

TALENT CHALLENGES

IMMIGRATION POLICIES

COMPENSATION

THE Great Farm AND Food Talent Search



TECHNOLOGY

NEXT GENERATION



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I joined the company as a Production and Supply Intern in May 2011. Syngenta has provided me with a supportive and collaborative work environment to take on new challenges and develop my skills.

It has been an enriching experience, and I look forward to continuing to contribute to the company's mission and values in the years to come.

Vikrant Rai
Global Program Manager

#SyngentaLearner



BAUER

Developing the
Workforce of the Future

EDITOR'S LETTER

GREETINGS,

From Maryland to California and all states in between, there's one thing employers frequently share with us: Good help is hard to find.

Prior to COVID-19, employers were already short over one million workers, but that gap grew to almost 10 million job openings by August of 2023. Filling some of those jobs becomes even more challenging for employers who work in rural or remote locations.

Agri-Pulse devoted months to identify some of the root causes of this dilemma, and look for innovative solutions that make it easier for employers to find the right employees in the right geographic area at the right time. As you might imagine, there is no one "silver bullet" to solve these workforce challenges. Solutions include starting the training and awareness process in high school when students are first beginning to explore career opportunities, deploying new technologies to make jobs easier, and offering a more flexible work environment for families who may be struggling to juggle work and family responsibilities. We also look at government programs that enable immigrant labor to work on farms and in factories and how the demographics of available foreign workers are changing.

We hope you find this comprehensive five-part series to be informative and also stimulate some of your own ideas about how to address "The Great Farm and Food Talent Search."



Best regards,

A handwritten signature in dark ink that reads "Sara R. Wyant". The signature is fluid and cursive.

Sara Wyant
Founder and Editor of *Agri-Pulse*
www.Agri-Pulse.com



Chapter 1

Finding good help is always tough. In agriculture, it's getting tougher.

By Jacqui Fatka

Keith Stahler, who oversees hiring for a major East Coast pork producer and packer, Clemens Food Group, has experienced firsthand the challenges of finding and keeping the workforce needed to keep plants running and customers happy.

“I think back to five years ago and it was difficult to find people” to work at Clemens’ two pork processing facilities and 25 farms spread across Indiana, North Carolina and Pennsylvania, said Stahler, the company’s director of talent acquisition. “Once COVID hit, the challenge was greater.”

Certain agricultural jobs are not for everyone, especially if a prospective worker did not grow up on a farm. It’s physically demanding with a lot of standing and turning, and sometimes in a cold or less than desirable environment, said Stahler. “It’s one of those industries where there tends to be a higher-than-normal turnover.”

When the pandemic hit, “it was really hard for all industries across the country to find people, but specifically when you’re trying to hire for a position that requires physical labor and a barn or plant work environment,” he said.



Source: USDA

Stahler's challenges were replicated across many sectors in the U.S. as employers in the pre-COVID labor market were already short nearly 1.3 million workers. Today, the pool of workers to fill all U.S. jobs remains tight with as many as 4.4 million workers missing from the labor force with 9.6 million job openings as of August 1, 2023, with only [5.2 million people currently seeking a job](#).

According to the [Bureau of Labor Statistics \(BLS\)](#), the labor force participation rate in July 2023 came in at 62.6% for the fifth consecutive month, which is still below the pre-pandemic level of 63.4% in February 2020. In June 2023, 3.8 million people willingly left their jobs.

So where did all the workers go?

"Several different labor market demographic challenges started before COVID, but really accelerated based on what COVID brought to the table," said Julie Davis, senior director of workforce and industry initiatives at the Association of Equipment Manufacturers.

A decrease in the rate of births — on the decline since the 1970s — coupled with lower labor market participation, more job openings, a shortfall of immigrants and a surge of retirements are all creating a workforce problem that is hard to ignore, said Davis.

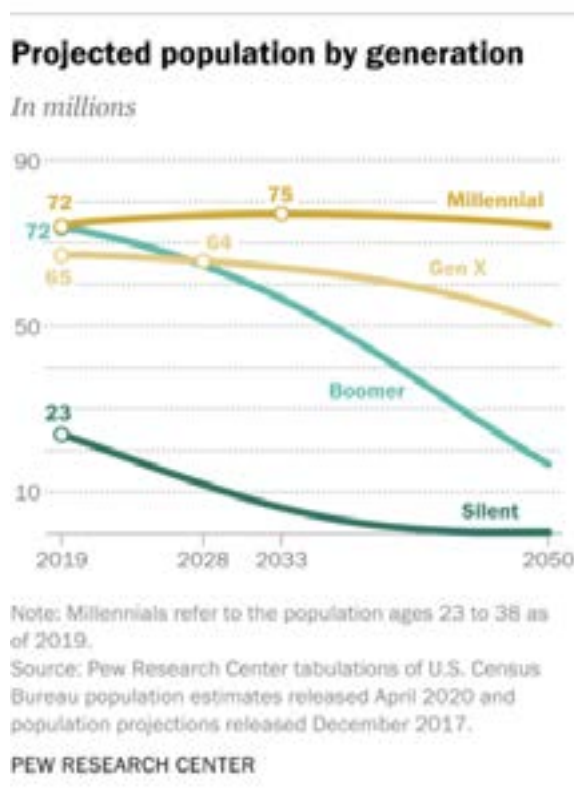
Everyone knew the Baby Boomers were nearing retirement, and the year before the pandemic the [yearly average of retiring Boomers was at 2 million people](#). When COVID hit, that number increased to 3 million by October 2021 as the aging workforce retired faster and earlier than they had previously anticipated, simply because they could, Davis said.

As Boomers exit the workforce, the U.S. population's slowing birthrate is unable to replace them. While Boomers were born into families with an average of four children each, Boomers themselves had an average of fewer than two children.

Looking ahead, the Congressional Budget Office projects that the U.S. population of retirees — the Social Security-aged population — will increase from 336 million people in 2023 to 373 million people in 2053, outpacing the growth of younger age groups.

Population growth is generally projected to slow between 2023 and 2053, averaging 0.3% per year over that period. Increases "will be increasingly driven by immigration as fertility rates remain below the rate that would be required for a generation to exactly replace itself in the absence of immigration," CBO said in a January 2023 report.

Davis said the continual decline of the nation's birthrate, which hit new lows in both 2020 and 2021, reinforces the stark reality that "you can't birth a 30-year-old" to meet current workforce needs. In 65 to 75 years, the aging population will create a complete inverse pyramid with an increasing number of older adults not in the workforce, she said.



Finding 30-year-old workers from other countries around the world is also not feasible. “Immigration is not a long-term solution for us as a nation,” Davis said. Countries around the world are also dealing with lower total populations, which lower unemployment rates and reduce the incentive for people to emigrate to the U.S.

The labor force participation rate for men between 25 and 54 years old fell from 94% in 1980 to 89% in 2019, a drop of 3 million workers, according to [The Demographic Drought](#), a report by labor market analysis firm Lightcast. In addition, men increasingly are choosing to work fewer hours by selecting part-time work over full-time employment. The number of prime-age men willingly working part-time increased from 6 million in 2007 to nearly 8 million in 2019.

Boomers also will be passing their [\\$68 trillion in estimated wealth](#) to prime-age workers and creating a disincentive for some people to be employed. “That transfer of wealth will move to the Millennial generation by 2030, and that is reducing their need to work,” Davis said.

The opioid crisis is also affecting this working age bracket. The Lightcast report said that in 2015 alone, an estimated 860,000 prime-age men were not working due to opioid addiction.

The Great Reconsideration after COVID

Even as fewer young men want to work, need to work, or cannot work, during COVID many workers also started reassessing their reasons for working.

According to a [Harvard Business Review](#) article, there’s a “reconsideration” going on which includes those workers who now look at their jobs with a new perspective. The shift motivated some workers to quit, especially those who may have faced burnout in demanding jobs. The study noted that burnout has “occurred notably among front-line workers, parents and caregivers and organizational leaders.”

Dual-income households were forced to make important decisions coming out of the pandemic. “Because care obligations fall disproportionately on women,” industries where women make up a majority of hourly workers have seen a larger number of employees quit, Joseph Fuller and William Kerr wrote in the [Harvard Business Review](#).

A [2022 Women in the Workplace report](#) noted that “29% of women — and 22% of men — have thought about reducing their hours, taking a less demanding job or leaving the workforce altogether, although far fewer have actually taken these actions.”

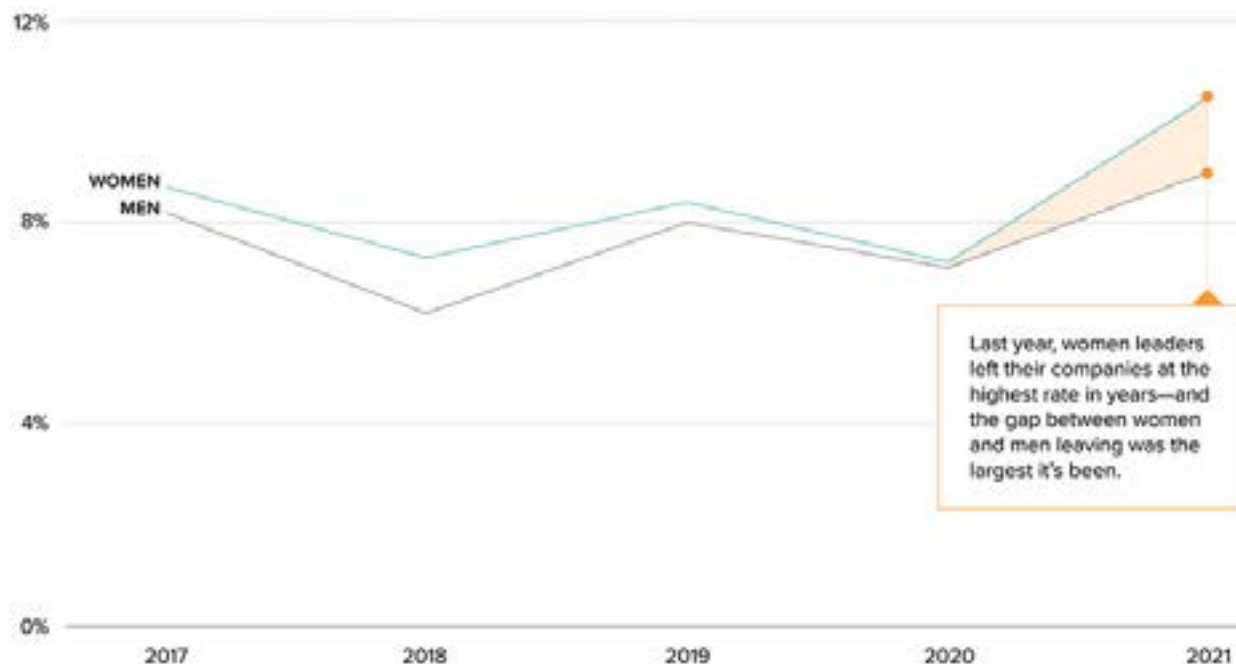
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If you understand and appreciate the significance of the industry, then you also appreciate that when there is a worker shortage, when there are issues and gaps in who is able to work in the field and able to work in these various jobs, you understand that it’s not just a threat to agriculture and food, but it’s also a threat to the overall U.S. economy.

—Tom Vilsack
Secretary of Agriculture

WOMEN LEADERS ARE LEAVING THEIR COMPANIES AT THE HIGHEST RATE IN YEARS*

% of voluntary attrition for women vs. men leaders from 2017 to 2021[†]



[†] In this chart, data for voluntary attrition from 2017 to 2021 come from unpublished pipeline data for the 2018 to 2022 Women in the Workplace reports. Voluntary attrition rates for men and women leaders (5.4 to 5.7 in Methodology) were calculated by weighting each employee level's voluntary attrition rate by the end of year composition.

^{*} In this study, unless otherwise noted, "voluntary attrition" refers to employees who left their organization of their own volition.

Source: 2022 Women in the Workplace

Ag jobs remain important to overall economy

Agricultural companies are finding ways to attract workers by making a connection to the important role agriculture plays in the overall economy.

Secretary of Agriculture Tom Vilsack often says roughly 20% of the U.S. economy is connected to the food and agriculture industry.

“If you understand and appreciate the significance of the industry, then you also appreciate that when there is a worker shortage, when there are issues and gaps in who is able to work in the field and able to work in these

various jobs, you understand that it's not just a threat to agriculture and food, but it's also a threat to the overall U.S. economy,” Vilsack said in an interview with *Agri-Pulse*.

Fewer Americans have a connection to the farm, but jobs in agriculture and related industries, from seed and fertilizer companies to supermarkets and restaurants, represent 15% of the nation's employment. Some 23 million are directly linked to the food and agriculture sectors, with a combined 46 million jobs linked directly or indirectly, according to the latest [Feeding the Economy report](#), commissioned by 30 food and agriculture groups.

2023 Feeding the Economy Study Highlights



Food and fiber production starts with 2 million farmers and ranchers. There are also scientists, production workers, logistics experts, truck drivers and engineers who work in more than 200,000 food manufacturing, processing and storage facilities. The journey may conclude at one of the nation's more than 1 million restaurant locations or 100,000 grocers.

Unique challenges in rural workforce

From Florida to California and all the states in between, rural locations have fewer workers to fill millions of agricultural jobs. Current labor conditions have sharply tightened in rural counties with a dependency on agriculture, according to research from Matt Clark, a rural economy analyst for Terrain, a team of economists who provide market and industry analysis to Farm Credit System customers.

“Nationally we have low unemployment rates. However, in rural areas, specifically those driven by agriculture, we have extremely low unemployment rates and the total labor pool to pull from is extremely low,” Clark said in an interview with *Agri-Pulse*. Much of the rural

workforce is “aging or shrinking in size or both. That’s likely going to be a problem for farmers going forward.”

Low unemployment rates are magnified in rural areas. A non-metropolitan county that has 2,500 people in the labor force and an unemployment rate of 2% has just 50 jobless workers to fill any openings, he said.

It is unlikely that labor force availability will quickly improve in farming communities, in part because of the continued population decline. The population of non-metropolitan farming counties fell 0.28% from 2020 to 2021 as net migration and deaths outpaced births. From 2010 to 2019, the number of people 14 through 64 years old declined by 7% in non-metro counties, Clark said.

According to U.S. Census Bureau data, the current ratio of likely workers (ages 14-64) in rural areas to the total population is 61%, Clark said. That compares to 66% nationwide, and an even higher ratio of 69% in counties with an emphasis on finance, information, education and health.

