U.S. Agriculture & Food Manufacturing

Navigating Labor Challenges and Finding Solutions

The labor shortage in U.S. agriculture and food manufacturing is one of the biggest challenges facing the industry today. Rising costs, an aging workforce and competition for talent demand action across the value chain. Addressing these challenges requires collaboration between policymakers, businesses, innovators and investors to implement solutions that ensure a sustainable and secure food system.

In a 1960 speech, John F. Kennedy summarized the harsh reality farmers face: "The farmer is the only man in our economy who buys everything at retail, sells everything at wholesale and pays the freight both ways."[1] *To secure their future, farmers and food manufacturers must adopt new technologies to increase efficiency and reduce labor costs.*

Automation, digital transformation and workforce development are key strategies to address the labor shortage. Companies must prioritize adopting technology, improving working conditions and fostering partnerships to drive innovation and efficiency. Meanwhile, policymakers have a critical role to play in reforming immigration systems, standardizing labor policies and promoting investments that support a resilient agricultural workforce.

The entire food and agribusiness value chain must work together. With shared commitment to these goals, the industry can overcome labor challenges, safeguard our food supply and solidify its role in the U.S. economy.

Labor Crunch in U.S. Agriculture: Balancing Rising Wages and a Shrinking Workforce

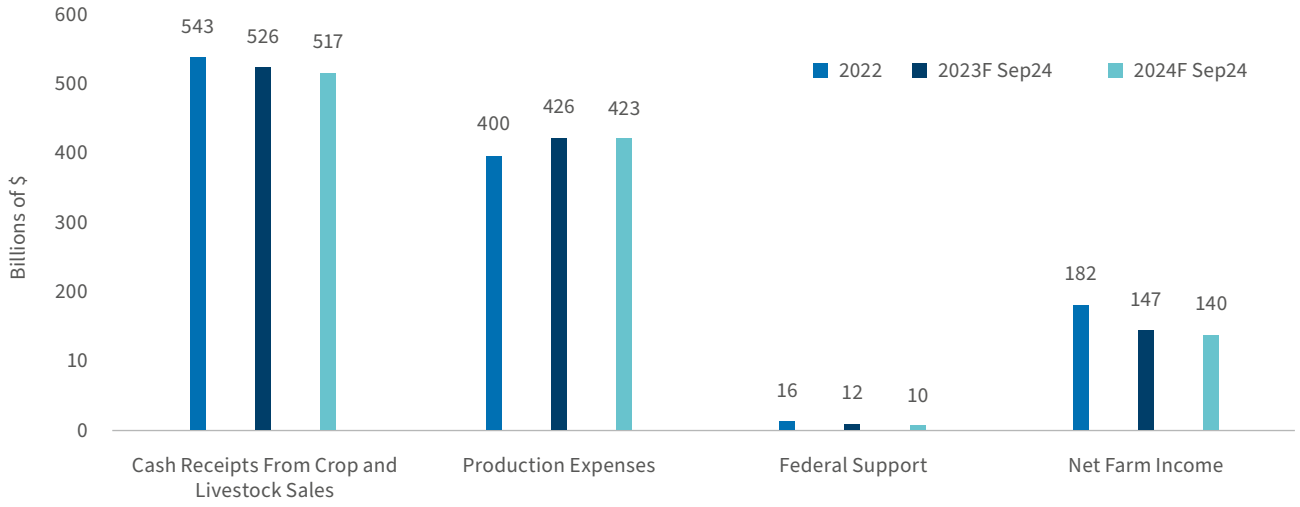
Agriculture and food manufacturing are facing significant challenges, including labor shortages, rising wages and an aging workforce. There were an estimated 2.4 million open agricultural jobs in the United States in 2024,[2] with 56% of farmers reporting labor shortages.[3] Decreased supply of labor, among other factors, caused labor costs to surge 17% in 2023; these costs are expected to rise another ~7% in 2024.[4] Food manufacturing saw similar wage increases and reported 74,000 open jobs in specifically food manufacturing in 2024.[5]

These trends are driving a shift toward automation, the adoption of advanced technologies and the need for more efficient workforce management strategies. Additionally, companies are increasingly focusing on improving working conditions, offering competitive wages and investing in training to attract and retain workers.

