California Farm Labor in the 2020s

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Highlights

California's farm sales of $51 billion in 2021 were almost twice the farm sales of Iowa, the #2 farm state; over $20 billion worth of CA commodities are exported. California has led among states in farm sales since 1949 by specializing in FVH commodities: fruits and nuts (worth $21 billion in 2019), vegetables and melons ($8 billion), and horticultural specialties ($6 billion).

Almost 90 percent of California's 850,000+ workers were born in Mexico, have little education (an average 8 years), are aging (average 42), and are half unauthorized. By contrast, H-2A guest workers are typically 32-year-old Mexican men who cost more than US workers, at least $25 an hour including wages, housing and transportation, versus $18 to $20 for US workers including wages and payroll taxes. Most H-2As are more 15 to 30 percent more productive, and their contracts provide labor insurance.

The covid pandemic accelerated three trends: faster adoption of labor-saving mechanization and mechanical aids that raise the productivity of hand workers, more H-2A guest workers, and rising imports of fruits and vegetables. Farm wages are rising than nonfarm wages (1) for market reasons, as stable demand confronts a shrinking supply of US workers, (2) as a result of new regulations including overtime, and (3) due to increased reliance on H-2A workers and transportation, housing, and AEWR requirements.

Farm Employment

California specializes in high-value and labor-intensive commodities. An acre of midwestern corn or soybeans typically generates $750 to $1,500 in revenue, while an acre of strawberries can generate $100,000 or more, highlighting the high investment requirements and risks associated with FVH commodities. Labor costs are 30 to 40 percent of variable production costs for most fresh fruits and vegetables.

California farms employ an average 425,000 hired workers; employment peaks at 500,000 in June and is less than 350,000 in January. Average employment is a measure of full-time equivalent (FTE) jobs. Seasonality and worker turnover mean that twice as many unique workers, 850,000+, are employed for wages sometime during a typical year on California farms. An FTE farm worker would have earned $755 a week or $39,000 in 2020, but typical farm workers receive only half as much, $18,000, because most are employed seasonally.

California is unique among states in having more workers brought to farms by nonfarm employers, especially farm labor contractors, than are hired directly by farmers. In US ag, two workers are hired directly by farmers for each worker brought to farms by crop support-service firms such as FLCs. In California, 1.5 workers are brought to crop farms by nonfarm crop support businesses for each worker who is hired directly.

Farmers and Farm Workers

Farmers and farm workers differ in characteristics and income. Farmers tend to be older than average US workers, are mostly white, and are often the 3rd, 4th, or 5th generation to farm. There has been an upsurge in outside investment into farming with goals that range from (1) restructuring to reduce costs and raise profits in traditional farming operations to (2) hoping to benefit from land-price appreciation and (3) retirement farming.

Farm workers are younger, minority, and often first-generation US farm workers who are mostly settled in one area and have one farm employer a year. CA farm worker earnings averaged $17.50 an hour in 2021, and farm wages are rising faster than nonfarm wages. Most hired workers begin to do farm work in their early 20s and drift out of farm work in their 40s. Until the 2008-09 recession, exiting farm workers were replaced by young and unauthorized newcomers from rural Mexico, but today the fresh blood is from H-2A guest workers who are almost 20 percent of US and 10 percent of California crop workers.

The Farm Workforce Modernization Act would legalize unauthorized farm workers, make it easier for farmers to employ H-2A guest workers, and require farm employers to use E-Verify. The FWMA would likely increase the US farm labor supply in the short term and expand the H-2A program in the medium term.

FWMA would allow unauthorized farm workers to become Certified Agricultural Workers (CAWs) with 5.5 year work visas; after four or eight more years of US farm work, CAWS could apply for immigrant visas. The H-2A program's Adverse Effect Wage Rate of $18.65 in California in 2023, when the minimum wage is $15.50, would be frozen and studied. Exiting CAW workers, cheaper H-2As, and the E-Verify mandate should expand the H-2A program beyond the 372,000 jobs certified in FY22, including 12 percent in California.