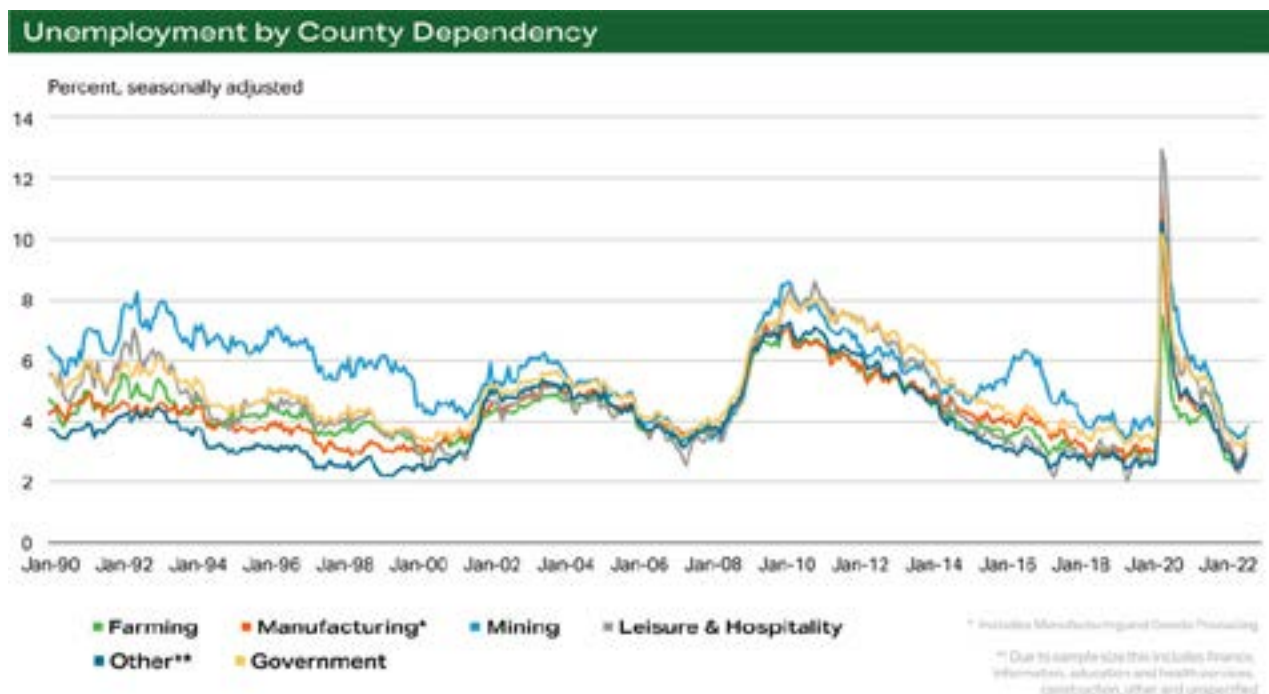


Chart: Matt Clark, Terrain

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I think every company is going to struggle with finding the right people at the right time in the right place that are open for work. I think ag has some unique challenges.

—Anne Holiday

Vice President of HR Operations and Talent, Corteva Agriscience

“This implies that the available pool of labor is likely to remain low in the near future,” Clark said.

Employers also struggle to find specific skill sets in areas where they are needed, said Anne Holiday, vice president of HR operations and talent for Corteva Agriscience.

A survey of 192 *Agri-Pulse* readers showed that finding workers with the right skills was a challenge for 67% of the respondents. Some 41% of the *Agri-Pulse* readers said a top challenge is the lack of applicants to fill open positions. Remaining competitive with other businesses for workers was a concern for 38% of the respondents, while 36% pointed to retaining current employees as another challenge.

“I think every company is going to struggle with finding the right people at the right time in the right place that are open for work. I think ag has some unique challenges,” Holiday said.

Angela Latcham, who oversees eight support teams as Corteva’s global seed operations support director at the company’s North America seed production sites and supply chain teams, said her company’s challenge is finding skilled workers for its 40 rural production and research area sites.

Latcham said ag employers also must ensure “people understand that you can have a non-ag background and still have a great and exciting long-term career at Corteva.” Companies continue to recognize the importance of recruiting outside traditional channels for future careers as well as creating specific training or apprenticeship opportunities to create a pipeline of future workers. *(Read more about this in chapter three of our series.)*

Employers also struggle to get prospective workers to move to where they are needed. The overall relocation rate in 2021 was the lowest in the 70-year record of Census Bureau figures.

Strong demand, but too few ag graduates

The [Bureau of Labor Statistics estimates](#) that there will be 115,700 openings for agricultural workers each year, on average, from 2022 through 2032. BLS said most of those openings will be created by workers transferring to different occupations or exiting the labor force.

Another study, conducted every five years by [Purdue University in conjunction with USDA’s National Institute of Food and Agriculture](#), estimates employment opportunities in food and ag-related industries will grow 2.6% between 2020 and 2025 for college graduates with bachelor’s or higher degrees.

Mike Gaul, director of career services at Iowa State University’s College of Agriculture and Life Sciences, informs his incoming agricultural students that it remains a “buyers’ market out there” for new graduates.

“This is as good as it gets. Get in the game and take advantage of it,” Gaul tells his students. Of the 60 new Iowa State agricultural business graduates in May, 54 had a job in hand.

Similar scenarios are playing out at land grant universities across the country. Mary Ellen Barkley, assistant director of the career center at Kansas State University, said 98% of the class of 2021-22 graduates from the College of Agriculture are employed or furthering their education.

Jill Cords, Michigan State University's Career Services Network assistant director and career consultant, said hot areas seeking employees include horticulture and landscape and construction and packaging. She said 92.7% of recent graduates from MSU's College of Agriculture and Natural Resources are employed in the ag field.

The Purdue-NIFA study estimated there would be 54,900 job openings annually in food, agriculture, renewable natural resources and the environment during the study outlook until 2025.

Some 61% will be filled by graduates with more traditional food and ag degrees, while the remaining 39% will be from allied fields such as biology, mechanical engineering, accounting and journalism, the report said.

Report author Marcos Fernandez, Purdue's associate dean of agriculture and director of academic programs, said employers' biggest need is in management, but the number of science and engineering jobs is expected to increase from 15,500 annual job openings in 2015-2020 to 18,400 annually from 2020-2025.

Fernandez said growth in science and engineering jobs will be even greater in the next five years because of the move toward data science and digital agriculture and information systems. As

an example, Holiday said Corteva Agriscience plans to heavily invest in its R&D capabilities in the next two years, which will require data scientists and software developers in critical roles to support digitalization and data analysis.

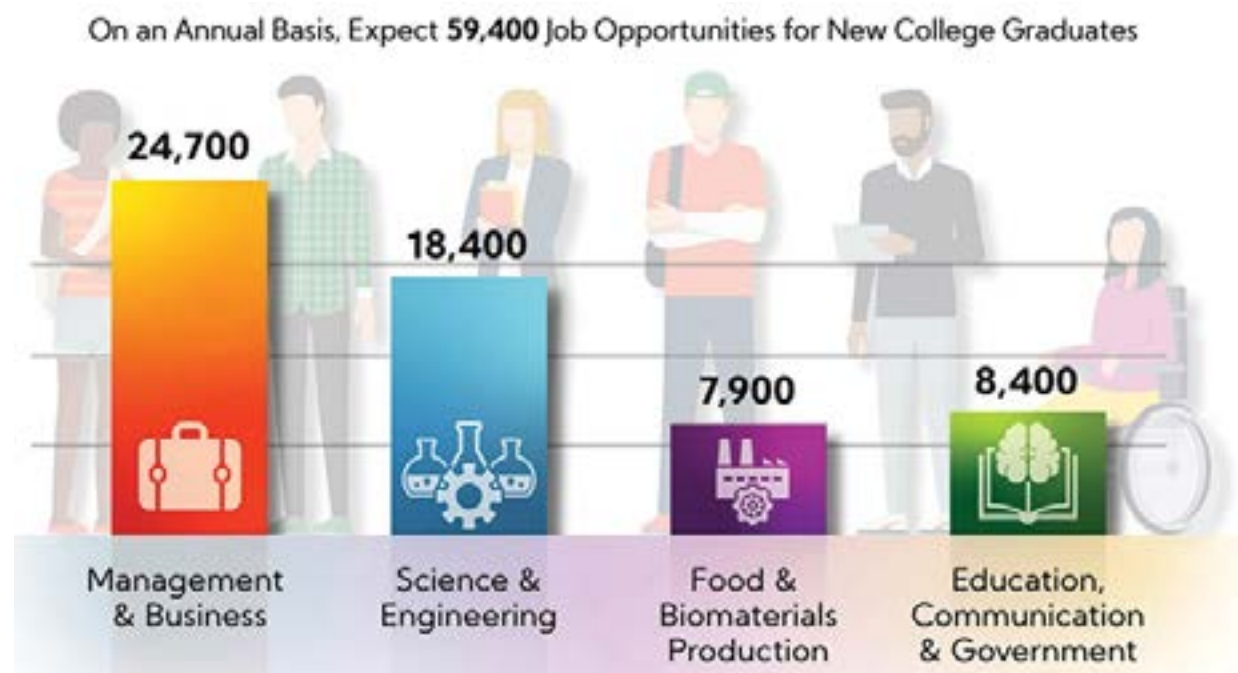
The projected number of education, communication and government jobs also increased from the last survey, going from 7,200 in 2015-2020 to 8,400 from 2020-2025. This includes occupations such as Farm Service Agency employees, Natural Resources Conservation Service specialists, plant and animal inspectors, and more traditional roles such as high school ag teachers and food and agriculture writers.

Earlier this year, NRCS Chief Terry Cosby said he anticipates hiring as many as 3,000 more employees in the next couple of years. NRCS has struggled to retain workers, too. Of the 800 new employees hired in 2022, only 500 stayed on, he said.

Food scientists are in demand along with new graduates in the animal science and health space.

"All of these food companies are screaming for talent out there, even if they're heavily invested in robotics," said Iowa State's Gaul.

Agriculture is still a "very promising career path" for individuals who are interested in



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If you look at the younger generations coming into the workforce, it is not that they live to work, they work to live. It is all about work-life balance to them.

—Julie Davis

Senior Director of Workforce and Industry Initiatives,
Association of Equipment Manufacturers

agriculture or an application of science and business as it relates to agriculture, food and renewable natural resources, said Fernandez. “I don’t think it’s a secret to most of us, obviously, but it’s a secret to many across the country.”

Generational differences require different approaches

AEM’s Davis said for older generations of workers, money was an adequate reward for their labor. “If you look at the younger generations coming into the workforce, it is not that they live to work, they work to live. It is all about work-life balance to them,” Davis said.

Laura Blomme, an executive recruiter for Hedlin Ag Enterprises, said the transition to a younger generation of workers will require companies to rethink workers’ needs.

“As the Boomers are retiring, and we are working through that, the Millennials are the class that is going to be the major source of the workforce for the next several years.” In generalizing Millennials, Blomme said many households feature dual full-time workers, and when a family is involved, it may require more flexibility on the side of employers.

The survey of *Agri-Pulse* readers asked them why they considered changing jobs; 31% said it was a desire to have an improved work-life balance, while 23% said it was for rebalancing of family life commitments.

Latham of Corteva said nearly 40% of its North American production workforce has seven or fewer years of experience. This new generation loves to collaborate in groups and

is more likely to challenge traditional ways of operating, she noted.

“They like the quickness, and they just want to be efficient. If they can get done in two hours versus six, they’re going to,” she said.

Blomme also said mentorship is paramount to this new generation of employees “who really want to find something that they are passionate about. It’s important for them to feel they’re bringing good value to the business and the job is worth their time.”

Blomme said candidates don’t want to change jobs every year, but also don’t limit themselves if new opportunities present themselves as a way to advance their careers.

“Realistically, individuals who are ambitious and driven are going to be looking for growth and advancement, whether that’s with the company they’re with or somewhere else,” Blomme said.

If employers position the opportunities correctly, Vilsack said jobs in food and agriculture can represent something that other career opportunities do not: a role that has a deeper meaning and sense of value drawn from making a difference in the world.

“If you want to make a difference, if you want your life to be meaningful, if you want to help your fellow man, if you want to impact and affect global security, if you want to maintain national security here at home, if you want to be your own boss, if you want to be in an area that’s constantly evolving with constant challenges, but allows you to feel a sense of connection to the earth and to the environment, there’s not a better opportunity than food and agriculture,” Vilsack said.



Chapter 2

Compensation conundrum: It's more than just a salary

By Jacqui Fatka

Good company culture critical to keeping employees, and perks becoming important, too

A few years ago, Trenten Wills wasn't even thinking about a career in agriculture.

The native of Kankakee, Illinois, headed to the University of Arkansas at Pine Bluff seeking a degree in business administration. But his advisers convinced him that he should switch to agricultural business because there were more job opportunities, and he was offered a scholarship that enabled him to pay for his entire degree.

"I'm a huge advocate of students now going into the agricultural world where there's so many possibilities and you can be who you want to be, earn the income you want to earn and be part of a constantly changing industry," he told *Agri-Pulse*.

But as he prepares to graduate in May 2024, Wills will be looking for an employer that offers not only good wages but a good fit for his personal goals.

"Flexibility and the ability to travel are my two main priorities," he said. However, he also is



Trenten Wills, University of Arkansas at Pine Bluff

looking for smaller companies with a family environment and a high priority on innovation.

More and more prospective employees tell recruiters they are looking for companies and organizations that offer much more than good pay and benefits. Like Wills, it's often the culture of a company that matters most.

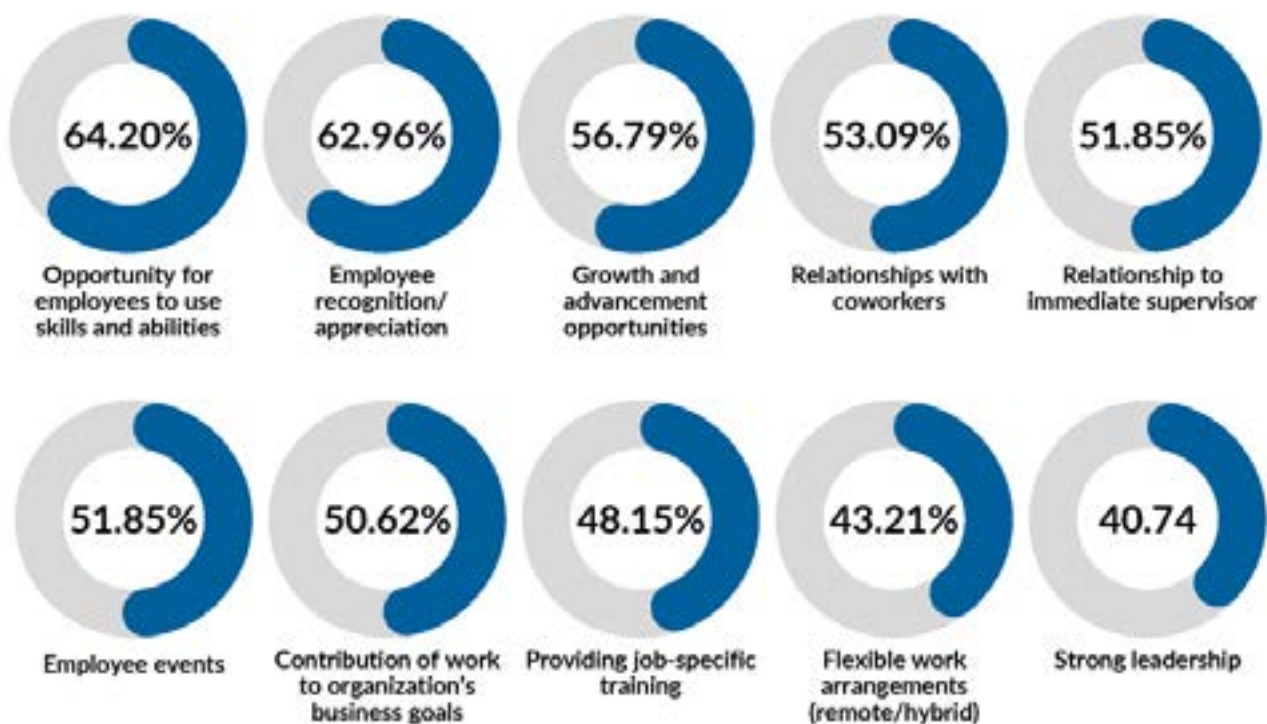


“People think the grass is always greener on the other side, but we see that there’s the adage of the ‘grass is greener where you water it,’” said Jessi Sletten, talent acquisition senior director for CHS Inc., a farmer-owned cooperative and diversified agribusiness based in the Minneapolis-St. Paul area.

