

California Farmers Change Production Practices As the Farm Labor Supply Declines

Zachariah Rutledge and J. Edward Taylor

A recent survey by UC Davis and the California Farm Bureau Federation discovered that California farmers are finding it increasingly difficult to recruit workers. As a result, they are continuing to raise wages and make changes to their production practices.



Results from the authors' survey confirm that farmworkers are becoming harder to find and retain, and farmers are going to have to adapt in an era of labor scarcity.

It's no secret that California is a powerhouse when it comes to specialty crop production. As the leading agricultural producer and farm employer in the United States, California's farms and ranches produced over \$57 billion worth of agricultural goods in 2016, including more than 400 different commodities.

Fruit, vegetable, and horticulture (FVH) crop production accounted for 53% (\$29.8 billion) of the value of all agricultural production in the state and 68% of non-animal agricultural production. California produces two-thirds of the nation's fruits and one-third of its vegetables. These crops require a substantial amount of manual labor to cultivate and harvest, and California farmers employ an army of workers to get their products to market.

Since the mid-20th century, California farmers have relied on an abundant supply of immigrant workers from rural Mexico, which has encouraged the expansion of labor-intensive crop production. However, mounting evidence suggests that the era of farm labor abundance is coming to an end, and this is having ripple effects throughout the state's agricultural sector.

California farmers have reported farmworker shortages for over a decade, and some farmers have left crops rotting in the fields due to a lack of available workers during harvest time. Recent studies provide evidence that the pool of available Mexican farmworkers is shrinking for a variety of structural reasons. These include changes in demographics, increased educational attainment among rural youth in Mexico, and better nonfarm

opportunities both in Mexico and the United States. Thus, there is every reason to think that the negative trend could continue.

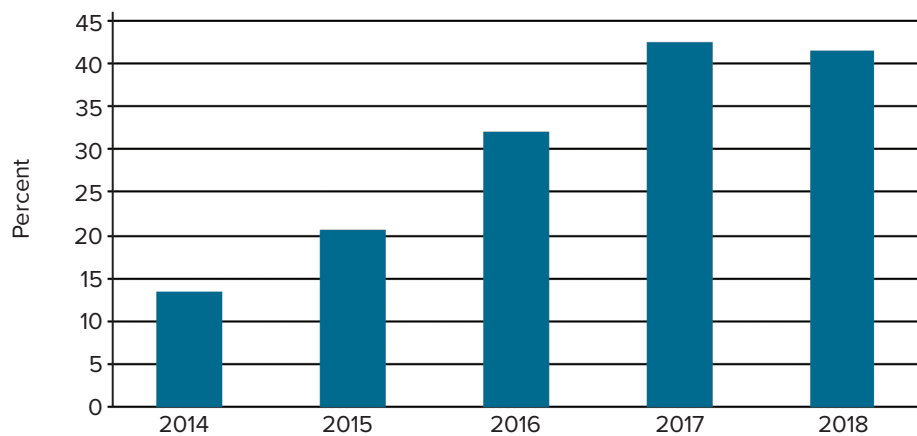
The average farm wage in California exceeds the mandated minimum wage. However, estimates suggest that real farm wages will have to increase by more than 10% over the next 10 years in order to maintain the same number of workers that are currently in the farm workforce (See Charlton et al., 2019a). Higher labor costs top the list of concerns for labor-intensive crop farmers, who already operate on tight profit margins.

Economic theory predicts that higher wages will induce farmers to adopt more labor-saving technologies and production practices and create incentives for new labor-saving research and development. In practice, rising farm wages have induced the adoption of labor-saving technologies, such as mechanical harvesters, that dramatically reduce the number of workers needed to produce some crops (See Charlton et al., 2019b). Technologies that eliminate the need for farmworkers to hand-harvest most FVH crops are currently not available. Although public institutions and private companies are hard at work developing them, farmers are relying on other adjustment mechanisms to deal with labor-availability issues.