For the industry, this means a growing emphasis on innovation, operational efficiency and a need to balance automation with sustainable employment practices to meet production demands while maintaining a resilient workforce.

The U.S. agriculture sector experienced a 25.5% decline in net farm income in 2023, primarily due to record-high production expenses and weak crop and livestock prices (USDA ERS, 2024). In 2024, net farm income is forecast to fall another 17.4%, as weak commodity prices continue to offset increased production and slightly lower overall production expenses. While total production expenses are expected to decrease by 1.0% in 2024, labor costs are forecast to rise by 6.9%.[6] Despite higher wages, the sector continues to face persistent labor shortages, fueling competition for available workers and further driving up wages.[7]

Figure 1 — U.S. Net Farm Income[8]



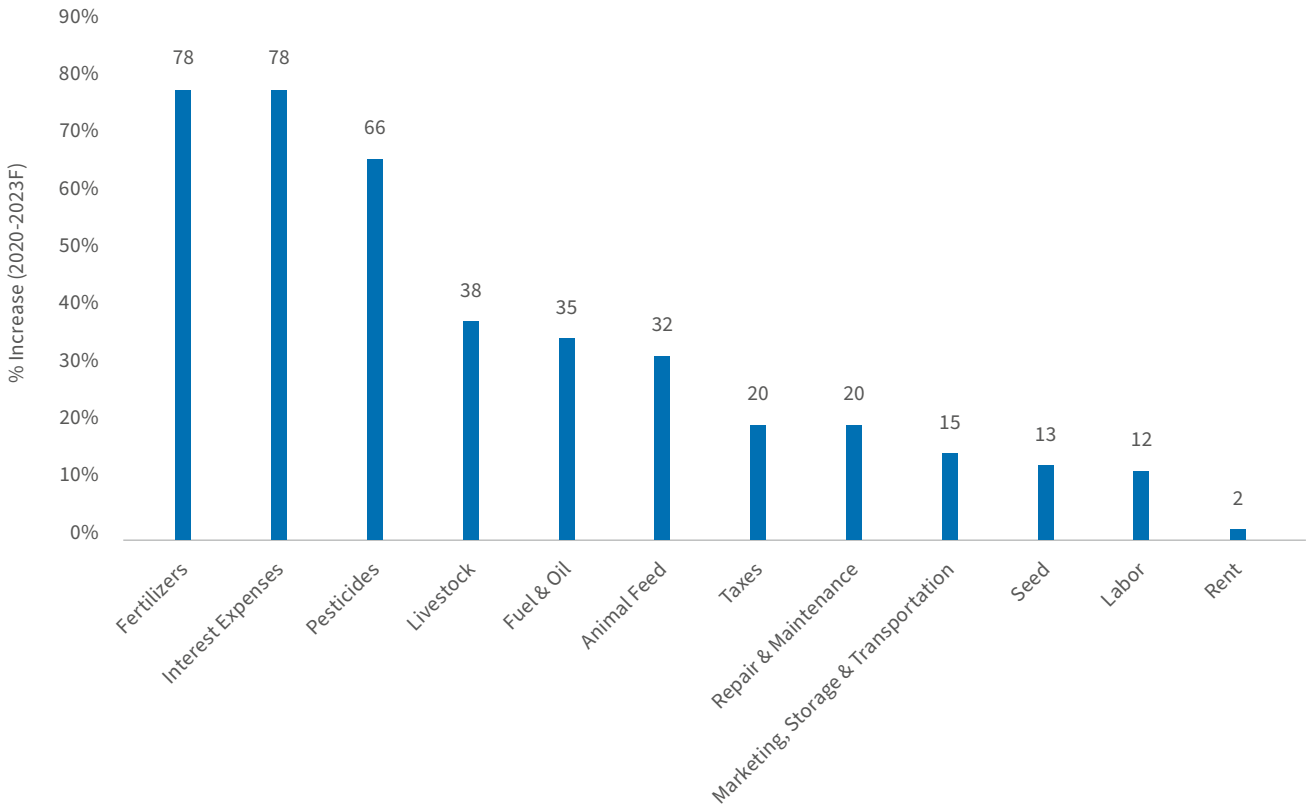
Source: Market-Intel Agriculture

Increased labor costs extend beyond the agricultural sector. In food manufacturing, unit labor costs rose by 7.5% in 2024, according to the Bureau of Labor Statistics and the Federal Reserve Bank of St. Louis.[9] Persistent labor shortages continue to drive up costs and limit production capacity, with 47% of industry respondents citing a lack of qualified candidates as their biggest challenge and 40% reporting increased overtime due to shortages.