Agriculture companies are becoming creative in getting new employees in the door, and then keeping them there by establishing a culture that values the input of employees and helps them buy into the overall mission of feeding and fueling the world.

“You can’t fake a good culture,” Sletten said.

Components of Company Culture



*Percentages do not total 100; respondents were allowed to select multiple responses. Results are calculated dividing the number of responses by respondents.

Source: AgCareers.com

Graphic by Jesse Harding Campbell



“We want to think about the interaction employees have with their leader. Is that a culture where everyone’s working hard, where we’re being good teammates and we’re investing in our local communities? Is it a safe workplace?” Sletten said. “At the end of the day, if all things are equal with pay and benefits and maybe schedule, it is who you work with, how they treat you, and does your work matter.”

As detailed in an [AgCareers.com HR Review](#) scheduled for release this fall, employers in the agriculture and food space — as in many other industries — are finding themselves hyper-focused on the need to secure the best talent.

Employees are increasingly drawn to companies that show they are flexible, transparent and care, said Rachael Powell, HR and compensation solutions manager at AgCareers.com.

“Employers are now tested by what they do, not just what they say,” she said.

AgCareers.com asked employers how they are competing for talent, with the top responses being creating a positive work culture (75%) and offering better benefits (64%). Increasing compensation lagged at 51%.

Creating a positive culture

Companies that are investing in career development and addressing their employees’ well-being are finding success in attracting and retaining workers, according to many of the ag industry’s hiring managers.

Future employees want to feel there’s a good culture fit, said Powell. That means employers need to be authentic with potential employees about where a company has been successful and where it’s trying to improve, while offering candidates clear ways they can contribute to reaching the company’s overall goals, she said.

Positive relationships with co-workers, strong leadership and flexible work arrangements are important, too.

Debbie Tucker, head of people and organizational development at Syngenta’s North America Crop Protection, said the company’s philosophy of “how we do things matters” drives many of its benefits and career opportunities. Syngenta has been recognized as one of the world’s top five leading employers — and the top agriculture employer — in the [2022 Science Careers Top Employers Survey](#); the company has appeared on the list 12 times in 13 years.

Syngenta’s retention effort starts with offering on-the-job career development activities, but also involves encouraging participation in various employee resource groups based on ethnicity, gender, mental health and leadership. The company also offers classroom training with 24/7 e-learning opportunities, coaching programs and networking opportunities.

Tucker said this new generation of workers isn’t just interested in one career path. They learn quickly and seek out additional learning opportunities. “They don’t want to stay in one area, but often want to experiment and explore in different ones,” she said.

Julie Davis, senior director of workforce and industry initiatives at the Association of Equipment Manufacturers, said Bureau of Labor Statistics data show employees 35 years old and younger stay with one employer for an average of just 2.8 years. The average for all workers is four years.

“What I tell companies is the first year an employee works for you they’re learning their job. The second year they’re learning your company. The third year they’re asking, ‘What are you going to do for me?’ And if companies don’t have an answer for career development or professional development, that employee is going to find that next step somewhere else.”

Many companies are investing in developing future leaders and training them in different areas beyond their entry-level assignments. Corteva operates a program called DELTA,

“

What I tell companies is the first year an employee works for you they're learning their job. The second year they're learning your company. The third year they're asking, 'What are you going to do for me?' And if companies don't have an answer for career development or professional development, that employee is going to find that next step somewhere else.

—Julie Davis

Senior Director of Workforce and Industry Initiatives,
Association of Equipment Manufacturers

which stands for Developing Emerging Leaders and Talent in Agriculture, said Angela Latcham, the company's seed production and supply chain leader. As new employees enter into agronomy and production fields, DELTA helps them develop business acumen and exposes them to other career opportunities at Corteva.

Future employees have an eye on company values

Companies must also communicate the right values to their employees.

Roxi Beck, director of consumer engagement at the Center for Food Integrity, said in a webinar although some companies are creating sustainability plans to appeal to consumers or investors, others see sustainability plans as important to recruiting new employees as well.

Beck said it's important for companies to clearly communicate which social issues and causes are most important to the company as it relates to sustainability. Job candidates also want to know what role they can play in achieving corporate goals, which should be easily identifiable on a company's social media or website, she said.

Matt Dean, chief financial officer for Versova, one of the top egg-producing companies in the United States, said retaining existing workers requires communicating the goals and mission

of the company, including how the company is involved in local communities.

“People want to feel good about where they work,” Dean said. He hopes that team members feel proud to produce “nature's perfect food” — nutritious, affordable eggs.



Roxi Beck, Center for Food Integrity

Dean said Versova has shifted some of its internal communications to highlight the importance of eggs to consumers; the company's eggs touch as many as 40 million plates every day. The company also highlights its community involvement in working with food banks or holding pancake breakfasts for local fire departments.

Diversity in the workplace is important to candidates, too. Beck cited a [Monster.com survey of Gen Z candidates](#) in which 83% said a company's commitment to diversity and inclusion was important in choosing an employer.

Syngenta's Tucker said a company's commitment to diversity, equity and inclusion is a differentiator in attracting and retaining the current workforce at the company. Syngenta has invested heavily in diverse partnerships by recruiting future employees with partnerships at the National Society for Minorities in Agriculture, Natural Resources and Related Sciences (MANRRS), Women in Agribusiness, the National FFA Organization and Agriculture Future of America.

"We have a dedicated diversity and inclusion leader, which to me speaks volumes about how this is our commitment and we're investing there," Tucker said.

Communication boosts understanding of goals

Leader development and empowerment both help build a positive culture throughout an organization.

"If you're dictating what you think your employees want, I will guarantee that you're probably missing the mark. And so, the first piece of building a culture that retains



Graphic: Monster

employees is all about starting to engage in conversation with them, get their input and really react to the messages that they are giving you," Davis said.

Employees who feel they're being heard are more loyal to that company, with 66% saying they'd stay beyond five years, according to a [Deloitte Global 2022 Gen Z Survey](#).

AgCareers.com also found that employee recognition programs are important; 40% of companies stated it helped keep staff motivated and challenged.

The nation's third-largest poultry producer, Wayne-Sanderson Farms, created an employee recognition program called "[Amazing Starts with Me.](#)" The initiative aims to encourage

Wayne-Sanderson Farms' employees at all levels of the company to go above and beyond in four key pillar areas: people, planet, food quality and animal welfare.

Employees at Wayne-Sanderson can nominate a colleague to recognize their accomplishments. Their "Amazing Starts with Me" program features employee spotlights, infographics, facility signage, video development, newsletters and event planning to celebrate their team members.

Empowering leaders to be part of the success

As Versova, the egg producer, builds on its communication strategy, it's taken a new, proactive approach to locally based management that company officials believe has helped retain workers.

"The best recruiting tool we have is to limit the people who walk in and then walk back out," Dean said. "We've tried to focus as much as we can on retention and not just recruitment. Because you can't just churn and churn and churn. You need to find stabilization."

Dean recognizes the labor availability problem isn't going away anytime soon. Maintaining stability in their 1,350 jobs at farms located in Ohio, Iowa, Washington and Oregon remains a challenge.

Under Versova's new business unit management structure, there are individual managers over each site, which may include both farms and processing facilities. The site managers get bonuses based on the overall productivity of

the site, as well as bonuses based on employee retention and employee input.

"We felt that when you give people the empowerment that they own the business, that they own the financials, they care that much more," Dean said.

But competitive pay matters, too

Despite leadership's best attempts to establish a culture that retains workers, Versova's exit surveys find pay is still a leading reason why employees leave for other jobs.

"Not every market is the same. We can't do the same pay changes in Ohio that we would do in Iowa or in Washington or Oregon," he said. "We've increased our rates where we need to in order to be competitive, but also to make sure our employees feel valued."

Versova's Trillium Farms in central Ohio will soon have a local job competitor with the arrival of a new Intel microchip manufacturing plant. Proximity to large urban areas can be a blessing and a curse, Dean said.

"In places such as Columbus, you have access to amazing, talented people who could join your team, but it's competitive," Dean said. "We view the competition as a challenge."

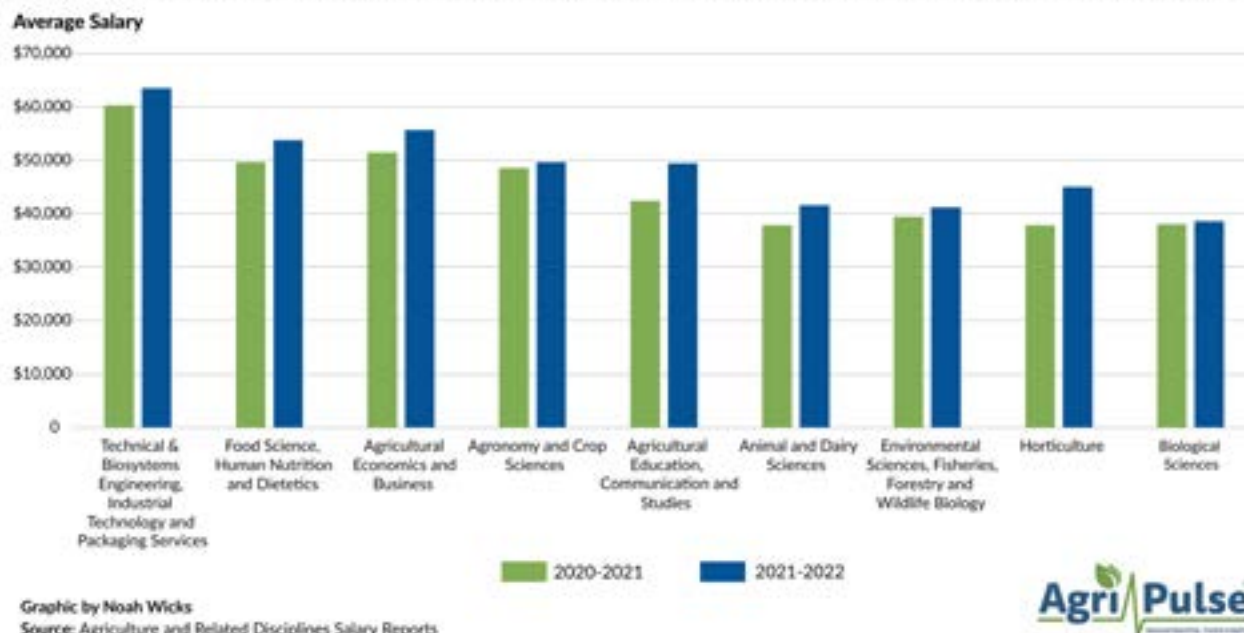
The AgCareers.com survey of ag companies found that to attract new talent, nearly half (46%) are offering higher starting pay for new employees, compared to 55.7% in the 2022 survey. Forty percent offer remote and hybrid work options, and just over a third (36%) offer a sign-on bonus. An estimated 27% offer additional paid time off or paid leave.

“

The best recruiting tool we have is to limit the people who walk in and then walk back out. We've tried to focus as much as we can on retention and not just recruitment. Because you can't just churn and churn and churn. You need to find stabilization.

—Matt Dean
Chief Financial Officer, Versova

Average entry-level salary for graduates in agriculture and related disciplines



Entry-level salaries are also on the rise for college graduates, according to information compiled from 19 agricultural colleges and universities across the country. Iowa State University Director of Career Services Mike Gaul said although not surprising given economic conditions, nine ag job sectors showed positive salary gains in 2022 versus 2021.

“What is surprising, though, is the magnitude of these gains, averaging 8.4% across all sectors with a range of 1.4% in biological sciences to 19.1% in horticulture,” Gaul said.

The top five earning sectors included technology (\$63,474 — up 5.3%), ag economics & business (\$55,641 — up 8.2%), food science (\$53,728 — up 8.3%), agronomy (\$49,637 — up 2.3%) and ag education (\$49,433 — up 16.5%), the report noted.

Ag companies have increasingly been conducting compensation studies, AgCareers.com reported. In 2023, over one-third of companies said they had conducted a study within the last six months, and another quarter said they conducted a pay study within the last year.

“Employees who feel their company is proactively working to solve compensation

issues will feel that their employer has their best interest,” the HR Review notes.

Flexible work schedules becoming necessary

The COVID-19 pandemic opened the door for hybrid and telework opportunities, and that has set the stage for major changes in how companies structure their workdays as well as how they adjust to their employees.

Flexibility looks different to each employee, and companies must determine what is feasible and workable.

AEM’s Davis said COVID reawakened employers to the truth that “employees are human beings, and you’re going to need to talk with them to find out what they want.” She suggested surveying employees about what they want in terms of job flexibility.

For instance, an employee’s workday could be improved if it aligns with school start and stop times. There also is the option of transitioning to a four-day workweek. “There’s no right answer. That right answer is driven by your employees and the age groups of your employees and what’s important to them,” Davis said.

AgCareers.com reported that 54% of employees now offer a hybrid work environment. Fewer than one-third of employers do not offer flexible work arrangements.

Several employers said the pandemic showed how flexibility can still provide the framework for efficient and productive employees. Now, companies have a larger pool of applicants for future job openings, although many agriculture and ag manufacturing jobs require on-site work.

“For our industry to embrace this new dynamic where it works and where it fits, has been positive and helped,” said DeeAnne Marlow, vice president of human resources for Hilmar Cheese Co. Because milk arrives at plants around the clock, the company has transitioned to some 12-hour shifts and rotated scheduling to give people more time off and for longer stretches of time, she said.

Sletten of CHS said her entire team of recruiters used to have to be located at the Twin Cities headquarters, even though they supported the hiring of employees nationwide. That policy changed as a result of the pandemic. “The value of hiring talent that lives and works in the

community far outweighs my need to have a recruiter based in Minnesota.”

Employers increasingly prioritize mental health

As COVID opened the door to hybrid work, it also brought a new realization of the importance of employees’ well-being.

“During COVID, it was a really big focus on your physical well-being as we worked on offering adequate testing and precautionary measures. But then what evolved is this sense of mental health and recognition of isolation because you weren’t at your workplace or other things your work community gives you,” Sletten said.

CHS has started coaching managers to be mindful of their team’s well-being. “Sitting in meetings all day, every day is not good for anyone, it’s not productive and it’s a drain on your energy,” she added.

CFI’s Beck said Gen Z employees are the first demographic who say mental health is a priority when looking for jobs. Managers can help build empathy skills and teach the importance of recognizing red flags and reducing employee stress and anxiety levels, she said.

Talent Retention Strategies



*Percentages do not total 100; respondents were allowed to select multiple responses. Results are calculated dividing the number of responses by respondents.

Source: AgCareers.com
Graphic by Jesse Harding Campbell





Syngenta mobile health unit

Health and wellness centers becoming more common

Employees also expect adequate health insurance, and some companies are even offering health care on-site.

For more than 14 years, Syngenta has had an on-site physician and nursing staff for its employees as well as a mobile health care center to send to satellite sites that do health screenings for employees and their family members. Tucker said this is a way to stay ahead of health issues, especially for those employees located in more rural areas who may have less access to health care services.

Syngenta, like other companies, also offers incentives to encourage healthy living.

Clemens Food Group, an East Coast pork producer and processor, has a Family Wellness Center with a full-court gym and cardio and strength training classes. The company offers a gym membership for \$12 a month, and employees can even get the fee reimbursed if they work out in the gym at least 10 times during the month.