Machines, Migrants, and Imports

Covid accelerated three trends: mechanization, migrant H-2A workers, and imports. Human history is the story of productivity improvements in agriculture that allow fewer farmers to feed more people, and labor-saving mechanization remains the major response to rising farm labor costs. Mechanization is easiest for crops that ripen uniformly, as with processing vegetables and tree nuts.

Mechanizing hand-harvested and fragile commodities such as lettuce and strawberries requires a systems perspective, cooperation between biologists and engineers, and trial-and-error refinements. A systems perspective means changing farming methods to facilitate mechanization, as when tall and round 3-dimensional fruit trees are replaced by two-dimensional dwarf trees whose limbs are trained to produce fruiting walls, so that apple orchards resemble vineyards. Cooperation means breeding plants that ripen uniformly and have skins thick enough to avoid damage from machines. The need to refine production systems means that the first machines are rarely those that dominate a decade later.

The mechanization question is how much (more) to invest in order to reduce labor costs. The decisive factor in mechanization is payback time, how soon does the new tree or vine architecture and machine pay for itself in reduced labor costs? Mechanization investments are most likely when market-driven changes are underway, as with new plantings or the replacement of Red Delicious with Cosmic Crisp apples. It is sometimes easier to mechanize pre-harvest tasks, including pruning and thinning, than to mechanize harvesting.

Migrants are the second option. The US Bracero program between 1942 and 1964 admitted a peak 455,000 Mexican guest workers in the mid-1950s, when 20 percent of US crop workers were Braceros. Farm labor costs jumped in the late 1960s as the United Farm Workers won 40 percent wage increases in table grape contracts and other farmers raised wages to avoid unionization. There was a wave of labor-saving mechanization in the 1960s followed by agricultural restructuring in the 1980s as oil companies and other conglomerates vulnerable to union-called consumer boycotts exited farming. After IRCA in 1986, unauthorized Mexicans provided an ample supply of workers in the 1990s and early 2000s, when the H-2A program certified fewer than 50,000 jobs a year.

The H-2A program began to expand during the housing boom of 2005-07. Farmers formed associations to recruit H-2A workers in ID, NC, and other areas after I-9 audits revealed unauthorized workers, but certifications stayed below 100,000 until 2013, when CA vegetables, Fl citrus, and WA apples began to rely on H-2A workers. H-2As are the highest share of farm employment in the southeastern states of FL, GA, and NC with the lowest AEWRs, but the H-2A program is expanding fastest in the Pacific Coast states of CA, OR, and WA, the three states with half of US crop workers, the highest AEWRs, and high housing costs.

The third response to higher wages is more imports. Over 60 percent of the fresh fruit available to US residents, and 35 percent of the fresh vegetables, are imported. Mexican farm wages are a tenth those of California, and Mexico provides half of US fresh fruit imports and three-fourths of US fresh vegetable imports. Many Mexican fruits and vegetables are from controlled environment agriculture (CEA), protective structures that range from plastic-covered hoop structures to greenhouses and result in higher yields, longer seasons, and better food safety. Workers in Mexico's export ag earn 2x or 3x the 2022 Mexican minimum wage of 173 pesos ($8) a day and 260 pesos ($12) a day in the border areas.

California pioneered the separation of the production and consumption of fresh and perishable commodities in the 1960s and 1970s to displace New Jersey as the US garden state; California's success was due to improved farming systems, cooling and packing technologies, and refrigerated transportation over interstate highways. This same separation of production and consumption is spreading to lower-wage countries, where growers often use CEA rather than open-field production methods. US and CA agriculture have traditionally been free traders, anticipating more opportunities to export rather than perceiving threats from farm imports, but ag protectionism may spread from the southeast as Mexican fruit and vegetable imports rise.