These cost pressures, along with supply chain disruptions, have constrained the industry's ability to fully capitalize on increased demand and have compressed profit margins.[10,11]

Rising input costs (Figure 2) intensify the impact of labor shortages, which are further aggravated by demographic changes, workplace mobility and difficulties related to hiring foreign labor.

Figure 2 — Inflation in Farm Production Expenses[12]



Source: United States Senate Committee on Agriculture, Nutrition, & Forestry

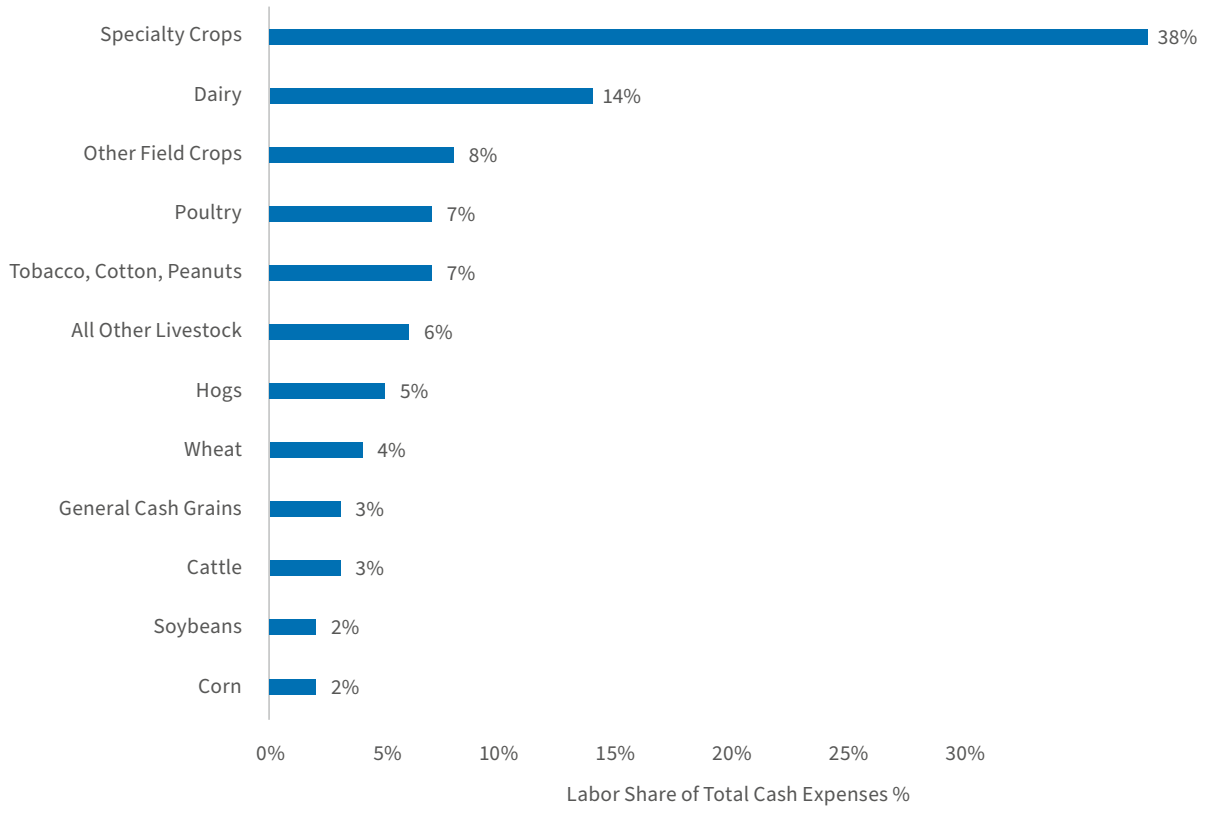
Rising labor costs are primarily being driven by two factors:

— **Increased minimum wage**: Higher state minimum wages contribute to the increased labor costs, especially in states with strong labor rights and protections. This is especially prevalent in California, where the minimum hourly wage increased from $12 to $16 between 2020 and 2024.[13] In addition to rising wages, new wage requirements for the H-2A program have an outsized impact in California, as ~90% of the agricultural workforce in the state operates under the H-2A visa program.[14,15]

— **Increased demand for labor-intensive crops**: Labor shortages are especially prevalent in states like California, Washington and Florida that produce labor-intensive crops such as fruits, tree nuts and vegetables, which require more hands-on labor for planting, tending and harvesting compared to less labor-intensive crops like grains.[16]

Farmers face a challenging cycle of balancing labor costs with overall production expenses. Labor expenses vary widely across states due to differences in agricultural practices, crop types and minimum wages, highlighting the need for state-specific labor policies.

Figure 3 — Labor Share of Total Cash Expenses by Total Crop or Livestock Specialization, 2022[17]



Source: USDA

Evolving Landscapes: Emerging Trends in U.S. Agriculture and Food Manufacturing

Aging Workforce

Across all sectors, labor force participation is projected to decline by approximately 2% by 2032, driven by an aging workforce and slower population growth compared to previous decades.[18] The food processing industry has seen a significant increase in the percentage of workers aged 60-69. One-third of the food manufacturing workforce is over 55, as younger generations are less inclined to pursue careers in food manufacturing, which they perceive as labor-intensive, low-paying, and/or lacking opportunities for advancement.[19]

Workplace Mobility

In 2023, food manufacturing and processing workers earned an average wage of $37,630 while those in farming jobs averaged $34,790.[20,21] In comparison, the average wage for manufacturing workers across the U.S. was nearly $42,000.[22] The wage disparity highlights a strong motivation for laborers to relocate, especially within production roles. This migration is happening more rapidly in markets near rural–urban interfaces where new infrastructure and distribution centers are being developed.

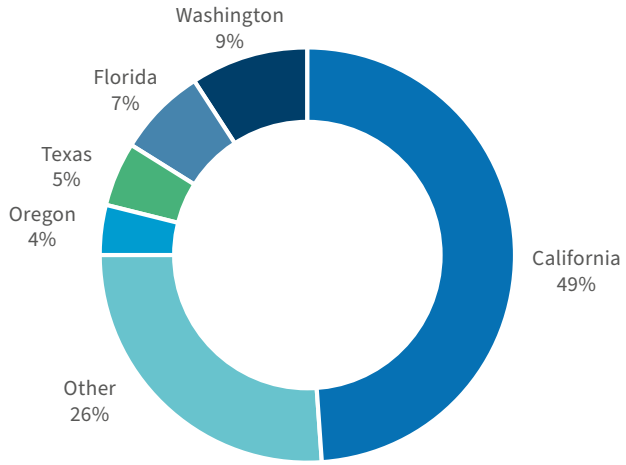
Declining Job Projections

The Bureau of Labor Statistics is forecasting a 2% decline in agricultural jobs between 2022 and 2032, largely as a result of increased automation. Moreover, the proportion of workers aged 20-29 in the food and agricultural sector has declined notably in recent years, as younger workers are finding higher wages and better work conditions in other sectors, making agriculture and food manufacturing a less attractive career path for younger people.

Seasonal and Migrant Labor Dependence

Approximately 86% of agricultural jobs in the United States are filled by foreign-born labor. However, 45% of these workers are undocumented, and many others are on short-term work visas, preventing them from staying long-term.[23] H-2A workers are more productive and provide labor insurance for producers of perishable commodities, but cost $5-$10 an hour more than domestic labor because of recruitment, transportation and housing costs. For fiscal 2023, this minimum hourly wage ranged from $13.67 (in Alabama, Arkansas, Georgia, Louisiana, Mississippi and South Carolina) to $18.65 (in California) and $20.33 (in the District of Columbia).[24]

Figure 4 — Share of Undocumented Workers by State[25]