On-site health services at Clemens' Family Wellness Center feature family doctors and nurses for routine checkups, physical exams and chronic condition management, as well as occupational and physical therapy. Having those options on-site means employees don't have to take time off to get care, said Keith Stahler, who oversees hiring for Clemens Food Group.

Another perk being offered to employees is paid paternity and maternity leave. Julia Campbell, a recent graduate of Iowa State who just accepted a full-time position with Corteva, said the 16 weeks of maternity leave was attractive to her as she looks forward to a career and family.

"To me, that's really hard to beat in our industry. I know that these companies are wanting to remain competitive, but to me, that focus on being home as a family for that time is really important," Campbell said.

She added that other larger players in the ag industry are recruiting students and trying to create competitive benefits packages. "It's kind of a call to action because work-life balance for my generation and my peers is becoming even more relevant, especially after what many are calling the 'Great Reset' after the pandemic," Campbell said.

Evolving necessary to meet changing needs

Company leaders say it's also critical for firms to continue to evolve to meet future workforce needs.

Clemens Food Group, for example, has employed creative new approaches to attracting workers, and that has helped the company weather the tight labor market.

Clemens' two pork processing facilities draw from different labor pools that require different approaches to filling jobs. The company's

Hatfield, Pennsylvania, facility is situated 20 miles north of Philadelphia. Advertising openings on billboards and social media ads and allowing walk-in interviews all helped bring in new applicants.

Clemens' Coldwater, Michigan, facility is in a remote rural area of just under 14,000 people. The company successfully relocated more than 700 team members to the area from places such as Florida, Texas and California. Some of the workers had been with amusement parks and other businesses affected by the COVID-related disruptions.



Keith Stahler, Clemens Food Group

“We’ve definitely had a lot of luck with drumming up interest and generating leads for candidates,” said Stahler.

Having competitive wages and benefits, paired with a family atmosphere and culture, resonated with candidates. But Stahler said the company also invested significantly in relocation assistance, including housing for 90 days, and hiring relocation specialists to help new employees get acclimated to the town.

“It was difficult, and still is in some cases, to entice somebody to move from a place like Florida or a more populated area to a place like Coldwater, Michigan.

“But as we continue to grow, we learned that there are people out there who want to settle down and want to get away from more of the hustle and bustle and be part of a more tight-knit community. As we started to bring more of those people in, we started to get more and more referrals,” Stahler said.

Agricultural companies, both in more rural or corporate-urban settings, recognize the challenges of the labor force today and acknowledge that they must continue to pivot and respond to a changing workforce.

“We’re still able to find really good talent for what we do, but we have to prepare for a competitive environment, and of course the labor environment right now is incredibly competitive,” said Mark Lowery, director of commercial marketing for New Holland Agriculture North America.

“It’s taking the lessons learned now in the current labor environment and not resting. This issue of the exposure of understanding of agriculture, recruiting folks and growing digital competencies is not going to relax. So, we just have to be vigilant.”



Chapter 3

Training the next generation of ag and food workers takes innovative approaches

By Jacqui Fatka

Brittany Williams has moved away three times from her hometown of Haskell, Texas, but the dusty roads of the ranching and cotton-growing area north of Abilene kept bringing her back. Today, she has a mission to do nothing less than “end generational poverty in rural America.”

She started teaching in 2007 and quickly discovered students were graduating without basic life skills and instead “taught to the test.”

She’s now director of continuing education for Texas-based Collegiate Edu-Nation, or CEN, where she serves 21 rural school districts across the 12 Texas AgriLife Extension districts.

CEN — which started in 2008, with 294 students in the west Texas town of Roscoe, where half the student population is Hispanic — is one of many ways that colleges, companies, organizations and others around the country are employing innovative thinking and training to develop the next generation of ag and food employees.

Apprenticeships, workforce training, career development and onboarding employees all



Students experiencing hands-on learning through CEN program.

offer ways for companies to build their future workforce with the talent needed to meet the growing projected job opportunities in the agricultural sector.

“For years, school districts have been catering to the affluent, easy students, straight-A students. What about the other 95%? What are we doing for them? And where are they going?” Williams



asked. “Right here in my hometown, I sit here, and I ask, ‘What can we do to motivate them to want to be better and want to serve a life with purpose?’”

“I always go back to the thought that we’ve got to save rural,” she added.

CEN’s Science, Technology, Engineering and Math (STEM) and Pathways in Technology Early College High Schools (P-TECH) model helps create a pathway to success for many low-income students who may not have the family home support system or finances as their urban counterparts. In 2022, Roscoe Collegiate enrollment had grown to 625, and the program has been adopted in other states.

Ninety percent of the graduating high school students in Roscoe who participated in CEN have obtained an associate degree or workforce certification, at no cost to them through a partnership with West Texas A&M University in Canyon.

CEN training can continue into adulthood through postsecondary and CEN’s Registered Apprenticeship Program that’s designed to avoid the burden of schooling costs or living away from home.

Public-private partnerships have been essential to the success of the program.

In Texas, a P-TECH 9-14 school model created by IBM provides youth with the academic, technical and professional skills often lacking in today’s workforce. The public-private partnership allows CEN to create model businesses at the schools to provide hands-on experience and certification training. The businesses go by names such as Edu-Vet, Edu-Drone or Edu-Weld.

The Edu-Vet business partnered with a veterinarian at Texas A&M and an embryologist to teach students as they earned their vet-tech and embryology certification with hands-on experience artificially inseminating cattle.

Partnerships help close skills gap

Just as those Edu-businesses in schools in Texas seek to create new training opportunities, workforce development is seeing a revival across the country as businesses realize conventional approaches do not always prepare future workers for current labor needs.

Companies are having to ensure talent strategies for hiring and developing workers fill a firm's business needs, said Julie Davis, senior director of workforce and industry initiatives at the Association of Equipment Manufacturers.

"If you don't have somebody that can bring HR to the C-suite table and help align the talent strategy with your business strategy, you're not going to win that war for talent," Davis said.

Companies can partner with educational institutions and also identify training curricula. "Evolving educational and skills training with education and partners is a tremendous opportunity. I'm excited to see the industries that are actively doing that because they're going to win in a big way," Davis said.

Working through high schools and youth apprenticeship programs and programs such as

FFA can also help companies develop a pipeline of new talent.

The 4-H program, which is more than a century old, also has a role to play. The 4-H program offers agricultural experiences for 6 million youth with hands-on projects in such areas as health, science, agriculture and leadership, and 4-H chapters are increasingly available in urban centers.

Powered by America's leading land-grant universities and Cooperative Extension System, 4-H programs offer viable career pathways in many new areas like computer science, drone technology, biology, environmental science, food science, seed technology, sustainability and more, said Jill Bramble, chief growth officer and new CEO for the National 4-H Council. "4-H'ers begin learning about agriculture careers as early as eight years old, engaging in diverse programming that helps them find their spark," she added.

The [4-H Tech Changemakers](#) and [4-H CS Pathway](#) prepare young people for the workforce by providing relevant computer science and digital skills education, opportunities to lead and a sense of responsibility for giving back, Bramble said.



Graphic: AEM

“

Our job is to reclaim those who may not have a direct connection to agriculture and invite them back into the food value chain as a farmer, rancher, chemist or engineer, who's going to solve the big food problems in the world.

—**Scott Stump**
CEO, National FFA Organization

In recent years, agribusiness giants Bayer, Corteva Agriscience, Nutrien and Nationwide have supported the 4-H Youth Summit Agri-Science held in Washington, D.C., in March. While at the summit, teams of high school students from across the country create action plans to address challenges in their communities with agriculture and science-based solutions. They then return home to put those plans into action.

Another well-known program trying to deepen the connection between science and agriculture is the National FFA Organization.

“Hands-on learning has been part of the FFA and agriculture education DNA for nearly a century,” said National FFA CEO Scott Stump.

FFA offers agricultural, food and natural resources learning experiences for more than 945,000 members ages 12 through 21 in more than 9,000 chapters at about one-third of the high schools nationwide.

As the rural population continues to shrink, there is an “exponentially growing need” to get more young people thinking about roles in the food and ag sectors, Stump told *Agri-Pulse*.

“Our job is to reclaim those who may not have a direct connection to agriculture and invite them back into the food value chain as a farmer, rancher, chemist or engineer, who's going to solve the big food problems in the world.”

One of the largest FFA chapters is located at the Chicago High School of Agricultural Sciences, which combines college preparatory classes with six ag career pathways, using the FFA model of classroom education, supervised

agricultural experiences (SAE) and engagement in the organization. Principal Bill Hook said the program is also helping schools in eight other cities, including Memphis and Milwaukee, copy the Chicago model.

As many as 2,000 Chicago students apply to the school each year, 200 of whom are accepted. During their first year, they take an Ag Careers and Leadership class that helps dispel myths about agriculture and exposes students to some of the 300 careers in agriculture.

Some 35% to 40% of the Chicago chapter members continue to college to pursue an agriculture degree, Hook said.

Of the 1% of FFA members who receive the organization's highest honor — the [American Degree](#), which requires completing an SAE program and 50 community service hours — a large majority wind up in the ag workforce, Stump said.

FFA launched a career exploration tool called [AgExplorer](#) for students to take an inventory of their interests and identify what careers may best suit them. Stump said FFA has identified skill gaps with industry partners in the career areas of sustainability and tech and is creating new hands-on experiences to teach an expanding skill set necessary for future jobs.

Gracie Murphy, an Illinois native currently serving as FFA's eastern region vice president, has spent time working with sponsoring agricultural companies to hear their needs for the future ag workforce and help craft experiential learning opportunities for FFA participants.



FFA and MANNRS leaders at the signing of an MOU between the two organizations.
(Photo: FFA)

Herself one generation removed from the farm, Murphy said FFA showed her there are careers that support the ag industry. She plans to major in agricultural education and appreciates her now-expanded understanding of the many career opportunities that she can pursue.

FFA is “not just telling students the careers available but showing them and connecting them with mentors who are going to help them through the process of having these students figure out what they want to do for the rest of their lives,” Murphy said.

Many companies also partner with FFA and local schools to enhance agricultural education efforts. The CHS Foundation, for example, awarded \$75,000 in grants for K-12 teachers to implement projects to allow students experiential agricultural education.

In addition to 4-H and FFA, another expanding organization to connect and recruit those outside of the traditional ag circles is MANNRS — Minorities in Agriculture, Natural Resources and Related Sciences, which has 70 university chapters across the country in 39 states.

A main focus of MANNRS is sharing basic ag literacy skills and expanding early career awareness about agriculture for minority students as they move from elementary school and on to higher education, said Ebony Webber, MANNRS’ chief officer of operations.

MANNRS’ model statement is “changing the face of agriculture by linking hands around the world,” Webber said. The organization has grown through partnerships at all levels with companies, universities and schools.

“Through our university connections, we recognize that we have the unique ability to be a convener to bring together trade organizations, corporate organizations, government agencies, university partners and high schools to serve in a unique capacity of being able to bring key stakeholders to the table and have a conversation,” she said.

“We’re working directly with corporate partners to influence their DEI (diversity, equity and inclusion) strategies, their recruitment strategy and some of their development opportunities for their minority and diverse employees within their company,” Webber said.

MANNRS has partnered with the National Grain and Feed Association to annually award \$10,000 scholarships for three students, which supports attendance at NGFA’s networking annual meeting and NGFA’s Advocacy Day on Capitol Hill event.

One grant recipient, Ernest Dixon III, said the exposure to the grain industry helped him land a job at Cargill. He said experience and exposure are the two components missing today for future agricultural workers.

Professional apprenticeships expanding in ag fields

Apprenticeships offer another important way to connect future employees with employers and target specific on-the-job training with specialized schooling.

In 2015, Zurich North America started looking at whether the apprenticeship model long used at the Switzerland-based Zurich Insurance Group could be used to train future professionals in the U.S., the company's largest business region. More than 70% of European youth start their careers on an apprenticeship path.

RCIS (Rural Community Insurance Services), the crop insurance arm of Zurich North America, matched its talent and business strategies by bringing apprenticeships to its crop insurance claims team.

"What if you hired someone who was early in their career and had a passion for the space of agriculture that could literally sit alongside someone with that experience and learn from them while they're going to school? That's the benefit of apprenticeships," said Al Crook, head of human resource business partners and executive sponsor of apprenticeship for Zurich North America.

The apprenticeship program started in the company's property and casualty business in 2016 and expanded to RCIS in 2021.

The Zurich apprenticeship program became the first of its kind to be certified by the U.S. Department of Labor after the Obama administration prioritized expanding workforce training.

The two-year apprenticeship program blends paid, on-the-job learning at Zurich with college coursework through one of four higher-education providers. Zurich covers tuition for apprentices to complete either an associate degree for those with few or no college credits or a bachelor's degree for those who already have completed two years of college. The apprentices get full benefits, including paid time off and a full-time job on completion.

One apprentice, Emily Wolf, grew up on a farm in Washington state but moved to northern Idaho after high school. There, she worked at a restaurant and eventually as a manager at a sporting goods store. Years later, she returned to her hometown and was working at a fertilizer plant and found herself wanting to find a career.

She learned about Zurich's apprentice program when she applied for a job opening as an RCIS crop insurance adjuster.

"I've always loved agriculture, and I've always wanted to stay in it. I just couldn't find a way to, and this just seemed like the best opportunity," Wolf said.

“

What if you hired someone who was early in their career and had a passion for the space of agriculture that could literally sit alongside someone with that experience and learn from them while they're going to school? That's the benefit of apprenticeships.

—Al Crook

Head of Human Resource Business Partners and
Executive Sponsor of Apprenticeship, Zurich North America

Wolf is part of Zurich's first group of RCIS crop insurance apprentices, who are hired in different areas of Zurich's business in 16 states. RCIS apprentices are located in states such as Idaho, Iowa, Minnesota, Nebraska, North Dakota, Ohio, South Dakota and Washington.

Wolf works three days per week and focuses on school for another two. Last year, Zurich began working with Northeast Iowa Community College in Calmar, Iowa, as the education provider for crop apprentices, who work toward an associate degree in agriculture business.

The program also matches apprentices with apprentice alumni advisers to help them navigate the dual responsibilities of work and school. Colton Wright serves as Wolf's mentor along with two other crop apprentices on the adjuster path.

"We have every opportunity to be completely successful. That's what I tell every apprentice I work with," Wright said. "I don't think there's any job out there where they're going to have this much support."

Building tailored apprenticeship programs

States are also stepping in to create tailored apprenticeship opportunities for farms and businesses of all sizes.

Shonda Anderson, director of apprenticeship and internship for the Kansas Department of Commerce, worked with the Kansas Farm Bureau to launch the [Rural Kansas Apprenticeship Program \(RKAP\)](#).

Anderson said apprenticeships bring back a "renaissance of respect to skill trades." For young people looking for a pathway into the agricultural space, the apprenticeship provides a full-time paid job on day one.

"The intent is mastery level training and mastery level understanding for an occupation," Anderson said.



Alex Seibel (from left), Brandon Kroll and Emily Wolf will be the first crop apprentices to graduate from the Zurich Apprenticeship Program in September.

The program allows individuals to work with farmers, ranchers or rural businesses of any scale. RKAP builds programs that specifically meet that farmer or business's needs at a very granular level, said Joel Leftwich, chief strategy officer at Kansas Farm Bureau.

In February, RKAP launched an apprenticeship program with Mid-Kansas Cooperative to hire agricultural equipment operators, CDL drivers and operations specialists. Anne Anderton Warren, MKC executive vice president and chief talent officer, said the program formalizes the training and opportunities that have existed at the cooperative for years. Apprentices will receive mentorship, training and compensation while developing skills in a high-demand agriculture career path.

