

The workforce available to tend and harvest California's fruit and vegetable crops has become increasingly Mexican and increasingly undocumented. Previous waves of migrant workers, including Asians at the turn of the century, midwestern whites during the Depression, and postwar Texas-Mexicans, have apparently run their course.

If there were not a continuous flow of Mexican workers into California's agriculture, there would soon be a shortage of workers or an adjustment in labor market conditions, because turnover is high. The most arduous piece-rate harvest jobs are held by the same worker for several years after which he takes an easier job in the United States or returns to Mexico. Since harvest workers' children raised in the United States normally quit the fields after they finish high school, a constant replenishment at the bottom of the job ladder from abroad is necessary to maintain the present system of wages and working conditions.

At present there is a labor glut at entry-level positions, because self-generating Mexican migratory networks from areas of high unemployment have developed enough momentum to overfill California farm jobs in most areas. With proposed changes in immigration policies, we are moving into a period in which the supply of undocumented Mexicans to agriculture is uncertain. Unfortunately, few studies have focused on what adjustments will be necessary if labor shortages occur.

California agriculture has several quite different micro labor markets, so that the overall picture can best be grasped by examining several case studies. The information for these case studies is based on in-depth interviews with more than 500 farmworkers conducted by the senior author. (Published results of the surveys are listed in the table source notes.)

Pole tomatoes, north San Diego County

Pole-tomato growers in San Diego County usually lease land from owners who are waiting to develop farmland for nonfarm uses. The transitional tomato industry plants 4,000 acres in North County and employs 5,000 harvest workers. The workers are 100 percent undocumented, live in the open fields, are paid the minimum wage, and sit in camps waiting for work. The foremen are directly employed by the growers.

Workers are paid the minimum wage but are often asked to work "volunteer" hours, and Social Security deductions are withheld for obviously bogus accounts. Almost all workers have the same fictitious Social Security number (000-00-0000). Although workers are

Some crops depend on a flow of illegal workers from Mexico

Foreign workers in selected California crops

Richard Mines □ Philip L. Martin



paid by the hour, a negative or reverse piece-rate system is enforced. The hourly workers who cannot maintain a fast minimum standard are quickly fired.

The pole-tomato industry illustrates how legal "commuter" workers can be displaced by undocumented immigrants. In the early 1970s, most tomato acreage was in southern San Diego County and most harvest workers were legal Mexican commuters. By the late 1970s, the industry had moved to North County and the labor force had become 100 percent illegal. The workers are from new, "immature," migratory networks that bring workers from central Mexico to the United States and are not usually related to the displaced border commuter migrants. The new workers are predominantly from Oaxaca, one of the poorest Mexican regions, which only recently began sending migrants to the United States.

It will be difficult to mechanize this crop. Pole tomatoes do not ripen uniformly, and they require staking and tying. Tariffs protect the industry from Mexican tomatoes, which are picked by a similar migrant workforce in Mexico.

A guestworker program could stabilize the pole-tomato labor market. The networks that send workers to northern San Diego County do not have the contacts to place new migrants north of the work sites or in San Diego's urban areas. Many of the tomato harvesters have their wives and children just across the border in Tijuana's burgeoning "colonias." If their families remained in Mexico, these workers could be converted into a legal and stable alien workforce, since the workers would not be tempted to "desert" their contracts and go further north looking for better conditions.

The guestworker option for crops north of San Diego County is not feasible, unless the strict enforcement of an

employer sanction law succeeds in disrupting the current migratory networks. Further north, most networks of workers, even those that are predominantly illegal, are well entrenched. Guestworkers would desert their contracts and find protection with "established" relatives and friends from the existing networks. If the guestworker program encouraged the creation of new networks in Mexico, a likely consequence would be a continued labor surplus as new and old networks both sent workers to the same farm jobs.

If the flow of Mexican workers to the pole-tomato industry in San Diego County were cut off suddenly, the industry could not easily find local workers for these jobs. Some growers might re-establish the corps of legal commuters, but the Mexican export industry just south of the border could also expand, unless U.S. tariff policies limited access to the U.S. market.

Citrus, Ventura and Tulare counties

Ventura County has a more stable labor market than Tulare County for citrus pickers. In Ventura, about one-third of the citrus harvest is managed by farm labor contractors (FLCs), who rely partially on undocumented workers; over half of the citrus harvest is done through FLCs in Tulare. Progressive growers' associations actually control over half of the Ventura citrus harvest, and about half of the Ventura workers harvest under union contract. In both counties, piece rates determine wages, but Ventura County workers are much more likely to be offered fringe benefits. Probably less than one-third of the 4,000 Ventura County citrus pickers are undocumented; most documented citrus workers have their families with them in the county. In Tulare County, over



Seasonal work forces by crop

County and crop	Undocumented	Peak
	%	number of workers
San Diego, pole tomatoes	100	5,000
Ventura, citrus	30	4,000
Tulare, citrus	60	7,000
Tulare, table grapes	30	7,000
Tulare, deciduous	60	8,000
Monterey, strawberries	80	1,500
Monterey, lettuce	25	7,000