Survey Overview

UC Davis partnered with the California Farm Bureau Federation (CFBF) to conduct a survey called "Adapting to Farm Labor Scarcity Survey." This voluntary online survey was sent out to CFBF members and various affiliated grower groups in January 2019. More

Figure 1. Percent of Farmers Experiencing a Labor Shortage During the Past Five Years



Authors' calculations from the "Adapting to Farm Labor Scarcity Survey" data.

than 1,000 California farmers participated in the survey, and 720 crop and dairy farmers completed the entire questionnaire.

The survey was designed to elicit information about production practices for farmers' main crop and county, based on the share of their total agricultural sales. Farmers responded from 54 of the 58 California counties, and over 70% of respondents reported producing fruits, vegetables, or nuts.

During 2018, the median survey respondent grew 125 acres in her main crop and county, employing five year-round workers and 10 seasonal workers. The median fruit and vegetable producer grew 107 acres of her main crop in her main county, while employing six year-round workers and 27 seasonal workers.

Farmworker Availability and Wages

Of the 749 farmers who identified their main county and crop, 58% reported not being able to obtain all the workers they needed at some point during the past five years (i.e., between January 1, 2014 and December 31, 2018). Over the past five years, the incidence of labor shortages reported by farmers increased three-fold, from 14% to 41% (see Figure 1).

Horticulture farmers (who produce ornamental, floral, and nursery crops) and wine grape farmers reported the highest incidence of labor shortages. Nevertheless, a substantial share of row-crop, grain, hay, and tree nut farmers also reported having some type of labor shortage, indicating that labor availability problems are not restricted to FVH crop production.

Not all farmers reported a labor shortage, but nine out of ten reported having to raise wages in order to obtain enough workers at some point during the past five years. Figure 2 shows that 31% of farmers reported having to raise wages in 2014, but this percentage jumped to 79% in 2018.

Farm Labor Contractors and the H-2A Visa Program

Farmers who find it more difficult to recruit workers may enlist the services of farm labor contractors (FLCs) or apply to legally contract foreign workers through the U.S. Government's H-2A visa program. Our survey reveals that both are becoming increasingly prevalent in California as a way to deal with farm labor scarcity.

Data from the Quarterly Census of Employment and Wages reveal that the share of California's farm workforce employed by farm labor contractors has increased steadily since the

1990s. Previous research found that the upward trend in FLC use during the 1990s could be explained in part by the passage of the Immigration Control and Reform Act of 1986, which imposed fines and jail time for farmers who knowingly hire undocumented workers. Because FLCs are the official employer of record, they potentially can buffer farmers from risks related to immigration and labor law violations. Nevertheless, if Immigration and Customs Enforcement (ICE) targets an FLC, the farmer who employs the FLC may still suffer from a shortage of employees.

Our survey reveals that farmers currently use FLCs to mitigate the risk of not being able to find enough workers. Sixty-four percent of respondents reported using an FLC at some point during the past five years, with 27% of respondents reporting that it was the first time they had used one. Of the 463 farmers who provided a reason for using an FLC, 65% said they used the FLC to make sure they had enough workers, 43% said they did so to reduce the administrative burden associated with employing workers, and 28% reported some other reason.

Traditionally, California farmers' use of the H-2A temporary guest-worker visa program has been very low; farmers complained about the bureaucracy and costs associated with the program. Nevertheless, their use of the program quadrupled in the last decade. Only 6% of respondents reported using the H-2A temporary guestworker visa program to bring in workers during the past five years; however, the vast majority of these reported using it for the first time during that period, revealing a recent surge in H-2A use. Most farmers who used the H-2A visa program reported that they did so to make sure that they had enough workers, again revealing an increasing need to deal with the risk of not being able to maintain an adequate farm workforce.

Labor-Intensive Crop Mix

Farmers reported changing the acreage dedicated to the production of their main crop, too. Of the 721 farmers who responded to this question, 31% reported making a change in acreage outside of a typical crop rotation at some point during the past five years. Five percent of respondents reported switching some acreage out of labor-intensive crops into non-labor-intensive crops.