Source: USDA

Given labor shortages in the United States, there are a number of pieces of legislation that have been put forward to provide a pathway to citizenship for these workers, including the Farm Workforce Modernization Act, Citizenship for Essential Workers Act and the U.S. Citizenship Act. Currently, the H-2A Temporary Agriculture Worker Program brings foreign labor to the United States for periods of less than a year, renewable in one-year increments up to three years total.[26] However, the cyclical nature of agricultural work makes it challenging to rely solely on this program. A key indicator of the farm labor shortage is the sharp increase in H-2A positions requested and approved, which has grown more than sevenfold in the past 17 years, from just over 48,000 certified positions in 2005 to approximately 371,000 in 2022.[27]

Addressing the U.S. Agricultural and Food Manufacturing Labor Shortage

"One of the clearest indicators of the scarcity of farm labor is the fact that the number of H-2A positions requested and approved has increased more than sevenfold in the past 18 years, from just over 48,000 positions certified in fiscal 2005 to around 378,034 in fiscal year 2023, signaling a labor shortage that threatens productivity."[28]

The disparity between the national job growth rate and the projected decline in agricultural and food production workers highlights a need for strategic focus to address labor shortages that are expected to worsen over time. Innovative solutions are needed to attract and retain workers and will likely require the industry to invest in automation, improve working conditions, offer competitive wages and seek immigration reform for U.S. agricultural and food manufacturing workers.

Societal Implication and Solutions

Addressing these challenges requires a forward-thinking public policy framework that will ensure a thriving, innovative and secure agricultural economy. Policymakers must view the agricultural workforce as a vital component of the nation's infrastructure, because a secure, domestically produced food supply chain is not only good for the economy but also a matter of national security. The challenges presented by labor shortages, particularly in high-production states, require a comprehensive response. Policymakers could:

- Support reforms to the H-2A visa program to make labor access more efficient and reduce unnecessary administrative burdens that hinder farmers from obtaining the workers they need.
- Adjust the Adverse Effect Wage Rate (AEWR) to strike a balance between providing fair compensation for agricultural workers and keeping domestic agricultural production economically viable.
- Prioritize pathways to permanent residency for foreign-born agricultural workers, which would help stabilize the workforce and decrease reliance on undocumented labor.
- Encourage states to harmonize labor standards to reduce disparities, creating a more predictable and fairer environment for agricultural employers and workers. Federally coordinated programs are essential to address disparities in labor conditions and wages across state lines, ensuring consistency and fairness nationwide.

Labor challenges go beyond individual farms and companies, making collaboration essential. Potential solutions for collaboration include public-private partnerships and regional workforce development initiatives to drive solutions that address regional labor shortages while promoting innovation and economic growth. These could be especially beneficial in high-production states like California and Florida.

In the short term, failing to address the inefficiencies in the H-2A visa program and unresolved wage issues could lead to sustained low farm income and significant disruption to the U.S. agriculture sector. Without immediate public-private partnerships, the sector risks losing competitive ground to international producers who can deliver food at lower costs. Additionally, the uncertainty surrounding tariff policies, especially with the change in political leadership, adds further instability to the sector. If these issues remain unaddressed, the timeline for technological advancements and automation may become secondary as production shifts to other countries, leaving the U.S. agricultural economy more vulnerable to potential short-term shocks.

Food and Agribusiness Value Chain: Implications and Solutions

Labor shortages in food manufacturing and farming are a challenge across the entire food and agribusiness value chain. Addressing this issue requires collaboration, innovation and targeted investments in technology and workforce development along with policy reforms. Below are practical approaches the industry is using to address the challenges of a shrinking labor force:

Automation and Robotics

Automation and robotics are changing agriculture and food manufacturing by reducing the need for manual labor in repetitive and labor-intensive tasks. These technologies boost efficiency, lower costs and improve working conditions, enabling businesses to stay productive despite workforce shortages. By automating critical tasks such as planting, harvesting and food processing, robotics can perform faster and more accurately than human laborers, helping to close labor gaps and increase overall output.

Digital Transformation and Process Optimization

The adoption of digital tools such as IoT-enabled devices and data-driven platforms is transforming farming and food production. These technologies provide real-time data on soil, climate and crop conditions, supporting better decision-making and enhancing operational efficiency. Digital tools also streamline processes, reduce waste and optimize resource use, allowing producers to accomplish more with fewer workers.