"We believe that clarifying our commitment through this opportunity provides people with or without agricultural experience a clear path to a rewarding role in our organization," Warren said.

The Kansas program requires a minimum of 2,000 hours of on-the-job training; some occupations will require as many as 8,000. It also requires a minimum of 144 hours per year of related technical instruction, either in-person or online, Anderson said.

“The completion of the apprenticeship program shows that the person didn’t just go to school; they didn’t just do these credentials. They also worked on the job and tracked every hour they were on the job learning. So that becomes a national-recognized credential in and of itself,” Anderson stated.

Attracting a more diverse workforce

Government agencies and companies that plan to stay ahead of workforce challenges are looking outside traditional ag circles. The generation entering the workforce seeks meaning in their work, which aligns well with workers with a non-agriculture background who can find purpose in many agricultural jobs.

“Thirty years ago, we had a 50% chance that the person’s parents or grandparents had a farm. We’ve got a 2% chance today. So, we find ourselves with our education hat on a lot of times about what our company does,” said Mark Lowery, director of commercial marketing for New Holland Agriculture North America, which does not have a widely recognized brand outside of farm country.

Agriculture Secretary Tom Vilsack said the government has an important role to play in securing farm workers and workers in the processing industry, attracting and supporting beginning farmers and ranchers, transitioning

employers to automation and finding new leaders to carry on the future of agriculture.

In June, with funding provided in the Inflation Reduction Act, USDA’s National Institute of Food and Agriculture announced a \$262.5 million investment in a NextGen program to train and support more than 20,000 future food and agricultural leaders through 33 project partners in 24 states. USDA had to choose between 175 project proposals made by 117 eligible institutions, requesting a total of \$1.5 billion.



Ag Secretary Tom Vilsack speaks at a USDA event highlighting the next generation of the agricultural workforce.

“The expectation is that we’re going to invite young people to have experiences, training and education with the hope and the belief that they will find an opportunity in agriculture, in agribusinesses, at USDA,” Vilsack said. Over time, he hopes those who participate can take their life and learning experiences to become the leaders of USDA and agriculture.

“

Thirty years ago, we had a 50% chance that the person’s parents or grandparents had a farm. We’ve got a 2% chance today. So, we find ourselves with our education hat on a lot of times about what our company does.

—Mark Lowery
Director of Commercial Marketing,
New Holland Agriculture North America

In August, USDA's Rural Development announced a partnership with the [Community College Alliance for Agriculture Advancement](#) to provide Midwest students with rural economic development opportunities as well as resources and skill sets to help them advance in ag careers. As part of a [memorandum of understanding](#), USDA will offer its staff expertise in over 400 offices around the country to provide guest lectures and assist with curricula to instill knowledge in the future ag workforce.

In an interview with *Agri-Pulse*, USDA Rural Development Deputy Undersecretary Farah Ahmad said the program marries the colleges' "training and education with our on-the-ground experience. When you combine those powers, you have a really strong training program for that next generation of rural leaders."

USDA's NextGen program works to reach out to underserved populations and builds on Vilsack's desire to diversify the workforce.

"Agriculture has for many years been a predominantly white industry," Vilsack said. "We really have to have an industry that reflects the diversity of the people we're serving and understands the cultural differences and challenges and preferences that we all have."

Scholarships, internships encourage additional experiences

To attract that diversity of applicants, companies are also offering additional support and assistance to potential employees. According to AgCareers.com, 50% of ag companies offer formalized on-the-job training, mentoring or coaching. External study with tuition reimbursement is on the rise, with 62% of companies now offering it, with another 38% providing certificate courses.

Many agribusinesses offer internships and job training opportunities to enhance the

understanding of agriculture and their business. Bayer, for example, has its Emerging Talent Program, which includes 20 internships and 14 trainee positions to offer a broad exposure to different business units.

The internship program is typically three to four months, but the trainee position lasting 12-15 months is a full-time role with compensation at about 90% of a field sales representative. This also allows that individual to be mentored by a full-time employee.

Barry Scarbrough, Bayer's North America training and development lead, said it's not uncommon for the company to hire new employees who don't have an agriculture background, so they've designed those 12-15 months to train new employees in both selling/negotiation soft skills in addition to agronomy basics.

Other companies, such as CHS, a Minnesota-based farmer cooperative, offer tuition reimbursement for additional certifications and training to address special skill needs, not just for use on a traditional bachelor's or associate degree. For example, CHS needs drivers that not only have a commercial license but also a hazmat endorsement and a minimum level of experience. The reimbursement can be used for training the drivers.

Establishing curriculum to target needs of industry

Farm organizations are also stepping in and working alongside community colleges and universities to develop curricula that will provide the needed education and skills.

The Western Growers Association received \$750,000 in grant funding from the California Department of Food and Agriculture to develop educational modules for new certifications and degrees. The goal is to train 3,000 future employees in the next four years.

“With the new developments in automation, employees are having to be more skilled so that they can run and repair these types of equipment,” said Carrie Peterson, who serves as the next-generation ag worker grant manager at Western Growers. “We are trying to ensure these students learn the right ag tech skills while they’re still in school so that they can utilize those skills once they get out, and they’re a good candidate for these jobs.”

Designing a full course or certification program can be a multiyear process, but Peterson has been working with faculty at select community colleges to take newly developed modules on identified skill gaps that they can quickly integrate into their curriculum. With the grant money, Peterson said they’re reacting to skills gaps that currently exist as opposed to looking forward and training for the future because it’s a quicker turnaround with these modules to embed in existing courses.

Modules cover topics such as irrigation practices, programmable logic controllers, GPS and geospatial technologies, unmanned aerial systems, precision agriculture software skills and knowledge of local commodities. Peterson worked with 10 faculty from 10 different colleges ranging from Redding, California, down to the Imperial Valley to design the modules. Today 25 to 30 community colleges have integrated the modules into their coursework.

Western Growers also is using the grant to provide approximately 70 internships over the next three years through a \$3,000 stipend to the host employer to offset the cost of the intern.



Agtech lab at Hartnell College - Alisal Campus
(Photo: Western Growers)

Peterson works directly with faculty at the colleges in the area where growers are located to match potential student interns with that employer.

“This is a great pipeline for us to test potential employees for the future for full-time or year-round positions,” Peterson said.

Walt Duflock, vice president of innovation at Western Growers, said the group also is looking to create opportunities for high school students to take the modules and receive the certification.

One obvious candidate for the program is King City High School in the Central Valley where nearly half the student body of 700 students is a member of FFA.

“There’s no reason why an opportunistic kid taking the right steps in their junior or senior year of high school couldn’t walk out the door at 18 with the King City High School diploma and a Western Growers certificate,” Duflock said.

“

With the new developments in automation, employees are having to be more skilled so that they can run and repair these types of equipment. We are trying to ensure these students learn the right ag tech skills while they’re still in school so that they can utilize those skills once they get out, and they’re a good candidate for these jobs.

—**Carrie Peterson**

Next-Generation Ag Worker Grant Manager, Western Growers



Chapter 4

The ripple effects of ag's immigrant challenges

By Jacqui Fatka

H-2A wage rates, regulations frustrate farmers, while H-2B cap hits other employers

Hard decisions are coming for northern Ohio vegetable farmer Bob Jones Jr.

For the past 30 years, he's used the H-2A program to hire the seasonal immigrant laborers he needs to complement the domestic employees in the 200-member workforce for his operation, known as Chef's Garden. But he's considering not applying for H-2A workers for 2024 because of the increased costs and unreliable bureaucracy.

Due to Labor Department processing delays, Jones is still waiting for 25% of his requested H-2A workers for 2023 that were to arrive in April. And he's out \$1,000 in processing fees for the workers who won't make it.

"We will most likely not use H-2A next year. We will cut back our acreage and change our operation because we can no longer keep pace with the costs of the program," Jones said.

As farmers and companies in the food and ag sector struggle to find workers, many have increasingly turned to recruiting foreign workers through visa programs, including H-2A. Demand for H-2A workers, who can take seasonal jobs on crop or livestock operations, has been skyrocketing. Meanwhile, others in the sector are trying to use smaller visa programs, such as H-2B or J-1.

But Congress' inability to advance immigration reform, combined with regulatory changes to H-2A, has created a level of uncertainty farmers say may push more U.S. ag production to foreign competitors.

"This is a crisis," said Kristi Boswell, legal counsel for Alston & Bird, who offers legal services for clients managing the labor situation.

"There are labor shortages all across the country. It is affecting how farms operate their business, what crops they decide to grow,



Ohio specialty vegetable farmer Bob Jones Jr., center, considers many of his Mexican descendant employees as part of his family as many have worked for over 15 years at Chef's Garden. Pictured is left to right, Carlos Figueroa, Jario Flores, Jones, Mario Estrada and his brother Juan Estrada.

whether they decide to expand, whether they shut their doors, and we are seeing more consolidation as a direct result of lack of labor.

“We are also seeing some of those larger operations buying ground in Mexico and moving operations there because of labor issues or costs associated with the H-2A visa program.”



Kristi Boswell, Alston & Bird

The reality is half the workforce in agriculture is working in an undocumented or falsely documented status, which Boswell said only complicates the political forces at play in finding a solution that provides a legal, reliable workforce without being handicapped by bureaucracy.

For Jones, his decision will have ripple effects throughout his entire workforce. His H-2A seasonal workforce makes up his harvesting crew, but the packaging, shipping, sales and marketing all consist of a local workforce.

Jones' operation is a family affair, with a partnership between Bob and his brother Lee and six members of the third generation currently working on the farm, but he considers many of his workers as family. During the winter, Jones visits the Mexican villages of his workers and supports churches and schools in their communities.

“They’re part of our family because many of them have been with us for 15 to 20 years,” Jones said. “The last time I went to Mexico, a third of my staff was building new homes, and I couldn’t have been happier.”

One of Jones’ workers, Mario Estrada, has been with Chef’s Garden for over 25 years and applied and received full U.S. citizenship so his family could join him in America. Citizenship requires five years of permanent residency as well as proficiency in English and passing a test. Jones helped Estrada and 15 others who work on his farm earn green card status or work toward citizenship, which can cost as much as \$10,000 per person.

Estrada’s Mexican roots were on a farm, and he told *Agri-Pulse* he found the “American dream” in obtaining his citizenship, but his love of agriculture and positive working conditions made it an easy decision to continue to work for Jones as he transitioned out of the seasonal H-2A program.

Mario’s brother, Juan, joined the farm workforce six years ago as an H-2A worker and remains happy with what is expected of him, as well as the ability to travel back to Mexico during the offseason and earn more than the alternatives in Mexico.

Without H-2A workers, AmericanHort member Jones cannot continue to expand his business as he wants. Similar to Jones, many farmers are forced to slow expansion plans, scale back or exit agriculture because of fewer legal workers.

Zachariah Rutledge, an extension economist at Michigan State University, said half the farmers

in the fruit and vegetable sector are facing labor shortages. On average, they can only find 80% of the workers they normally need.

In the [2022 Greenhouse and Nursery Labor Employment Survey](#), conducted with AmericanHort in collaboration with the University of California, Davis, and Michigan State University, 35% of growers utilized the H-2A program, yet half those who used it said they would employ workers for more than the maximum of 10 months if it were allowed.

Michael Marsh, president and CEO of the National Council of Agricultural Employers, said another survey done in 28 states showed that very few domestic workers will take farm jobs.

“For the 97,691 jobs that were made available, there were only 337 domestic applicants,” Marsh said. “I don’t see that trend changing.

“We hear sometimes from labor advocates, ‘Well, if you paid folks \$100 an hour, you could get all the workers you need.’ That’s not true either. Maybe they show up for you ‘til noon, and then they take their \$400 and they go home,” Marsh said.

In fiscal year 2022, 371,000 H-2A workers were certified for work in the United States, up from 77,000 in 2011. “All of the evidence points to increased reliance upon the H-2A program moving forward,” said Rutledge.

But at what cost?

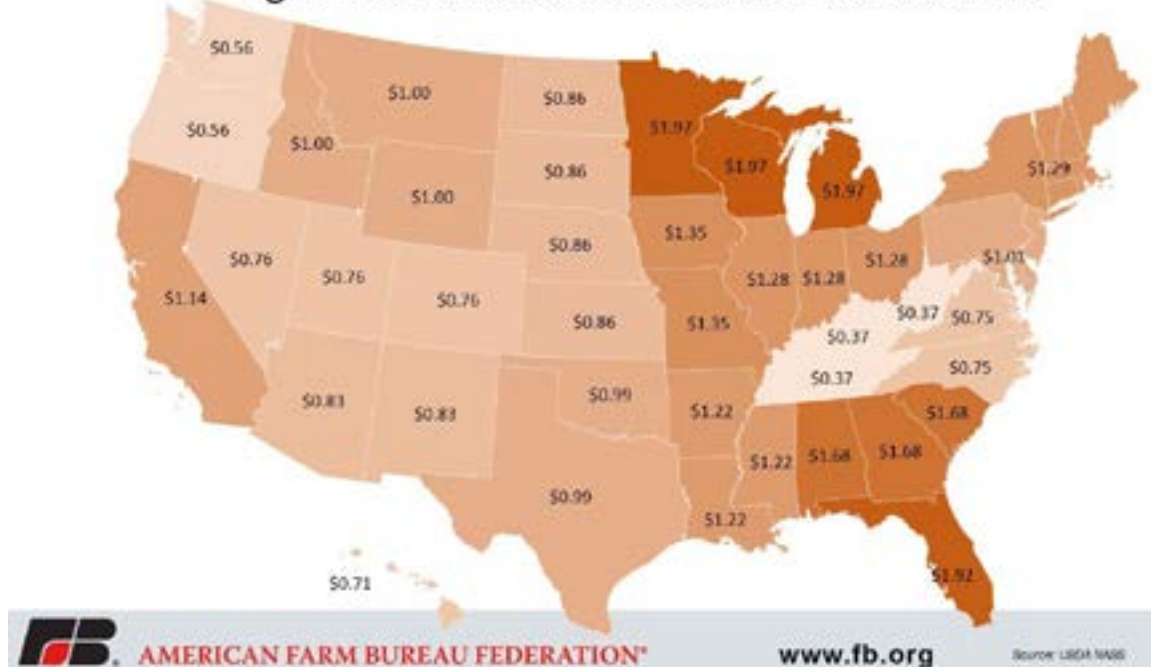
Boswell, who served as an adviser at USDA and the White House under the Trump administration, has seen a significant regulatory shift in the last four years negatively impacting farmers. The H-2A program has seen two rules

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They’re part of our family because many of them have been with us for 15 to 20 years. The last time I went to Mexico, a third of my staff was building new homes, and I couldn’t have been happier.

—**Bob Jones Jr.**
Owner and Vegetable Farmer, Chef’s Garden

Figure 4. Dollar Increase in 2023 AEWR Over 2022 AEWR



finalized this year and another two proposed rulemakings on the way.

“If you’re a current H-2A user or if you’re looking to get into the H-2A program, it is getting harder and harder to simply maneuver the program,” Boswell said.

By law, H-2A pay rates are not supposed to undercut wages paid to domestic workers. To that end, DOL sets an Adverse Effect Wage Rate (AEWR) for each state every year based on a USDA survey of wages that U.S. farms pay their workers.

For 2023, the AEWR ranges from \$13.67 (in Alabama, Arkansas, Georgia, Louisiana, Mississippi and South Carolina) to \$18.65 in California and \$20.72 for the District of Columbia.