California's farm labor story of the 2020s involves rising farm labor costs and more mechanization, more H-2A guest workers, and more farm imports, with variance by commodity. Rising labor costs are likely to:

- shrink US production of open-field fresh tomatoes and cantaloupes as imports rise,
- speed the switch from hand to machine harvesting of blueberries and raisin grapes where imports keep a lid on US grower prices,
- encourage more mechanical aids such as conveyor belts and robots that raise the productivity of US and H-2A workers in strawberries and table grapes and
- speed the replacement of ladders with lifting platforms in tree fruits such as apples and cherries.

Producing labor-intensive commodities will require more investment, raising the question of where to invest. Should additional investment go to machines to replace workers, aids to make workers more productive, housing

for H-2A workers, and/or production in lower-wage countries? The path ahead is not clear, which is why growers of most commodities are investing in some of each until the winning strategy comes into focus.

Ag, migration, labor, and trade policies will help to determine the winning strategy for particular commodities. The US is a global leader in developing new varieties of fresh apples desired by consumers, and significant new investments in replanting orchards with dwarf trees to facilitate the use of mechanical aids and machines means that H-2As are likely to serve as a bridge to full mechanization. By contrast, processing orange acreage is likely to continue shrinking due to disease, hurricanes and urbanization, and competition from cheaper frozen OJ.

Wine

The US consumes more wine than any other country: 33 million hectoliters or 870 million gallons in 2021, including 40 percent imported wine. A third of US wine imports arrive in bulk and are blended and bottled in the US. The world wine industry is marked by (1) concentration in wine making that gives power to the largest 30 wineries that account for 80 to 90 percent of the wine produced, (2) production that is rising faster than consumption, keeping a lid on grape prices, and (3) frequent lack of profit and capital to invest for mechanization, especially if alternative crops such as almonds are available.

California's grape industry has three major segments: raisin, table, and wine grapes. California produced 5.6 million tons of grapes in 2020, including 1.1 million tons or 20 percent (green) raisin grapes, 1.1 million tons or 20 percent table grapes, and 3.4 million tons or 60 percent wine grapes. Raisin grapes were worth an average $275 a ton to growers, table grapes $1,320 a ton, and wine grapes $795 a ton. California had 142,000 acres of wine grapes in 2020, 122,000 acres of table grapes, and 580,000 acres of wine grapes.

The major labor-using steps in wine grape production involve pruning grape vines in winter, removing leaves and thinning bunches of grapes in spring, and harvesting grapes in fall. Pruning and thinning are largely mechanized, and 90 percent of California's wine grapes are harvested by machine.

California produces over 85 percent of US wine, and the wine grape industry is segmented. Most wine grapes are in the San Joaquin Valley, where machines are used extensively in vineyards that have high yields of grapes that generate less than $500 a ton. The North Coast wine sector relies more on hand labor to produce higher value grapes. High housing costs and an aging local workforce force growers to decide between more machines or more migrant H-2A workers.

A comparison between UC Cabernet Sauvignon cost studies highlights differences by region. A 2019 study estimated labor costs in the southern SJV at less than $500 of the $2,500 in variable production costs per acre. Yields of 12 tons an acre and grower revenue of $325 a ton generate $3,900 per acre, with machine-harvesting costs of $27 a ton or $325 an acre. In Napa, by contrast, yields were four tons an acre, Cabernet was worth $8,200 a ton, for gross revenue of almost $33,000 an acre or eight times more. Hand harvest costs were $250 a ton or $1,000 an acre.

Hand harvesting wine grapes, which costs 10 to 20 times more than machine harvesting, is most common in the North Coast, where high housing prices limit the availability of local seasonal workers. Surveys of workers in Napa and neighboring counties find satisfaction with wages that are often $20 an hour or more, but dis-satisfaction with long commutes from homes in lower-cost areas. North Coast growers must weigh ever higher labor costs against quality and other reasons for continued hand operations, including vineyards on steep hills and those not laid out for machines.