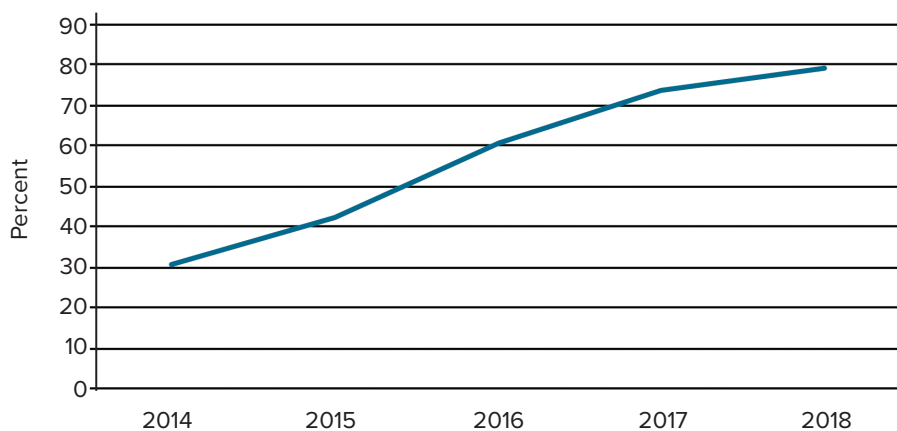
Of those farmers who switched some acreage from labor-intensive crops into non-labor-intensive crops, 78% switched acreage into nuts, and 22% switched acreage into row crops, grain, or hay. Although the survey results do not provide evidence of dramatic changes in the crop mix, they do suggest that at least some farmers are responding to labor scarcity by reducing the amount of acreage dedicated to the production of labor-intensive crops in favor of crops that permit mechanical harvesting.

Changes in Cultivation Practices

Issues related to labor availability have also caused farmers to change their cultivation practices. More than one-third (39%) reported making a change to at least one of their usual cultivation practices at some point during the past five years. Of those who changed cultivation practices, 80% said they did so either because there were not enough workers or because of rising labor costs.

Figure 3 shows that the percentage of farmers who changed cultivation practices because of labor availability increased from 7% in 2014 to 25% in 2018. The most common changes included reductions in pruning or weeding, followed by delayed pruning or weeding. However, 8% of farmers reported having to delay or reduce harvesting because there were not enough workers available, suggesting

Figure 2. Percent of Farmers Who Raised Wages to Attract Enough Workers



Authors' calculations from the "Adapting to Farm Labor Scarcity Survey" data.

that the inability to find workers during harvest time has affected their ability to generate revenue.

Labor-Saving Technology Adoption

As workers become harder to retain and wages continue to rise, the use of labor-saving technologies is becoming more attractive to California farmers. Fifty-eight percent of farmers indicated that they had used a technology that reduced their reliance upon farmworkers at some point during the past five years, including over one-third (37%) who reported using one for the first time.

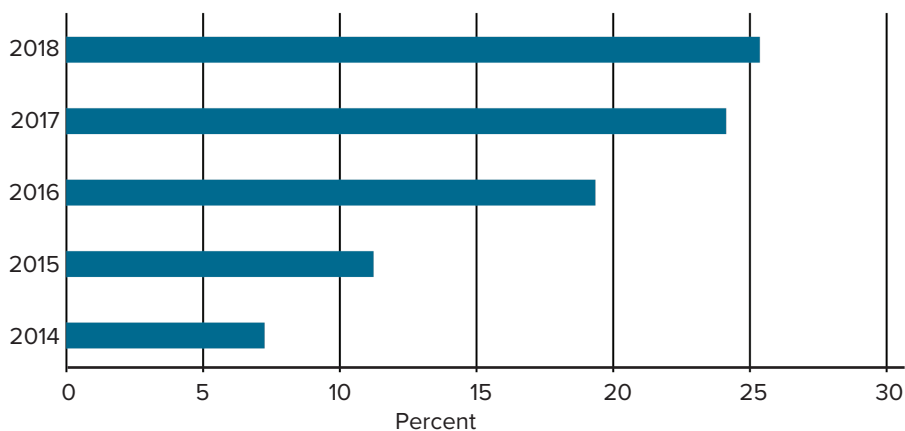
Of those who used a labor-saving technology for the first time, 72% reported using it because of rising

labor costs, and 54% used it because there were not enough workers (see Figure 4). The two most common labor-saving technologies adopted were mechanical harvesters and specialized tractor attachments. Other common responses included mechanical planters, pruners, weeders, thinners, and automated irrigation technologies.