Last year, 10 states experienced double-digit increases. In Florida, the increase was 15.5%, said Adam Lytch, north Florida regional manager for L&M Farms. On Lytch’s operation, payroll expenses increased \$1.4 million over the prior year.

“When you include the costs of housing and transportation that H-2A employers are required to provide, this year’s minimum wage could account to more than \$23 per worker,” he said

during a Senate hearing in May where other farmers also lamented the impact of the soaring labor costs.

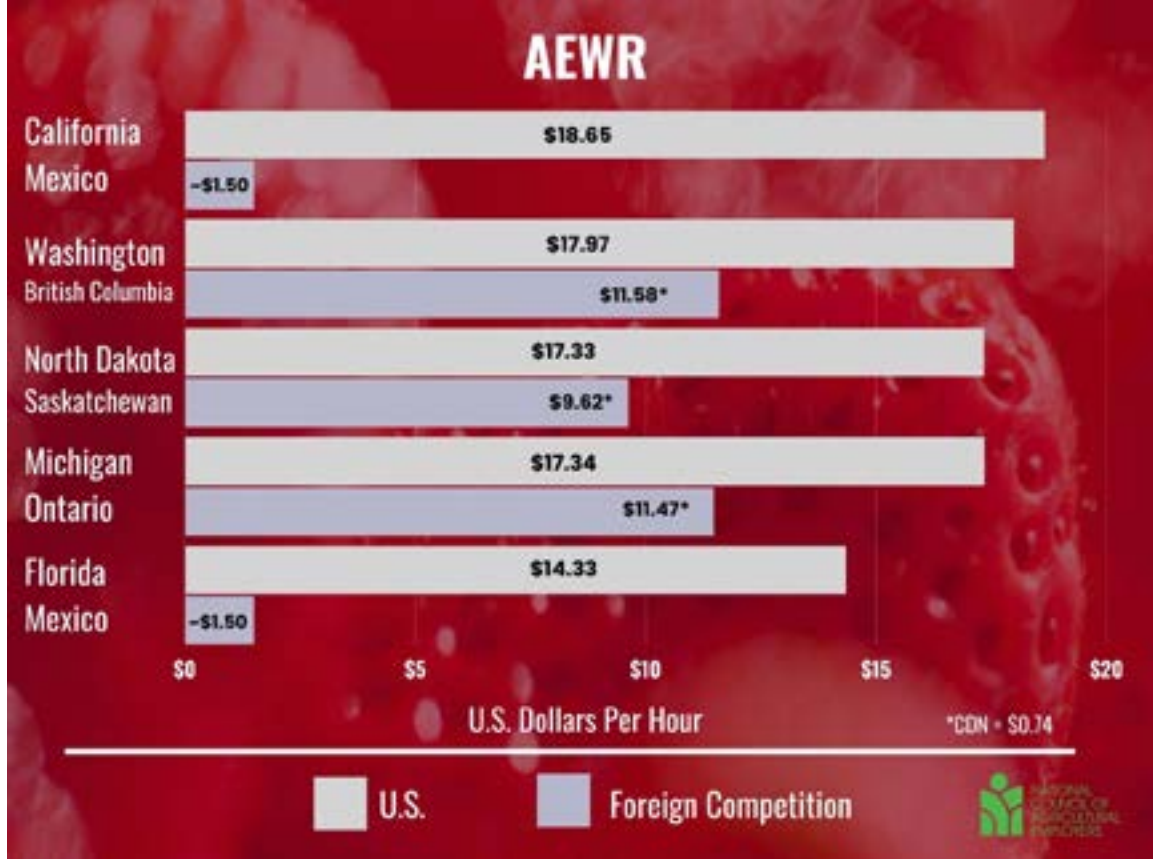
Rutledge said Michigan saw one of the largest increases in AEWR in 2023 at 13%, compared to average increases of 3% to 5% in previous years.

Jones said the required wage rate increases make it difficult to reward his longtime employees in a commensurate fashion. “Part of my issue is I’m not being fair to my best people,” Jones said.

Earlier this year, Sens. Thom Tillis, R-N.C., and Jon Ossoff, D-Ga., introduced the Farm Operations Support Act, legislation that would revert the AEWR to the December 2022 rate for the remainder of 2023.

Chef’s Garden markets directly to high-end restaurants, entities such as Disney, and through prescription food boxes and direct-to-consumer deliveries. For now, Jones has been able to pass on rising labor costs and remain profitable. But it continues to get harder to recoup those costs.

But Michigan-based fruit and vegetable grower Fred Leitz, who relies on wholesale markets, has a harder time passing on labor costs on the operation he runs with his three brothers.



When the Pharr International Bridge opened in 2012, Mexico’s fruit and vegetable production started going up dramatically, while U.S. production went down, said Leitz. “Mexico is producing the same crops at the same time of year going into the same markets that I am. The only difference is they are one to two days farther away from the markets than I am, but their labor rates are very low.”

Leitz estimates his cost of production for labor is over \$5 a box during the span of starting in the greenhouse and finishing the crop by cleaning up the fields, compared to what Leitz has heard is Mexico’s cost of just 60 cents a box.

When wholesale buyers want to push the price they’re willing to pay down to \$10/box, it’s hard for him to stay profitable, he said.

At peak workforce, Leitz employs about 230 people, with about 190 from the H-2A program, to go with another 20 to 25 domestic migrant workers and 15 seasonal workers from the local area. Leitz said labor costs now account for about 45% of his expenses for the year. “That’s just way out of line,” he said.

Rutledge estimates farm wages in Mexico are about 15% of what they are here in the U.S. “If you have farmworkers making \$15-\$20 an hour here in the U.S., they’re making about \$2, maybe a little more, in Mexico,” he said.

The [Economic Research Institute estimates the average Mexican crop worker](#) makes about \$4.20 an hour. That is higher than Rutledge’s estimate but still well below U.S. wages.

H-2A critics say regulations create more roadblocks

Farmers also are concerned about a new Biden administration rule that requires employers pay at the highest job level code regardless of the total time spent on that particular task. Boswell said one of her clients — U.S. Custom Harvesters Inc. — will have to pay workers who only drive trucks a small percentage of the time on a combine crew at a rate nearly double that of the combine driver.

“In small crews, this drives up wages for the entire workforce to a level that’s not sustainable from a business perspective,” Boswell said.

Another change implemented by the administration to the H-2A program

limits H-2A employees to working for a single employer for no more than 34 hours a week, if the grower has filed as a joint employer. DOL justifies this provision by stating that any grower who can provide even a single week of full-time work — defined as 35 hours in this program — should file as a sole employer.

Kate Tynan, senior vice president of the Northwest Horticultural Council, said the change makes it more difficult for small growers to use the program, because they need to jointly apply for H-2A workers to share the associated costs.

“As labor shortages continue to become more acute, more and more growers will continue to face the choice of using the H-2A program, if

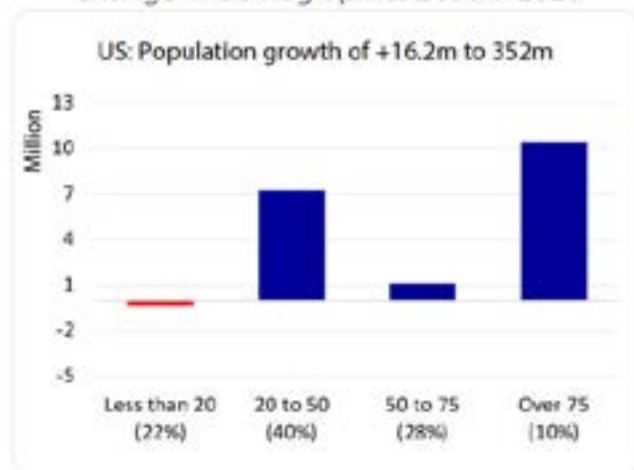
they are financially able or selling their multi-generation family farm,” she said.

Farms simply lack options for legal workers other than H-2A, said James O’Neill, director of legislative affairs for the American Business Immigration Coalition.

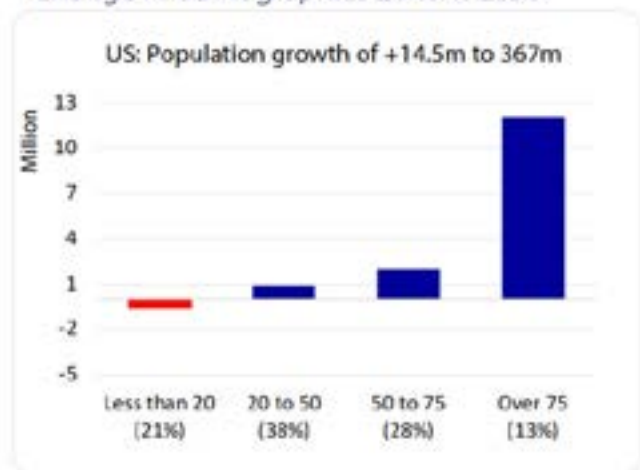
USDA’s Ag Labor Survey estimates that 60% of farmworkers in the U.S. are undocumented, and because the dairy industry is locked out of the H-2A program, potentially 85% of that workforce is undocumented. Of the estimated 2.2 million agricultural workers nationwide, 1.1 million are likely undocumented.

“Any reasonable solution to the workforce shortage has to include stabilizing the workers that we already have, and creating new pathways for workers to be able to come and do the work that we desperately need them here to do,” O’Neill said.

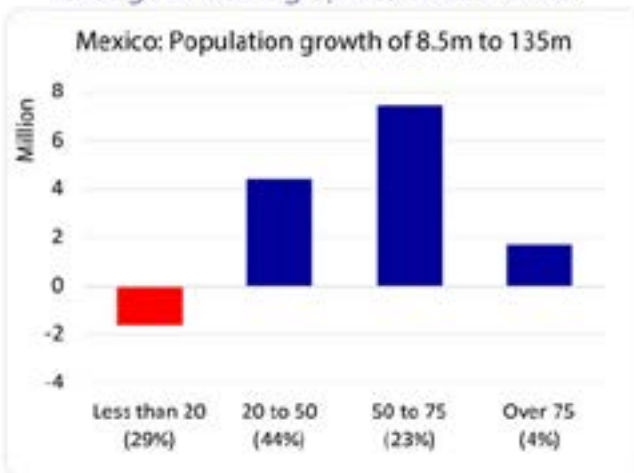
Change in demographics 2030 v. 2020



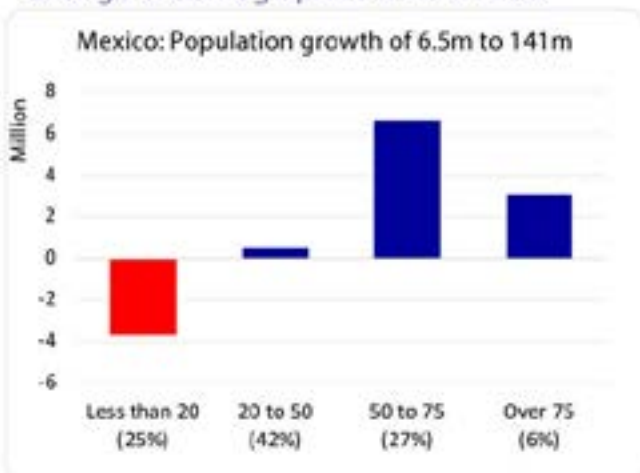
Change in demographics 2040 v. 2030



Change in demographics 2030 v. 2020



Change in demographics 2040 v. 2030



David Magaña, a senior analyst for Rabobank, said demographic and economic changes in Mexico are limiting the number of Mexicans available for U.S. work. During the 2008-09 recession until pre-COVID, there was a net migration of people going back to Mexico from the U.S. Meanwhile, Mexicans also are having smaller families.

“A few decades ago, most of these workers came in from central Mexico, and they were able and willing to work in agriculture,” Magaña said. But as recently as 20 years ago, more workers came from southern Mexico and in the last five years from Central America.

“Looking at the numbers, I can tell you that’s not the same profile of migrant workers as it was in the ‘80s or ‘90s. The majority used to be single men going to work temporarily with some ag experience. Now it is unaccompanied children or families escaping from violence who don’t have the experience of work on a

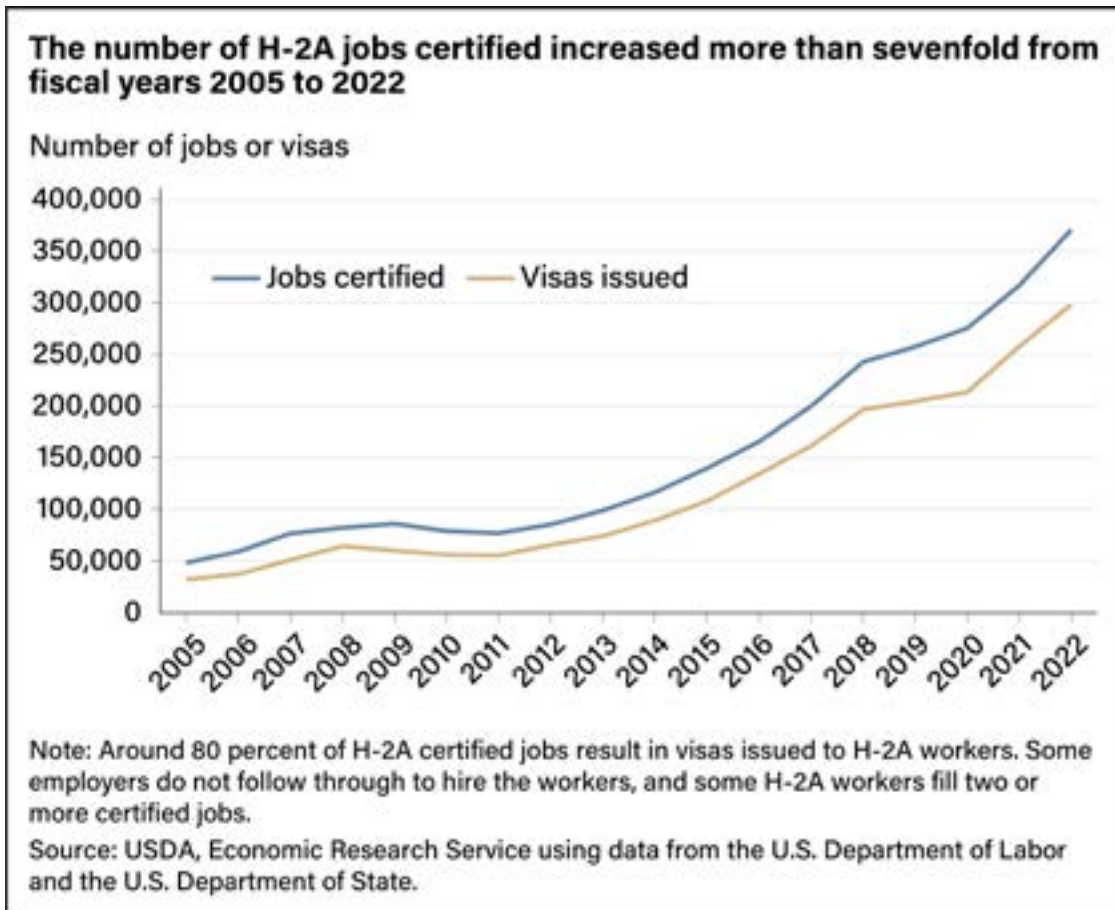
farm, and many of them don’t want to,” Magaña said.

To expand the potential pool of H-2A workers, USDA announced in June 2022 it would be using \$65 million in American Rescue Plan funding to help recruit and identify H-2A workers in the Central American countries of El Salvador, Honduras and Nicaragua.

