

FRUIT AND VEGETABLE PRODUCER RESPONSES TO HIGHER LABOR COSTS

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How would US fresh fruit and vegetable producers respond to higher labor costs? Case studies suggest that there would be labor-saving mechanization in commodities such as raisin grapes and higher prices in strawberries. Weather is the single most important factor affecting fresh fruit and vegetable trade, but labor and transportation costs also shape trade patterns. Affluence created a demand for fresh fruits and vegetables year-round, and new seeds and better storage enabled producers to supply commodities year round. Rising wages can prompt labor-saving mechanization instead of rising imports. Vegetables are far more mechanized than fruits— about 75 percent of US vegetable and melon tonnage is machine harvested, but less than half of the fruit tonnage. There was significant interest in mechanization in the 1960s and 1970s, when the end of the Bracero program and the rise of unions led to rapid increases in farm wages.



Publicly supported labor-saving mechanization, perhaps best symbolized by the development of the mechanical tomato harvester, waned in the 1980s as federal, state and industry contributions to university-based labor-saving researchers ended, immigration increased, and real farm wages fell. USDA Secretary Bob Bergland said, "I will not put federal money into any project that reduces the need for farm labor," and California Rural Legal Assistance filed a lawsuit against the University of California alleging that federal research funds were used unlawfully to develop the tomato harvester and displace small farmers and farm workers.

Federal funding for mechanical harvesting research increased with the Food, Conservation, and Energy Act of 2008, which included "efforts to improve production efficiency, productivity, and profitability over the long term (including specialty crop policy and marketing) and new innovations and technology, including improved mechanization and technologies that delay or inhibit ripening."

The federal minimum wage was \$5.15 an hour between September 1, 1997 and July 24, 2007, when it rose to \$5.85 an hour. In 2008 minimum wage rose again to \$6.55 and then to \$7.25 in 2009. The federal minimum wage fell by 30 percent in real terms before the 2007 increases. The California minimum wage was also \$5.15 an hour on September 1, 1997, and rose to \$5.75 in 1998, \$6.25 in 2001, \$6.75 in 2002, \$7.50 in 2007, and \$8 an hour in 2008.

The following case studies illustrate possible adjustment scenarios to higher wages...



Raisins

Harvesting raisins has traditionally been the single most labor-intensive activity in US agriculture, requiring 45,000 to 50,000 workers for six to eight weeks. Traditionally workers cut bunches of grapes and place them on paper trays to dry into raisins; however the rising minimum wage and concerns regarding a steady supply of harvest workers encouraged many growers to mechanize. By some estimates, up to half of California's raisin grapes were picked with at least some mechanization in 2010. This trend towards mechanization has reduced the peak raisin harvest work force to perhaps 25,000 and is expected to continue. Wages, the availability of labor and the prices that growers get paid are factors that impact mechanization.

There are labor-saving alternatives for raisin growers, but they require investments that may not pay off for several years. Growers who plant earlier-ripening varieties can cut the canes on which grapes grow and allow grapes to begin drying into raisins while on the vine, the so-called Dried-on-the-Vine (DOV) method of harvesting. DOV harvesting shifts the demand for labor from the September harvest to the winter pruning season, since canes must be trained to grow in a manner that makes it easy for a wine grape harvesting machine to knock them off the vine. Machines reduce raisin harvesting costs dramatically, but require an upfront investment in early ripening grape varieties, careful pruning, and harvest machinery.

The major factors that slow the mechanization in raisins include: (1) the structure of the industry, including a large number of older growers with small acreages; (2) stable or declining US raisin consumption and rising imports and (3) the significant investments required for replanting and machines.



Strawberries

Strawberries are a success story for growers, with production and prices climbing for California growers who produce almost 90 percent of US strawberries. California growers hope to sell their berries fresh to consumers, but send them for processing into frozen berries when there are more berries than can be sold fresh. Imports of fresh strawberries are less than 10 percent of US fresh strawberry consumption, but imports of frozen strawberries account for over 60 percent of US frozen strawberry consumption and are rising.