Conclusion

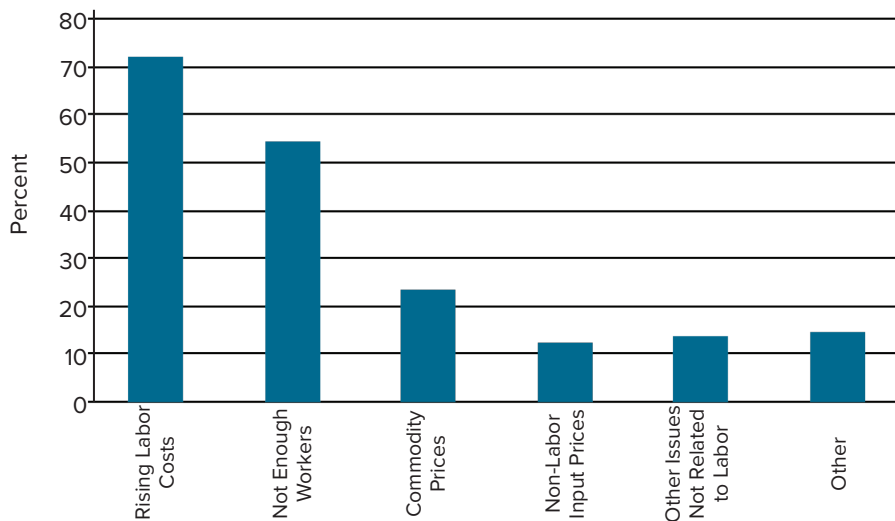
The results from the UCD-CFBF "Adapting to Labor Scarcity Survey" largely confirm the handwriting on the wall: farmworkers are becoming harder to find and retain, and farmers are going to have to adapt in an era of labor scarcity. Farm work is physically demanding and often pays less

Figure 3. Percent of Farmers Who Changed Cultivation Practices Because of Labor Availability



Authors' calculations from the "Adapting to Farm Labor Scarcity Survey" data.

Figure 4. Reasons for Adopting a Labor-Saving Technology



Authors' calculations from the "Adapting to Farm Labor Scarcity Survey" data.

than nonfarm jobs entailing a similar degree of physical labor. Data from the National Agricultural Workers Survey reveal a recent upward trend in the share of farmworkers who engage in work off the farm, suggesting that employment in other sectors of the economy is becoming an increasingly attractive alternative to farm work.

In all countries, as incomes and nonfarm employment rise, workers—particularly young people—leave the farm. Farmers have continued raising wages in an attempt to attract and retain workers, but it is clear that this has not resolved the problem.

Over the past five years, an increasing share of California farmers report using a farm labor contractor to mitigate the risk of not being able to find enough workers. Although the H-2A visa program is not widely used, California farmers are increasingly using it to gain access to foreign workers.

Some farmers have switched acreage out of FVH crop production into less labor-intensive crops, including nuts, row crops, grain, or hay, and a substantial share have changed cultivation practices because they could not find enough workers. Most farmers report using a technology that

reduced their reliance upon workers during the past five years, including many who started using a labor-saving technology for the first time during this period.

If the trends highlighted by our survey continue, farmers undoubtedly will become more reliant upon technologies that automate labor-intensive tasks, and they will find themselves under increasing pressure to seek ways to produce more crops with fewer workers.

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Authors' Bios

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For additional information, the authors recommend:

Charlton, Diane, J. Edward Taylor, Stavros Vougioukas, and Zachariah Rutledge, 2019a. "Can Wages Rise Quickly Enough to Keep Workers in the Fields?" *Choices* 34, no. 316-2019-1984: 1-7. www.choicesmagazine.org/choices-magazine/submitted-articles/can-wages-rise-quickly-enough-to-keep-workers-in-the-fields.

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