USDA intended to launch the competitive pilot program early this year ahead of the growing season, but as of August still had no additional details to offer on the program.

Boswell said, “There are safeguards in place to ensure that there isn’t that flood of foreign workers into the market that hurts the domestic labor force. No one wants to hurt the domestic labor force. And in fact, farmers would love to be able to hire U.S. workers if they were available.

“But that isn’t the reality, and that’s why it has grown exponentially in the 12 years that I’ve



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If landscapers don't get enough help and can't run their businesses fully, then they're not buying as many trees and shrubs; that's affecting the nursery industry and the greenhouse industry.

—Alan Jones
President, Manor View Farm

been doing this,” she said. “The H-2A program went from 77,000 certifications to 360,000 certifications.”

While farmers across the country say they have no choice but to apply for H-2A workers, some domestic workers still see the visa program as unfair competition.

Esther Ruiz has been working in agriculture in Arizona for the past 15 years as a domestic farmworker, primarily in lettuce and broccoli fields. This year, a month into what she assumed would be six months of work, she was laid off as younger, male H-2A workers arrived at the farm.

“We end up unjustly unemployed because the H-2As get to take the work that we as local residents had already started, because companies fire us to put in the H-2A contracted workers,” Ruiz told *Agri-Pulse*.

This creates difficulty for Ruiz, who became a U.S. citizen through marriage, to pay for living costs and food; H-2A workers have free housing and transportation through the program.

“Above all, this is age discrimination, because 98% of the H-2A workers are very young men,” she added.

H-2B and J-1 visas offer options for some food, ag employers

Some farmers and other sectors of the industry are looking to other visa programs for help.

The H-2B program, which unlike H-2A has a cap on the number of visas that can be issued annually, can be used by landscaping companies

— they accounted for 37% of the total H-2B positions last year — and other employers for nonfarm work.

In FY22, DOL approved 211,254 requests for H-2B positions, but the program is capped at 66,000 visas, limiting the ability to fulfill all the requests. Congress has given DOL some ability through appropriations language to allow returning worker exemptions resulting in visas issued slightly higher than the cap limit, but Boswell said Congress should increase the cap level.

This past year, Alan Jones, president at Maryland-based Manor View Farm, hired 14 H-2A and 12 H-2B workers to manage the labor needs of its nursery tree farm and landscaping distribution plant center.

“Due to the H-2B visa cap and lottery allocation system, we've had a couple of years when we didn't receive any visas and other years when workers showed up late,” he said.

“If landscapers don't get enough help and can't run their businesses fully, then they're not buying as many trees and shrubs; that's affecting the nursery industry and the greenhouse industry,” Jones said.

Sara Duckwall, project and communications director at Duckwall Fruit, has never successfully brought H-2B workers to her fruit packing operation in Oregon. After paperwork delays forced them to miss out on securing workers in 2022, Duckwall Fruit sought assistance from a senator's office in hope of getting approval for 20 H-2B workers to begin Oct. 1.

Number of certified H-2B positions by occupation, FY2022

Ranking	Occupation	Number of workers certified	Percentage of total workers certified
1	Landscaping & groundskeeping worker	78,304	37.1%
2	Maid & housekeeping cleaner	17,253	8.0%
3	Forest & conservation worker	13,769	6.5%
4	Amusement & recreation attendant	11,277	5.3%
5	Meat, poultry & fish cutter	8,004	3.8%
6	Cook, restaurant	7,837	3.7%
7	Construction laborer	6,398	3.0%
8	Waiter & waitress	6,286	3.0%
9	Laborer & freight mover	4,216	2.0%
10	Counter attendant	3,353	1.6%
	Other	54,557	26.0%
Total		211,254	100.0%

Source: CRS report R44849 (congress.gov)
Graphic by Jesse Harding Campbell



“The DOL turnaround time with a perishable product is untenable. The cap is very hard to navigate,” Duckwall said.

Another option is the uncapped J-1 program, which allows foreign students to work in the U.S. for up to one year. The training and education component makes the J-1 visa attractive but provides only a small labor pool to meet unique needs in the ag sector, said North Dakota farmer Clair Hauge, who uses J-1 visas.

Hauge, who farms 7,000 acres and operates a cow-calf herd and feedlot with his brother Jamie, is 85 miles from the nearest city for shopping or parts, making it a challenge to keep and recruit workers in his rural part of southwest North Dakota.

“No doubt without foreign labor, we wouldn’t be able to do what we do,” he said.

Hauge uses H-2A and J-1 visas but prefers the J-1 because of the flexibility and simplicity to apply. He’s hosted students from all over the world who have learned the many aspects of their diversified farm.

Another program that can be used to bring in professionals from Mexico and Canada is the TN program. Agronomists, plant and animal breeders, animal and soil scientists and veterinarians are among the workers who can get TN visas.

TNs can be requested at any time during the year, unlike H-2A or H-2B that have rigid windows for applying and certifying the jobs. TN visa holders can also bring their families, pay local taxes and qualify for health insurance and other social benefits with their employer.

Victor Ochoa, director of operations at Swineworks, which helps swine operations

recruit workers, said about 80% of the TN visa holders his company helps secure serve as swine technicians. The rest work on maintenance crews or in feedmill operations or as office staff.

Moving workers to a permanent visa status

Some companies are looking for ways to legally retain workers for the long term.

Tyson Foods has a program called the Tyson Immigration Program, or TIP, to help its existing employees move to a permanent visa status. Tyson employs over 40,000 immigrants and refugees from over 160 countries who speak 60 different languages at their U.S. plants, said Garrett Dolan, Tyson Foods' senior manager of corporate social responsibility.

TIP helps people become citizens, renew paperwork for green cards and ensure they have employment authorization renewals.

Tyson's immigrant workers can face a number of barriers to upgrading their visa status, including finding immigration legal experts in rural locations where Tyson plants are located. Immigrants also struggle to know whom to trust, especially when they've been taken advantage of in the past.

Tyson partners with a nonprofit organization, Immigrant Connection, which provides Justice Department-certified staff personnel to Tyson

plants to meet confidentially with employees who seek the service. Tyson pays for the consultations offered on-site and also offers to pay for citizenship processing.

"We believe that if you can remove these concerns that a newcomer has about their immigration status, you can stabilize them in their personal life. And when you stabilize them in their personal life, you build loyalty," he said.

Over the past five years, they've seen high retention rates in the more than 1,000 employees per year who have become citizens.

Obtaining U.S. citizenship also requires basic literacy skills and English proficiency, and Tyson offers free ESL classes in many of its locations before or after work shifts.

Fair Food Program aims to address worker, farm concerns

Even as employers in the ag and food sector struggle just to find workers, some farms and companies are also trying to address public concerns about the treatment of farmworkers with the creation of the Fair Food Program.

Participating growers and buyers agree to implement a "code of conduct" which outlines protections for farmworkers such as wages and hours, freedom from retaliation, and health and safety requirements such as access to shade and adequate water. Growers in return receive

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We believe that if you can remove these concerns that a newcomer has about their immigration status, you can stabilize them in their personal life. And when you stabilize them in their personal life, you build loyalty.

—Garrett Dolan

Senior Manager of Corporate Social Responsibility, Tyson Foods

purchasing preferences from participating buyers such as Whole Foods, Wal-Mart and others who desire products purchased under improved labor conditions.

Jon Esformes, CEO of Sunripe Certified Brands and chief operating officer for Pacific Tomato Growers, was the first grower to sign an agreement with the Fair Food Program in 2010. He said what started out as an effort to ensure legal compliance with labor laws has made the company a “workplace of choice.”

When many operations were struggling to find workers during the pandemic, participation in the Fair Food Program turned into a “huge economic benefit” because workers wanted to come to their farms, said Esformes, speaking on a panel during the USDA Ag Outlook forum in February 2023.



Lupe Gonzalo, Coalition for Immokalee Workers

Lupe Gonzalo, a farmworker and senior staff member with the Coalition for Immokalee Workers, said farmworkers prefer to work on farms in the Fair Food Program. For those workers, it is a “relief for them to be working on a farm where their basic human dignity is being respected.”

In August, Sen. Alex Padilla, D-Calif., introduced two bills to help elevate the voice of farm and food system workers.

“Too often, lack of access to language services, outreach and USDA programs leaves them vulnerable to challenges including food and housing insecurity, lack of health care access and inadequate job protections,” Padilla said in a statement.

His Supporting our Farm and Food System Workforce Act would establish an office at USDA to serve as a liaison between the agency and farmworkers “providing a platform for their concerns and interests and helping develop recommendations and new initiatives for the department.”

The 2008 farm bill established a dedicated liaison for USDA and farmworkers nationwide but has “lacked sufficient staff and resources to adequately address farmworkers’ needs,” according to a release detailing the bills.

Farmers fear more farm production move out of U.S.

Jones, the Ohio vegetable grower, tries to make the case to lawmakers about the need to fix the H-2A program. He tells them it’s a matter of fact that without immigrant labor, the fruits and vegetables Americans consume will be harvested by foreign hands.

“Our choice as a society is whether we want that to happen domestically where we can regulate that production, shipping and processing of that food,” Jones said.

“When we force our production of food offshore, we lose the ability to regulate how it’s being grown, what chemicals are being used to grow it, who is harvesting it, and how those folks are treated.”

More than 60% of fresh fruit and more than 35% of fresh vegetables consumed are produced

by a foreign competitor, and those numbers are going to continue to increase, according to Marsh of the National Council of Agricultural Employers.

Agriculture Secretary Tom Vilsack said in many circumstances throughout the history of the U.S., immigrant laborers have done the work that was difficult and hard.

“And did it in a way that conveyed a sense of value and respect for work, and then explained to their children and grandchildren that they needed to do better,” Vilsack said, as those future generations of immigrant workers went to school or started a profession.

“That’s the secret sauce of America, that these folks come over, they work hard to take care of their families and encourage their kids to do something better,” Vilsack said. “When you basically don’t have a system that’s working, you essentially minimize the ability of our country to have that kind of entrepreneurial spirit.”

“

When we force our production of food offshore, we lose the ability to regulate how it’s being grown, what chemicals are being used to grow it, who is harvesting it, and how those folks are treated.

—**Bob Jones Jr.**

Owner and Vegetable Farmer,
Chef’s Garden



Chapter 5

How technology can help solve agriculture's labor woes

By Jacqui Fatka

Mechanization is the answer to rising H-2A wage rates and labor shortages for Jim Saunders, who's in "expansion mode" on his central Virginia nursery and fruit farm.

He's purchased three mechanized pruners over the past three years, and he is looking to purchase another two machines this winter that can prune about three times faster than hand shears as they move on tracks between his rows of boxwood trees. Each machine costs \$30,000, but Saunders thinks it's worth it.

"I've seen that machine operate, and it's much faster than our hand pruners. And the machine doesn't get tired as the day goes on," he said.

Saunders farms on the eastern side of the Blue Ridge Mountains where he grows peaches, apples, Asian pears and landscape shrubs and trees. He employs 110 foreign, H-2A workers and hires another 100 domestic workers who serve in administrative, accounting, truck driver and supervisory roles. His labor costs



have increased 25% since 2019, making mechanization more appealing.

He's looking at installing robots in his greenhouses to space, prune and fertilize the plants. The potting process is already mechanized so workers don't have to bend over as much. Still, mechanization remains especially challenging in his business, because fruit can be damaged and ripens differently.

"We're hopeful that robotics and mechanization is going to reduce our labor. That's the ultimate goal," Saunders said.

As the costs of technologies go down and labor costs go up, farmers in all segments of agriculture see mechanization and artificial intelligence as opportunities to stay ahead.

The use of semi-automated technology such as assisted steering continues to become more widely adopted, and the transition to fully automated systems such as weeding robots and computer-operated grain carts is here or soon on the horizon.

Still, the cost of developing and purchasing technology remains steep for many commodities, prompting the specialty crop sector to push Congress this year to provide dedicated funding in the next farm bill for research and cost-share assistance.

Zachariah Rutledge, assistant professor and extension economist at Michigan State University, said his survey of 1,300 farmers found that two-thirds have already adopted a new labor-saving technology due to rising labor costs and shortages of workers.

[McKinsey & Company's 2022 Farmers Global Insights Survey](#) found that 5% of farmers in Asia, Europe, North America and South America were using next-generation technology, compared to 21% using farm management software. Further adoption will be pushed by on-farm economics as well as a desire to implement more sustainable farming practices.

**Investments in automation, by farm size
2022 [average]**



Source: Grower survey, Western Growers, Roland Berger

Michael Marsh, president and CEO of the National Council of Agricultural Employers, said the speed and cost of technologies at which operations can adopt mechanization will determine whether many producers will stay in business.

"I don't think technology adoption can come quickly enough and low cost enough to keep some of these legacy family farming operations in business," Marsh said. Still, he fears the needed technological innovations will be out of reach for many of farmers and ranchers, who may be forced to leave the business or switch to other less labor-intensive segments of agriculture.

Western Growers' [research on specialty crop automation](#) found that about 70% of participating growers had invested in automation in 2022, with an average annual spend of \$450,000 to \$500,000 per grower. That's up from 2021 when average investments in automation were around \$350,000 to \$400,000 per grower.

When growers were asked how they expect automation project spending to change in the next three to five years, “around 40% of growers predicted an increase of 10-50%, while around 30% expected it to rise by more than 50%,” the automation report said.

Walt Duflock, Western Growers’ vice president of innovation, said new money is flowing into the agricultural robotics and mechanization space because of labor concerns. While many procedures for processing frozen or packaged fruits, vegetables and nuts are already heavily mechanized, the specialty crop industry is “striving for the last mile for whole fruits and vegetables,” he said.

“I think we’re going to continue to get better at weeding, thinning, planting and harvest-assist that helps the crews out. I think harvest will be the last mile,” Duflock said.

Harvest machines exist today for the types of produce that are easiest to mechanize. Those include blueberries, raisin grapes and baby leaf lettuce. Fruits and vegetables that bruise easily or don’t ripen uniformly, including strawberries, table grapes, fresh market tomatoes and melons, are harder to harvest mechanically.



Tom Grandziel, University of California, Davis

Tom Gradziel, professor and plant geneticist at University of California, Davis, said mechanical harvesting technology is improving with the

many engineers working alongside growers on finding solutions and utilizing the new computing capabilities and image analysis for robots. Adoption will be driven by the economics to achieve a return on investment. Fresh peaches, apricots, cherries and fresh plums pose a challenge because the fruit is tender and matures at different times, he explained.

Robots today, with the support of very efficient computerized systems with high-resolution cameras, can identify fruits that are ripe and selectively harvest only those. “It’s going to be costly, but costs are coming down rapidly. AI is going to help a lot with that,” Gradziel said. “Within the near future, we’re going to have systems that could be effective in your orchard, whether they’re cost effective is going to depend on the cost or the value of that crop.”

Western Growers launched the Global Harvest Automation Initiative in February 2021 with the goal of automating 50% of the U.S. specialty crop harvest within 10 years. The organization established a harvest automation cohort that brings together automation startups and helps integrate technical interfaces into the companies’ product road map and assists in establishing a strategy for go-to-market support, field trials and case studies.

“When the startup has to build everything themselves — the image library, the artificial intelligence code that converts that image library into a series of actions for a robot and a robot arm moving down the field — that takes a lot of product road map. That’s a lot to build,” Duflock said.

“It turns out the cost of these startups is just too high for the market they’re chasing right now. We’re starting to fix this, but every crop for fresh produce harvest needs its own robot, and that’s not very capital efficient,” Duflock said. “We’re helping them to reduce that capital need and that time to market for their first product.”