Strawberry fields are picked by hand multiple times, often every three days. An average 1,000 hours of harvest labor is required to harvest a typical acre of strawberries,

representing half of the \$19,000 cost of production. The best strawberry pickers earn \$10 to \$12 an hour during the peak season, but most earn less. In surveys of farm employers, strawberry workers have the lowest average hourly earnings, an average \$9.13 an hour in 2007, lower than the average \$9.31 for employees of labor contractors and the \$10.27 average of all crop workers. Reasons for low strawberry wages may include the long season, the ability of families to work together and, because the work involves bending rather than climbing trees, more older workers and women, which increases the pool of workers available to harvest berries, holding down wages.

Many southern California strawberry growers use a Harvest Pro (a slow-moving conveyor belt onto which pickers can place trays of harvested berries) mechanical aid to increase worker productivity. The belt reduces the need for pickers to carry full trays to the end of the row and reduces the slips and falls that sometimes occur when piece rate workers rush to deliver full trays of berries to waiting trucks so that they can return to picking. There were 250 of the \$115,000 mechanical aids in operation in 2008, most in Ventura county, where they were used to harvest at least half of the area's strawberries on relatively flat land. Far fewer Harvest Pros are used in the Salinas region.

Strawberries are fragile and perishable, complicating mechanization. Most mechanization efforts involve a two-machine process, with the first machine scouting the field making a map of the ripe fruit, and a second machine using this information to harvest the fruit. Because of falling computing costs, this two-machine strategy is more economical than a once-over harvester that would lower harvesting costs and yields of useable fruit.



Lettuce

US lettuce consumption and production is growing, but the major types of lettuce have changed. Head or iceberg lettuce is now just 60 percent of the US crop, reflecting the rise of leaf, romaine, and other lettuces. The US produces lettuce year-round. Very little lettuce is imported or exported.

A handful of large producers dominate the production of lettuce. They produce lettuce year-round, normally operating in Salinas seven months a year, around Yuma, Arizona for four months, and a month in the San Joaquin Valley in spring and fall. Large lettuce producers have a history of innovation. They developed vacuum tubes that cool heads of lettuce quickly and bagged salads, or cut-up lettuce in refrigerated bags.

Most head lettuce is harvested and packed in the field. Crews of about 40 workers walk behind slow-moving conveyor belts, cut heads of lettuce and place them on the belt, where they are conveyed to packers who wrap them with film and pack them into cartons. The first harvest typically accounts for about 75 percent of the yield; most fields are picked twice.

Even though an increasing share of iceberg lettuce is used in bagged salads, most growers are reluctant to use a once-over mechanical harvester because heads of lettuce do not ripen uniformly, so that up to a quarter of the crop could be lost with a harvester. Baby-leaf lettuces, whose share of the market is expanding, are usually harvested by \$250,000 machines that use a band saw to cut up to seven tons an hour, replacing 140 hand workers.

Lettuce has been called green gold because of its profitability. Unions were quick to target large and profitable lettuce growers in the 1970s. By the late 1970s most of the large growers had union contracts that offered entry-level wages that were twice the minimum wage as well as benefits that were rare for seasonal farm workers, including health insurance and pensions. In the 1980s rising illegal migration reduced the number of union contracts and today non-union workers produce the majority of lettuce.

The production systems of labor-intensive commodities vary, as will the reactions of producers to increases in labor costs. Rising wages can prompt labor-saving mechanization. For some crops, mechanical harvesters may be available in a range of configurations appropriate for farms of different sizes. Even when a mechanical harvester is available, not all growers will adopt the new technology. Hand-harvested produce is usually of better quality, since it is hard to replicate the skill and care of hand harvesters. Producers who hire mostly unauthorized workers face several challenges, including immigration enforcement or reforms that could raise labor costs at a time of increased trade. Producers' reactions depend on factors that include the availability of mechanical alternatives, the degree of import competition, and the feasibility of aids that increase worker productivity.

For More See:

Calvin, Linda and Philip Martin. 2010. [The US Produce Industry and Labor: Facing the Future in a Global Economy](#). USDA. Economic Research Report No. (ERR-106). November.

www.ers.usda.gov/AmberWaves/december10/Features/LaborIntensive.htm

<http://migration.ucdavis.edu>

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