



# Policy Brief

American Immigration Control Foundation P.O. Box 525, Monterey, Virginia 24465

## Mechanization: A Solution to the Farm Labor Issue

By John Vinson

### *Overview*

When proposals come forward to stop illegal immigration and deport the illegal aliens now living in the United States, a common response is that we need the illegal immigrants because “they do jobs Americans refuse to do.” Actually in most cases, this simply isn’t true. In nearly every job category in the U.S., native-born Americans are the majority of workers. [1]

Thus when illegal aliens take these jobs they are competing with a majority of Americans who are doing them and are perfectly willing to do them. One exception to this general rule, however, is that of farm workers. According to various estimates, illegal aliens make up more than 50 percent of our agricultural workforce.

Those who oppose crackdowns on illegal immigration often point to illegal farm workers and claim that without them “our crops would rot in the fields” and “their cheap labor keeps our food prices low.” After making these points, they sometimes go on to say that our need for farm labor means that we should legalize all illegal aliens in the U.S., now estimated at between 11 million and 12 million.

That conclusion simply doesn’t follow. Only about five percent of the illegal aliens in the U.S. are involved in agriculture. [2] Consequently, we could deport 95 percent of the foreigners illegally residing in this country, and it would have no impact on crops at all. Also, if past experience with amnesty is any guide, illegal aliens now working in agriculture, if legalized, would likely move on to more lucrative and less demanding occupations. Most likely, other illegal immigrants would see this as an opportunity to take their places.

Another proposal is using guest workers, but a problem with using them is that legislation probably would require that they receive what we would define as decent wages and living accommodations. Such

requirements, under the existing H-2A guest worker program, have made that program unappealing to many U.S. producers.

In reality, cheap labor contributes only marginally to our relatively cheap food prices. [3] Other factors are more significant to the prices we pay at the supermarket. And the labor that is cheap to employers is not really so cheap for consumers in general. What they may gain in lower food prices is offset in varying degrees by the higher taxes they must pay to provide the public services, welfare, and other costs incurred by illegal immigrants.

Furthermore, some commentators dispute the claims of growers that few Americans will do farm work. [4] As a case in point, Americans still make up about 46 percent of the agricultural workforce, a not insignificant percentage. [5] The commentators add that more Americans would consider farm work if the wages were higher and working conditions were better, but as long as illegal alien workers are readily available, wages and working conditions will not improve.

### *Mechanization*

Another way to accomplish farm work is to continue a trend that began about 150 years ago. [6] This is the mechanization of agriculture, the substitution of machinery for human labor. Today some ask, “Who will pick the apples?” and suggest that cheap foreign workers are the only answer. But before we accept that answer too quickly, we might reflect that in the 19th century people sometimes asked, “Who will pick the cotton” if we don’t have slaves or free workers living at a level close to slavery. Of course we know the answer to that question: We invented cotton harvesters.

And along the way other technology was developed to harvest wheat and other commodity crops. But, as one observer has noted, “mechanization has come unevenly to fruits and vegetables. It’s a patchwork of

crops and seasons, some served by machines but most served by a hoard of unskilled, low-wage workers from other countries.” [7]

Mechanization of fruit and vegetable harvests significantly began in the late 1930s. Today, machinery brings in a large share of crops for processing such as tomatoes, blueberries, tart cherries and grapes. Available machinery also can harvest fruits such as oranges and apples for juicing. Technology still must be refined to allow the mechanical picking of fresh-market crops such as apples, sweet cherries, and peaches without bruising them.

In the mid-sixties the U.S. Department of Agriculture along with land-grant universities began a major research effort to develop new technology to harvest crops. The timing was no accident. In 1964 the government ended the Bracero program, which had enabled growers to obtain an abundant supply of cheap farm workers from Mexico. With that supply gone, the incentives to mechanize were strong, and much progress ensued.

Unfortunately, that government-initiated effort came almost completely to a halt within a decade and half. Marking its demise was the statement made in 1979 by Bob Bergland, the U.S. Secretary of Agriculture at that time: “I will not put money into any project that results in saving farm labor.” [8] He later backed a lawsuit against the University of California to stop the use of public money for research into harvest technologies. The immediate reason for his action was pressure from the United Farm Workers Union and other labor groups that saw mechanization as a threat to their members’ jobs.

At that time, however, a much greater disincentive to mechanize was on the rise: massive illegal immigration. With so many inexpensive illegal workers available, the need to develop agricultural machinery seemed less pressing. One very unfortunate outcome of projects shutting down was that the expertise they accumulated was lost. [9] Development continued in the private sector, but the lack of public funding for research definitely slowed progress. Today, most research in agricultural technology takes place outside of the United States, often in countries where cheap labor isn’t readily available.

Nevertheless, the tide may now be turning for mechanization in the U.S. One reason is that our producers are increasingly facing competition from other countries that employ farm technology. Also, fewer illegal aliens are coming to the U.S. due to the

bad job market since 2008. Even when our economy improves, the flow might not resume as before because of better economic conditions in Mexico and a decline in that country’s birth rate.

