Farmland Price Per Acre by Crop (2008–2021)

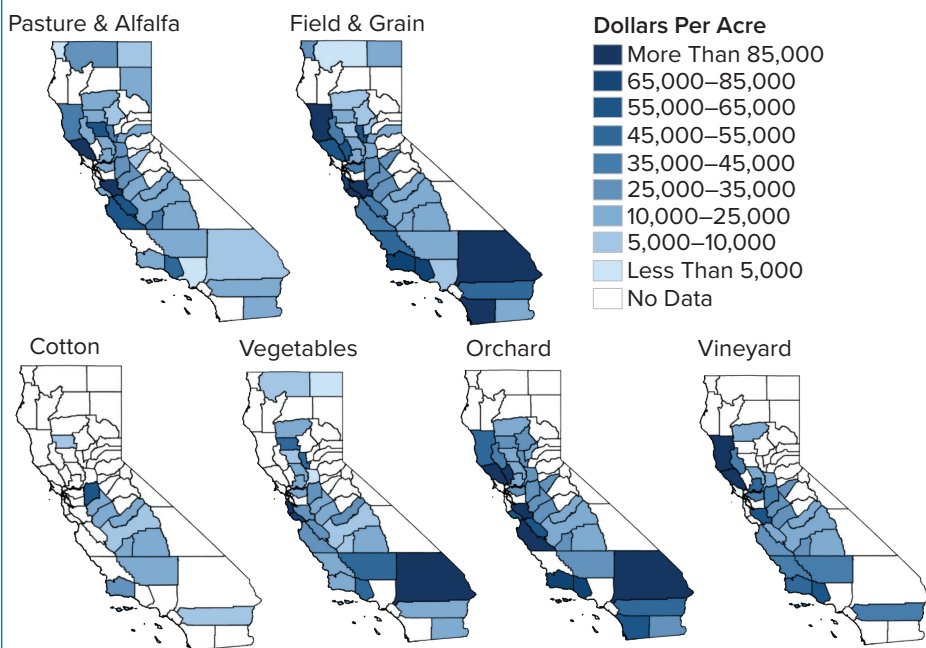
	Minimum	Maximum	Mean
	(2021 U.S. Dollars Per Acre)		
Pasture and Alfalfa	1,756	168,115	28,192
Field and Grain	3,183	190,483	46,149
Cotton	6,953	58,074	19,400
Vegetables	2,237	154,000	31,640
Orchard (and Other Tree Crops)	16,491	196,117	48,000
Vineyard	11,562	201,000	45,183

Source: Authors’ calculations based on data from ATTOM Data Solutions and CDL data from

USDA NASS for the years 2008–2021. CDL data is available at: <https://bit.ly/3ux6LkN>.

Note: Table 1 is obtained by aggregating mean farmland sales prices per acre across various crop types and then analyzing the summary statistics. Orchard includes almonds, pistachios, other nuts, citrus, other subtropical fruits, and other tree crops. Field crops and grains includes rice, dry beans, safflower, corn, and other field crops. Vegetables include melons, squash, cucumbers, onions, garlic, potatoes, tomatoes, berries, and other types of vegetables.

Figure 2. Spatial Variation in the Price of Farmland Sales by Crops Grown



Source: Authors’ calculations based on data from ATTOM Data Solutions and CDL data from

USDA NASS for the years 2008–2021. CDL data is available at: <https://bit.ly/3ux6LkN>.

Note: This figure displays the map of California farmland values per acre from 2008 through 2021 by crop type.