Sources: Estimates of undocumented from Richard Mines, *Developing a Community Tradition of Migration: A Field Study in Rural Zacatecas, Mexico, and California Settlement Areas*, Monographs in U.S.-Mexican Studies, No. 3, University of California, San Diego, La Jolla, Calif., 1981; Richard Mines and Ricardo Anzaldua Montoya, *New Migrants vs. Old Migrants: Alternative Labor Market Structures in the California Citrus Industry*, Monographs in U.S.-Mexican Studies, No. 9, U.C., San Diego, La Jolla, Calif., 1982; and Richard Mines and Michael Kearney, "The Health of Tulare County's Farmworkers." Report to Department of Health, State of California, Sacramento, 1982. Numbers of workers from Report 881A, Employment Development Department, State of California; William Friedland et al., *Manufacturing Green Gold: Capital, Labor, and Technology in the Lettuce Industry*, Cambridge University Press, New York, 1981; and Joe Nalven and Craig Frederickson, *The Employer's View*, Community Research Associates, San Diego, California.

half of the 5,000 workers are undocumented, and many workers do not have their families in the United States.

These different labor markets are the result of different economic circumstances and reactions to them. By the time the Tulare County "orange belt" was bearing fruit in the late 1950s, wages of Braceros — Mexicans contracted to do farm work in the United States — were high and U.S. Department of Labor enforcement of labor standards made Braceros expensive. In Ventura, the citrus pick was very dependent on the contract labor system. In 1965, after the Bracero Program ended, Ventura was faced with a severe labor shortage and reacted by stabilizing its labor force. Ex-Braceros became legal "green card" immigrants, and growers encouraged them to bring their families to the United States by offering the workers pensions and health insurance benefits. In Tulare, by contrast, FLCs and illegals were already prominent, and few labor market adjustments were necessary.

A sudden cutoff of Mexican workers would be devastating to the citrus industry. Citrus suffers from growing overseas competition and could lose some of its foreign markets if a labor shortage interrupted harvesting. Disruption of the harvest could also harm American workers who pack and transport citrus.

Mechanization of the citrus pick is uncertain. In California, the fresh fruit that has the greatest value must be carefully handpicked. Citrus fruit does not ripen uniformly, so each tree must be picked at least twice each season. Finally, it is difficult to design a machine that can adjust to the differing shapes and heights of citrus trees.

Experiments with abscission chemicals that cause fruit to drop to the ground continue, and their eventual

success may permit mechanical harvest of citrus for by-products. Other experiments include shakers to dislodge fruit from the trees and hydraulic platforms from which pickers could harvest fruit. At this time, all mechanical harvesting methods have major problems and none is commercially available to harvest fresh lemons and oranges.

If the Mexican labor supply were eventually cut off, the industry would probably "re-stabilize" its labor force, a process similar to that which took place in Ventura County after 1965. In addition, efforts to develop mechanical harvesters, at least for processed fruit, would be intensified.

Table grapes, Tulare County

Grape cultivation requires workers to perform a variety of labor-intensive seasonal tasks. A 1981 survey of Tulare County farmworkers found that the workers who both picked and pruned averaged 230 days of work each year. This long season has made the grape workforce more stable than citrus pickers. Over two-thirds of the grape workers in the survey were paid by the hour, not with the piece rate. The average wage in 1981 was \$4.30 an hour. Most of the grape workers were employed directly by growers, and fewer than one-third were undocumented.

A rapidly increasing percentage of wine grapes are machine-harvested. Gallo is now accepting mechanically harvested grapes. Mechanization of the table grape harvest may also be possible. However, it may be some time before machines do the many seasonal tasks required.

Stabilization of the labor force in grapes would probably lead to demands for changes in working conditions. Most grape pickers complain of eye irritation, skin rashes, and nausea because of con-

tact with sulfur and dust on the leaves.

Deciduous crops, Tulare County

Those who harvest peaches, plums, nectarines, and cherries work very short seasons. The harvests are managed primarily by labor contractors, but one-third of the picking is directed by grower-appointed foremen. The pay system is mostly by the piece, and over half of the pickers are not legally admitted to the United States. Although the season is short, piece rates enable many harvesters to earn \$40 to \$50 a day at peak periods.

Historically, groups of workers followed the ladder crops. In the 1940s and 1950s "fruit tramps" originally from the Midwest formed the main corps of fruit pickers, but Mexicans have replaced the Anglos. In the summer, part of the settled Mexican picking population in Tulare County chooses to follow the ladder crops into northern California and beyond to escape the sweltering Valencia orchards. Many fruit pickers are undocumented workers who are moved around the Central Valley by FLCs.

There is no immediate indication that the fresh fruit harvest will be mechanized, even though mechanical harvesters have been developed for some varieties of processed fruit. Also, there is less international competition in deciduous crops than in citrus.

It might be possible to "stabilize" the present deciduous labor force. As in Ventura County citrus, some new entrants (members of current workers' families) would be required to replace workers who dropped out of the work force each year.