One example of mechanization is the recent trend in the raisin industry. Development of raisin harvesting machines began in the 1950s, but producers insisted for many years thereafter that only human labor could do the work of cutting grape clusters, and the subsequent steps to turn the grapes into raisins. But by 2005 a major shift toward mechanization was beginning. A major impetus was mechanized foreign competition. Also, even at that time, the supply of foreign workers was tightening.

As one news report that year related, “The transition of many of [California’s] 5,500 raisin growers [is] considered the most significant innovation in the raisin harvest since the industry was established in 1873. It’s happening faster than anyone expected. Last fall, the amount of raisin acreage picked by machine increased by more than 30 percent.” [10] The machinery and preparations for mechanization are expensive, but the increased yield can repay the investment in a short amount of time. [11]

As noted previously, the development of technology to harvest orchards for fresh produce has lagged, due to the problem of the fruits bruising easily. Said one agricultural educator recently, “We like to joke that progress in the tree fruit industry has come a long way—we’re still picking apples and peaches with a bag and a ladder, the same way it was done a hundred years ago.” [12]

Nevertheless, change is coming to the orchards. One innovation still requires human pickers, but it greatly reduces the work they have to do and the total number of pickers needed. It lifts workers off the ground on a platform so they can pick apples and feed them into an attached machine which sorts the fruits for acceptable quality and then stores them. Thus there is no more need for bags and ladders.

Progress is coming on mechanical picking equipment, some of it described as “robotic.” An Associated Press story notes that “Such machines, now in various stages of development, could become essential for harvesting delicate fruits and vegetables now picked by hand.” The story quoted Jack King, national affairs manager of the California Farm Bureau, “If we want to maintain our current agriculture here in California, that’s where mechanization comes in.” [13]

The AP account added that “The new pickers rely

on advances in computing power and hydraulics that can make robotic limbs and digits operate with near-human sensitivity. Modern imaging technology also enables the machines to recognize and sort fruits of varying qualities.” Derek Morikawa, who heads the Vision Robotics firm, works with the California Citrus Research Board and the Washington State Apple Commission to mechanize harvesting. He observed that “The technology is maturing at the right time to allow us to do this kind of work economically.” [14] Part of this technology is a scanning unit which creates three-dimensional maps of orchards showing the location and ripeness of the fruit. The robotic pickers then follow the maps to pick the fruit.

Another interesting development to provide a fine touch to harvest sensitive crops, such as high-grade wine grapes, is the near-infrared spectrometer, a device which measures the sugar level and chemical make-up of grapes to be picked. This information then goes to a map which guides the mechanical harvester. [15]

It’s important to note also that farm mechanization doesn’t just involve the harvesting of crops. Machines can perform other tasks on farms as well. One example is the milking and feeding of dairy cows. Dairy robotics began in Europe about twenty years ago, in large part because of the scarcity of labor, and is well established there today.

In the U.S. the pace has been slower, but the use of robotics here is increasing.

Dairy robotics frees farmers from having to milk cows on a regular twice-a-day schedule. Once trained, the cows go in for milking by themselves. The technology also provides feed for the cows. Worldwide, 10,000 farms are using dairy robotics. [16] The system cost in the range of \$200,000, but savings in labor costs can pay off that outlay in seven to ten years. [17] An additional benefit of a transition to mechanical harvesting would be well-paying manufacturing jobs for Americans producing the machinery.

### ***Summary***

Mechanization of U.S. agriculture is clearly the wave of the future. Innovation is an outstanding facet of our national character, and we have strong incentives to continue our inventiveness in agriculture.

As mentioned, our growers face increasing competition from foreign producers who are mechanizing. Also, dependence on foreign labor discourages innovation, while bringing many social

and political problems. Surely we can find alternatives to economies based on sweat and toil which seem more appropriate to the 19th century than today. As a humane nation, we ought to seek better ways to produce our food than those which sometimes border on exploitation of illegal laborers. And finally, with consumers becoming ever more health conscious, mechanization can eliminate human contact with produce which can spread disease. [18]

### ***Solutions***

1) The first solution to promote agricultural mechanization is to curtail the flow of illegal immigrants who seek farm work. To give growers time to adapt to their absence, a guest worker program might be instituted, possibly a revamping of the H-2A program to streamline it and make it more user friendly. A guest worker program, however, should end after a specified number of years. That interval and deadline will give growers incentive to employ mechanization and make other changes while giving them adequate time to do so.

2) The government’s support of agricultural mechanization should resume, with funding of research at universities. The research should explore two avenues of development. Along with technology which can replace human labor, researchers should aim to develop machinery to make the tasks of labor more efficient and less burdensome. Making farm work more appealing in this fashion can help to ensure an adequate supply of American workers.

3) To encourage growers to adopt mechanization, the government might offer them tax credits and other tax incentives to do so. Most helpful too would be loan guarantees to help small growers to purchase equipment. This would prevent larger and better capitalized operations from gaining an advantage over them. And finally, the U.S. Department of Agriculture should make information on the possibilities of mechanization available to growers through extension offices.

### ***Endnotes***

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4. American Won't Do the Jobs Undocumented Workers Do for Pennies, David Dayen, 10/21/11, [www.firedoglake.com](http://www.firedoglake.com).

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16. *The realities of Robotic Milking Technology Today*, [milkproduction.com](http://milkproduction.com), 8/20/12

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