“When the startup has to build everything themselves — the image library, the artificial intelligence code that converts that image library into a series of actions for a robot and a robot arm moving down the field — that takes a lot of product road map. That’s a lot to build.

—Walt Duflock

Vice President of Innovation, Western Growers

Duflock said startups that have succeeded in bringing new innovations to the table have done the best job of understanding where their solution fits into the growers’ environment and what economic questions they should be asking.

“If we know that labor is our biggest scarcity, we can’t miss the labor crew by a day or that crop is lost,” he said. As an example, if a farm can weed more on the front end to make the harvest group more efficient, this may allow harvesting in three days instead of four.

Western Growers invested in helping develop an image library as part of a “Tech Stack” to assist startup companies in identifying crops with high-resolution images through the entire growing stage.

“Any startup anywhere in the world can take this image library off a site called AgML — Ag Machine Learning,” Duflock explained. “They can pull the images down and on Day One, when you understand what you want to build, we can give you the images to design early-stage R&D work and early-stage prototyping. This can save a mechanical startup six to nine months of high-cost engineering time.”

Duflock said the goal over the next 12 to 18 months is to add 20 to 30 of California’s highest grossing specialty crops to the image library.

Paul Mikesell, CEO of Carbon Robotics, has seen increased adoption of his AI-based laser weeding control system that’s been utilized on specialty vegetable farms and the winner of this

year’s “Best AI-based Solution for Agriculture” award in the AI Breakthrough Awards program held by [AI Breakthrough](#).



Paul Mikesell, Carbon Robotics

In an interview with *Agri-Pulse*, he said the company’s LaserWeeder machines use cameras, computer vision and deep learning algorithms for automatic weed and crop detection and then utilizes lasers to kill the weeds in farmers’ fields. The company estimates it has killed more than 2 billion weeds. By the end of this year, LaserWeeders will be operating in 17 states and three provinces of Canada.

“All you need to do is tell the LaserWeeder what crop it’s supposed to be protecting,” Mikesell said. The equipment has been used so far in onion, broccoli, cauliflower, carrot, garlic, leeks, radishes and chili pepper fields.

With prices for electronic equipment, cameras and computers going down and labor costs steadily rising, the return on investment for a grower is between 12 months to three years, as it saves up to 80% on weed control costs, Mikesell said. The company claims LaserWeeder can kill up to 99% of weeds, weed up to two acres per hour, and eliminate up to 5,000 weeds per minute.

“With all the pressure around access to workers, a solution like ours makes a lot of sense. When you get a good group of workers together, the last thing you want to do is send them out into the field to pick weeds. There’s a lot better stuff that you can do around the farm,” Mikesell said.

Growers and technology entrepreneurs will get a chance to see a wide range of ag robotics on display and in operation in September when Western Growers, in conjunction with VINE/ University of California, Agriculture and Natural Resources and the nonprofit association Global Organization for Agricultural Robotics, hold a 3-day [FIRA USA event](#), following up on the inaugural event held last year.

Row crop shift to more automation coming, but regulatory hurdles remain

Automation is spreading into the row crop side of agriculture as well.

Five primary areas of precision agriculture are growing in acceptance: auto guidance; machine section control to do things such as switching off a planter or sprayer over previously covered area; variable rate technology to determine application rates for seed, fertilizer and crop protection; telematics to provide real-time monitoring of GPS location and routes; and precision irrigation.

In the next one to three years, AGCO plans to introduce for the North American marketplace a fully autonomous grain cart and tractor

for use at harvest, an autonomous baler and tractor, AI weed sensing technology on sprayers, targeted fertilizer applications, self-adjusting planter technology and a fully electric small-horsepower tractor.

Unlike other companies in the large farm equipment space, AGCO allows its products to be used as a retrofit on its competitors’ equipment, such as a John Deere planter or Case IH sprayer, as well as its own line of equipment with Massey Ferguson and Fendt. But all the major equipment makers are racing toward increased automation in their own product lines.

“Every automated feature that we put in, whether it’s on a new machine, or a retrofit solution, is purely based on farmer economic improvement,” said Eric Hansotia, AGCO’s chairman, president and CEO.

During grain harvest, an autonomous grain cart can free employees to do other tasks such as driving a truck. AGCO estimated the use of an autonomous grain cart could offer a 33% increase in harvest efficiency and increase net income by 9% for a Kentucky sample operation where AGCO held a technology showcase in June.

AGCO’s Symphony Vision retrofit suite of products uses camera technology and AI to ensure the right pesticide application rate, placement, source and timing to combat weeds. This can help save money for producers and create less potential impact on the environment from overuse or runoff.

Another type of autonomous technology in development by AGCO is a virtual driver baling system, which has a projected 2025 rollout. It includes collision avoidance and windrow detection and guidance.

Automation has run into some resistance in California because of concerns about the impact on worker safety and pushback from labor unions concerned about job losses.

[California worker protection laws prevent the adoption of autonomous tractors.](#) Earlier this year the standards board for the Division of Occupational Safety and Health, or Cal/OSHA, denied two petitions for updating a code that would have allowed autonomous tractor use.

“If you don’t have a human safety operator on that tractor, the risk for something to go wrong to hurt one of the workers who is in front or behind the tractor is very significant,” said Jassy Grewal, legislative director for the United Food and Commercial Workers Western States Council.

However, other states like Arizona are more welcoming to ag automation, which is why the ag technology industry would likely see a more consistent regulatory environment across the country.

“Technology isn’t something we should be afraid of,” said Curt Blades, AEM senior vice president of ag services, in a recent release about the [environmental benefits of precision agriculture](#). “Technology is something we should fully embrace to meet the challenges that are in front of us.”

Blades said four factors will help accelerate adoption:

1. State and federal policies that reward innovation.
2. Increased farm income to help enable investments.
3. Improved infrastructure (such as wireless networks).
4. Improved consumer communication to build trust in the science surrounding new technology.

AI also transforming crop technology advice

The world’s view of ChatGPT and use in agriculture has also transformed as companies and the farmers they work with turn to the



AGCO’s autonomous baling tractor pauses as it encounters a dog in a field.

AI tool to offer additional insight to assist in decision-making.

Barry Scarbrough, Bayer North America’s training and development lead, said the company’s field sales representatives are integrating ChatGPT to help improve customer relations. Field reps are using the tool to prepare for conversations with farmer clients that will include data analysis.

Bayer is also launching in the next three to six months a new customer relationship manager tool that Scarbrough said is a combination of “old school sales force and artificial intelligence to interact with the customer.”

Meanwhile, some farmers are turning to AI to make agronomic decisions. The same technology that powers ChatGPT is used in a new platform from the Farmers Business Network, Norm, which acts as an agronomic and economic adviser to aid in farmers’ decision making.

Farm management systems and sensors can also integrate AI-powered platforms to help farmers monitor operations in real time. This can allow farmers to track key performance indicators such as crop health, yield outlooks and financial metrics.

Technology utilization in livestock farms also on the rise

In the dairy industry, robotic milking systems have seen a significant increase in adoption, especially as the sector has been unable to utilize H-2A workers because of the program's limitation to seasonal employment.

Cows visit the robotic milk station to eat, and then the milking robots automatically attach and detach milking cups to the cow's udders. Sensors then collect information on milk yield, milk quality and cow health. The technology not only saves on manual labor, it also has been shown to enhance milk production and improve udder health.

Mark Rodgers, who owns Georgia-based Hillcrest Farms with 325 dairy cows, decided to install robotic milkers in December 2019 as he looked for ways to bring the fourth generation of his family into the operation.

"To lead the next generation to take over as stewards of our property and our land, we thought it was probably the best move at the time. We knew labor was going to be our Achilles' heel down the road," he told *Agri-Pulse*.

The shift allowed his workers to transition to roles that are less physically demanding, with more flexibility.

"Instead of milking cows and doing monotonous work, we're doing more cow management," he said.

"We think we can do a better job managing those cows with robotics," he explained, as it can

detect health concerns by evaluating the milk and sending notifications earlier than humans can identify on their own.

Other technologies in the livestock sector help trace animals and provide real-time health data.

HerdDogg's remote-sensing Bluetooth tags and cloud-based data platform, are used in cow-calf, dairy, beef, bison and feedlot operations to help find sick animals, monitor health and track animal movement.

HerdDogg CEO Andrew Uden said the technology adoption is increasing because there is no longer an adequate labor force for tasks such as walking pens. The data also improves recordkeeping and data collection.

"One of the reasons that we use technologies like HerdDogg's is so we can turn on the lights of those animals that are sick," Uden said, but also in normal tracking and monitoring of vitals and health management as well as on the reproductive side. The technology can detect estrous cycles to help the animals breed more efficiently, Uden said.

It can also be used as a training tool for new pen riders who don't have the animal husbandry skill set. "It frees up our existing cowboys to do their jobs, and spend less time training because we have this tool in the feedyard," Uden said.

Uden is excited to see how open Application Program Interface (API) platforms continue to advance and allow producers to integrate and share data across platforms and eliminate cumbersome paperwork.

“It frees up our existing cowboys to do their jobs, and spend less time training because we have this tool in the feedyard.

—Andrew Uden
CEO, HerdDogg

“If I put HerdDogg tags on my cows and calves, that data can now flow into my feedyard via the HerdDogg system or through an open API right into my feedyard management system,” which saves considerable amount of time for his management team to capture data and recordkeeping across the system.

Research supporting new advancements in technology

Because of the growing cost of labor along with the expense of developing and buying high-tech equipment, the Specialty Crops Farm Bill Alliance appealed to Congress this year to include in the next farm bill a \$20 million-a-year research program for automation and a new cost-share program for producers. The alliance said 17 of the 20 most widely consumed fruits and vegetables still require harvesting by hand.

Reps. Doug LaMalfa, R-Calif., Salud Carbajal, D-Calif., Max Miller, R-Ohio, and Abigail Spanberger, D-Va., introduced the Specialty Crop Mechanization and Automation Research and Development Program in June to provide the \$20 million in annual research funding, prioritizing projects that address the training and retraining of any impacted employees due to mechanization adoption.

Carbajal, the son of a farmworker, said the technological breakthroughs realized in other industries have not made it to agriculture, where handpicking and labor-intensive methods remain the same since he and his dad were in the fields.

“Undertaken in the right way, with guardrails like those included in our bill, breakthroughs in this space will improve the quality of life for our farmworkers, and ensure we have a more sustainable workforce that is prepared to cultivate the farms of tomorrow,” Carbajal said in a statement.



Igino Cafiero, Bear Flag Robotics

Igino Cafiero, CEO and founder of Bear Flag Robotics, said at the *Agri-Pulse* Food & Ag Issues Summit — West in June 2023, that a potentially better way to support the development of new technologies is to assist growers with buying the equipment. If the goal is to reduce herbicide use, for example, provide growers a grant to more easily afford technology such as a laser weeder, Cafiero said.

“Market dynamics can drive the incentive instead of funding the research,” Cafiero said.

Western Growers continues to see industry collaboration as an important opportunity to advance the knowledge and technology within the automation space including with partnerships with the Washington Tree Fruit Research Commission and California Table Grape Commission.

Ines Hanrahan, executive director of the Washington Tree Fruit Research Commission, said on a workforce panel during USDA’s annual outlook conference in February that growers in her state are pushing researchers to develop modern apple varieties that can ultimately be harvested mechanically.

“We have a nice variety, Cosmic Crisp, that is climate-friendly, but it also lends itself to automation of harvest,” she said.

Researchers created that variety that comes off the tree easier to aid the mechanization and also tastes good and won't get damaged when harvested by a machine.

Jenny Maloney, global-Americas strategic account manager at Bayer, said her company is developing novel germplasm to breed crops that can be harvested by machines more easily. The company is already doing this in its high-rise broccoli varieties that grow tall with strong, clean stems and visible crowns that are firm and heavy with uniform maturity, more suited for machine harvesting. Bell peppers are another crop Bayer is targeting in its R&D pipeline for labor reduction traits, Maloney said.

"Breeding efforts can improve the consistency of when bell peppers are mature and ready for harvest, which allows more peppers to be harvested at the correct time when using the automation technology. Novel genetics can also increase the efficiency of hand or automated harvested by offering easier fruit detachment from the plant and ensure higher marketable yield through increased post-harvest fruit quality that is robust to the stress of automated harvest," Maloney said. "While crop innovation projects have long lead times, they are expected to provide notable benefits to farmers in the future."

Gradziel said because of the "progressiveness of growers in California," new varieties he's researching today can be in the field in four to eight years that combine solutions from different harvesting options working with the fabricators, ag equipment manufacturers and engineers and combining that with improved genetics.

New type of workers needed in an automated farming future

As robotics and AI advances, the new question everyone is asking is whether humans will be replaced.

Aaron Smith, professor of agricultural economics at University of California, believes the answer is a firm "no."

"We've never seen mass unemployment follow from advancements in technology, and so I don't expect that happening in the future either. What does happen is that people change the kind of work that they do," Smith said as you look back at other major technology advancements in society such as the introduction of tractors and shift from horses or expansion of automation in factories.

Antonio De Loera-Brust, spokesperson for the United Farm Workers, said, "To the extent that technological innovations and automation can make farmworkers' jobs safer, more dignified, less physically demanding, we're all for it."

He said "technology is morally neutral" but the context of the end goal matters whether technology acts as a way to augment the workforce or to discipline workers and displace them. "Do we have confidence that the well-being of the workers is going to be what's driving innovation or just the profit motive as always? That's our concern," De Loera-Brust said.

He added, "The threat of getting replaced is not with robots, it's getting replaced with H-2A workers, or some other crop, or with food getting imported from overseas."

Still, Smith said some field workers could potentially lose their jobs because of automation.

"It is going to be very challenging for them to find other rewarding work to be able to do," he said. "I think we should not ignore the fact that there are people who can get lost in the shuffle."

The [Bureau of Labor Statistics](#) said due to the increased use of mechanization on farms, ag equipment operator jobs will grow much faster than any other ag job sector during the next decade.

“ The threat of getting replaced is not with robots, it’s getting replaced with H-2A workers, or some other crop, or with food getting imported from overseas.

—**Antonio De Loera-Brust**
Spokesperson, United Farm Workers

The Western Growers’ report noted a shift in tasks performed by employees to integrate automation into operations and upskilling of workers for automated equipment. In 2022, 50% of growers said they had specific employees who had a majority of their time dedicated to the integration of automated investments. “Around 25% of growers had 1-2 employees, 20% had 3-5 employees, and 5% had 5+ employees dedicated to the task,” the report added.

Duflock believes that within 10 years there will be thousands of robots in fields with thousands of tech-enabled workers building, supporting and servicing those robots. “It’s going to be high-tech, skilled workers who have bigger salaries, who will be harder to find and harder to keep because there’s still going to be a shortage of these workers.”

“As repetitive and manual tasks are increasingly performed by robots, human laborers are able to take on more skilled positions concerned

with the integration and management of these technologies. This trend will likely continue as automation investments continue to rise,” the report said.

Smith said there will be winners and losers in the push to greater automation at the farm level. The pace of adoption will depend on the level of productivity growth experienced by producers, beyond just the cost savings on labor and technology costs.

“If you can save 3% or 5% on your cost of growing broccoli or carrots, but then you can also get a productivity bump because the robotic weeder is more effective than hand weeding or because it allows you to operate and manage the field differently, that’s going to be a massive boom,” Smith said.

“As growers figure out how to use these technologies to improve productivity, I think we’ll see gains there that are perhaps larger than and outweigh the cost savings that you might get.”