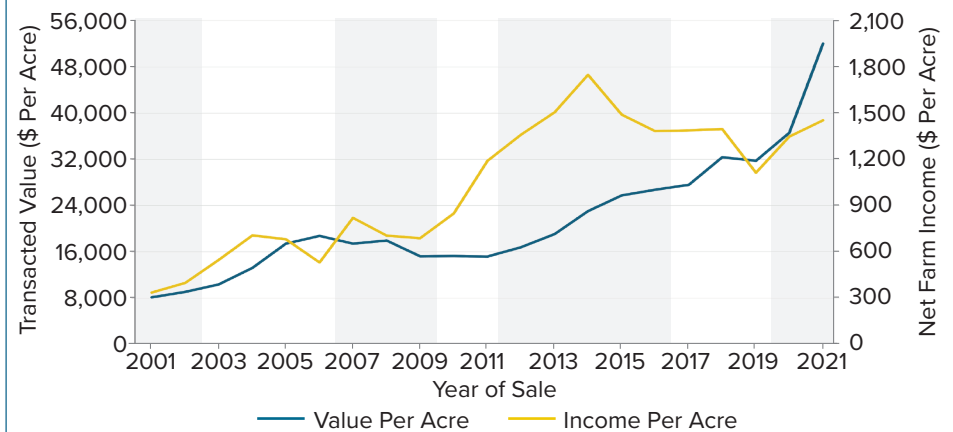
price at \$154,000 per acre, followed by San Bernardino County (\$94,000 per acre), Santa Cruz County (\$69,000 per acre), and Sutter, Ventura, Glenn, and Kern counties (\$45,000–\$50,000 per acre). Finally, cotton farmland in San Joaquin County sold for the highest price (\$58,074 per acre), followed by Santa Barbara County (\$27,000 per acre).

Impacts of Climate Change on Net Farm Income and Farmland Sales Prices

The changing climate in California has a direct impact on farm incomes, which in turn is associated with changes in the sales price of farmland. In Figure 3, we show the trends in net farm income and farmland sales prices in California from 2001 to 2021. We constructed net farm income per acre (on the right y-axis) by dividing net farm income by total agricultural acreage. We obtained net farm income for California from the USDA Economic Research Service (ERS) farm income data and total agricultural acreage from the National Land Cover Database.

We calculated farmland sale prices per acre (Figure 3, left y-axis) by dividing farmland sales price by parcel size and then aggregating it to California by year of sale. Over the past two decades, the net farm income increased by 339% (annual increase of 16% over 21 years) compared to a 538% increase (annual increase of 26% over 21 years) in farmland values during the same time period; this demonstrates a significant gap between farm income and the value of farmland, particularly during the longer drought event of 2012–2016. The trend lines appear to diverge from 2009 to 2019, but then converge again. Surprisingly, it is farmland values that are lagging, not net farm income. The overall trend suggests that farm incomes are not aligned with farmland

Figure 3. Trends in Net Farm Income and Farmland Sales Prices in California, 2001–2021



Source: USDA ERS Farm Income data is available at: <https://bit.ly/40ZxLpk>. The National Land Cover Database was used to create county-level acreage and then utilized to compute net farm income per acre.

Note: The figure shows recent trends in farmland sale price (blue line) and the net farm income per acre (yellow line). In the background of the graphs, we highlight the major droughts in California.

values, and agricultural productivity only partially contributes to farmland values.

High sales may be due to urban development pressure. We created an urban proximity variable for each parcel in our sample based on the nearest city center. The parcels in our sample are on average 4.1 miles away from the nearest city center, and the maximum distance was 28.3 miles. Unsurprisingly, the correlation between the distance from the city center and farmland value is negative.

Concluding Remarks

We examined trends in farmland sales transactions and assessed values in California. We showed that both have been steadily increasing over the past two decades, particularly after 2009. Farm earnings are weakly supporting farmland values, perhaps due to uncertainty arising from climate change and lower agricultural productivity. Drought was correlated with an increase in both the number of parcels and acreage sold in California. Importantly, we found that farm parcel sales are primarily associated with annual crops and that these sales are concentrated in the San Joaquin Valley. On

average, parcels that sold for higher prices, particularly for annual crops, tended to be closer to the nearest city center.

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Authors' Bios

Siddharth Kishore is a postdoctoral scholar, Mehdi Nemati is an assistant professor and Ariel Dinar is a Distinguished Professor, all in the School of Public Policy at UC Riverside. Cory Struthers is an assistant professor at the Evans School of Public Policy and Governance at the University of Washington. Scott MacKenzie is a professor and Matthew Shugart is a Distinguished Professor Emeritus, both in the Department of Political Science at UC Davis. They can be reached at: siddhark@ucr.edu, mehdin@ucr.edu, adinar@ucr.edu, cstruth@uw.edu, samackenzie@ucdavis.edu, and msshugart@ucdavis.edu, respectively.