Strawberries, Watsonville

The strawberry work force is structured by a sharecropper system or is employed directly by growers. The sharecroppers obtain land, fertilizer, and seedlings from the landowner. They pay for all labor and baskets and share profits with the owner of the land. Sharecroppers are difficult to regulate and often pay less than the minimum wage for cultural practices. The 1,500 strawberry workers are mostly undocumented, and many are from new migratory networks that cannot find urban jobs for new arrivals from Mexico.

In the 1950s and 1960s, the Watsonville strawberry growers relied on Braceros. During that period, the Mexican strawberry industry grew while California's industry contracted. In the 1970s, the Mexican industry contracted, and California acreage expanded rapidly with the development of better varieties and better soil management practices. However, a crucial element in the resurgence of California strawberries was

availability of low-cost Mexican labor.

Technology does not promise a successful harvester for fresh market strawberries in the near future, because the fruit matures unevenly and the plants are very delicate. A sudden cutoff of Mexican labor might drive the industry back to Mexico. The same firms that market California fruit also handle Mexican strawberries, so the middlemen are poised to move with the industry.

Lettuce, Salinas

The \$1 billion lettuce industry depends on a corps of well-paid cutters and packers. About half of the 7,000 harvest workers cut and pack lettuce under a piece-rate schedule that permits many workers to earn \$15 to \$20 an hour at peak periods. The other lettuce workers are mostly women and older men who thin and hoe or wrap the lettuce at wages of \$4 to \$6 an hour.

The lettuce industry is highly concentrated, dominated by a few grower-shippers. The cutting and packing crews are self-regulating, minimizing the grower's supervisory responsibilities. The work of the entire crew determines the piece rate of each individual, so all crew members maintain a fast pace. Salinas lettuce growers depended on contract labor during the Bracero period, after which the industry legalized its ex-Bracero crews. It shifted from an hourly pay scale used during the labor-abundant Bracero period to the present piece-rate crew system after 1964.

Lettuce cutting machines, though expensive and imperfect, are available, and problems with postharvest activities, such as wrapping and bulk handling, could be overcome. However, growers will be slow to switch, because transportation costs to East Coast markets often equal production costs, and mechanical harvesting cannot ensure that the lettuce shipped east is 100 percent salable. In addition, lettuce harvesting, as the highest paying seasonal farm labor task in California, would attract workers from other crops if needed.

Immigration reforms that include employer sanctions, stepped-up enforcement, and an amnesty for illegal residents appear inevitable. If California's agriculture is to adjust to inevitable workforce changes without disruptions and losses, farmers and farmworkers must develop strategies to determine which tasks can be mechanized or modified and which can justify to policy-makers the need for foreign labor.

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Side-whip grafting of grapevines to change over varieties

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Topworking vines earlier in the spring

T-budding is one of the easiest methods of changing over varieties in a mature vineyard. It requires the least skill and, when a certain degree of precaution is used, gives a high take. After some experience, the technique results in vine takes of 95 percent and higher. The greatest drawback to this method is that it cannot be started until the bark "slips," which, in most areas of California, is around the end of April or the first part of May. In the coastal counties where it is cool, the buds may be delayed in pushing. This delay results in a smaller new head or growth that often does not mature.

A method is needed that permits the vines to be topworked earlier in the spring — March and April — at high level, just as has been done in the past by cleft or split grafting at ground level. One such method is chip budding, but this requires considerably more skill than T-budding and may give more erratic results, especially when vines bleed late in the spring. Another method of topworking grapevines at high level early in the spring (March) is the notch or wedge graft, but this also requires considerable skill. Within the last five to eight years, grafters in the lower San Joaquin Valley have shown interest in the side-whip graft, which is reported to be fairly easy to accomplish and to give satisfactory takes.

Two test plots established in 1982 provided "take" data on this type of grafting. One plot was in Manteca, California, where 117 vines of Ruby Cabernet were grafted to five clones of Zinfandel. We compared two methods of side-whip grafting, the first using only a single tongue at the upper end of the slanting cut of the scion, and the second using two tongues (see photos). We

grafted the vines on April 14 using two scions per vine.

The two-tongue method was superior in both vine take (90 percent take out of 50 vines grafted, as opposed to 72 percent of 67 vines by the one-tongue method) and scion take (79 percent take of 100 scions inserted, as opposed to 46 percent of 134 scions).

In the second test plot, at Napa, California, only the double-tongue method was used. Eighty vines of Merlot were grafted over to four Italian wine cultivars on April 24 with two scions on each trunk. A very good vine take (99 percent) resulted, but the scion take was lower (91 percent of 160 scions).

These results and discussions with other budders and grafters suggest that side-whip grafting is not as successful as T-budding. However, the take is acceptable. This method requires somewhat more skill than T-budding but not as much as notch grafting or chip budding.

One limitation of whip grafting is that it should not be used in areas that have high winds in the spring.

Side-whip grafting results in a good-size new head being established early in the season so that the wood matures properly before the next winter. In areas where it can be used, whip grafting offers a means of getting an early start on topworking a vineyard. T-budding may be used later to catch the grafts that failed to grow. In topworking a large vineyard, it is possible to start early by whip grafting until the bark "slips" and then use T-budding.

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