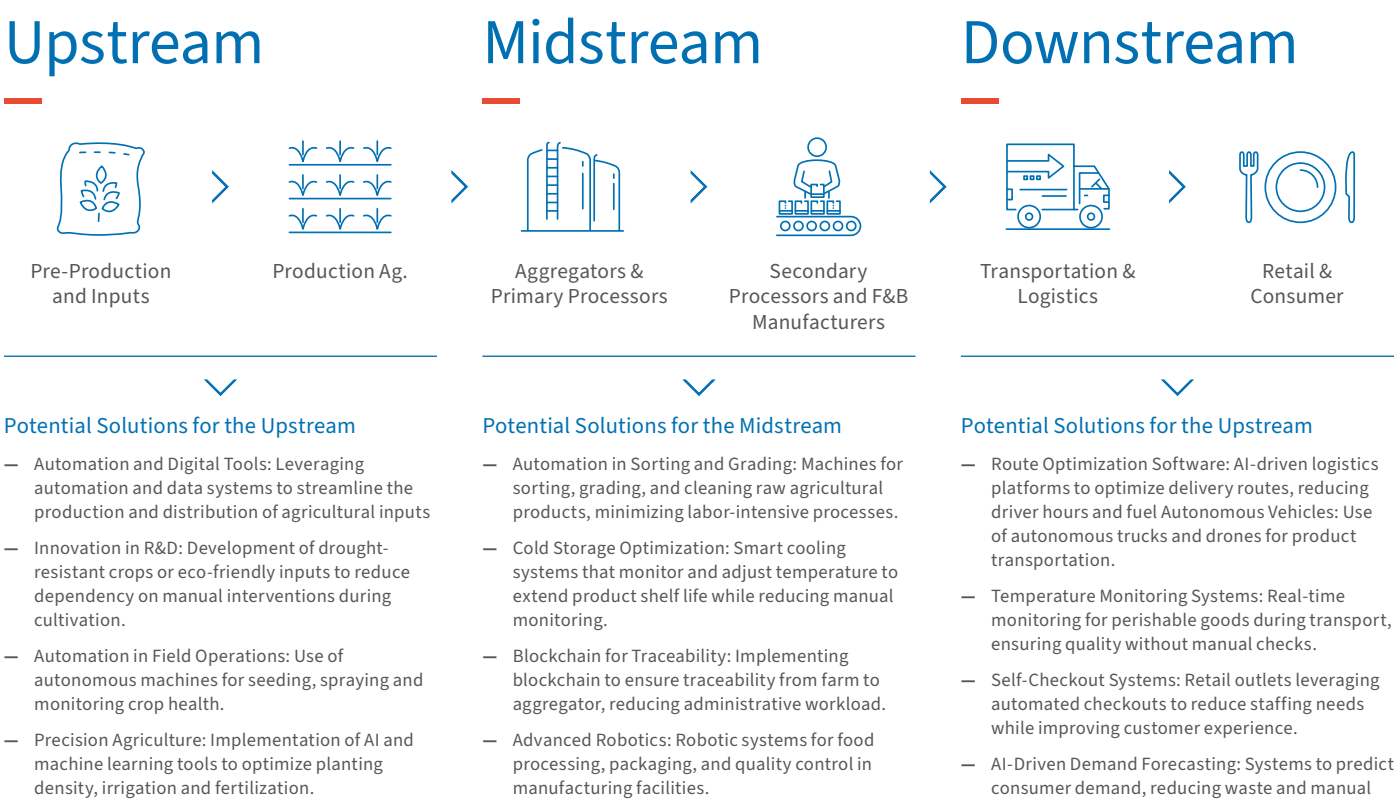
Workforce Development and Support

Investing in workforce development is crucial for building a skilled and reliable labor force. Programs that train workers to use advanced technologies, such as robotics and digital platforms, can increase workers' efficiency and value. In addition, partnerships between businesses and educational institutions are key to creating a pipeline of talent. And strategies to retain workers, such as offering competitive wages, improving working conditions and providing clear paths for career advancement, help stabilize the workforce and reduce turnover.

Flexible Workforce Solutions and Supply-Chain Collaboration

Flexible workforce solutions and stronger collaboration along the supply chain can help address labor shortages during peak times. This includes hiring part-time or seasonal workers and pooling labor resources among farmers to reduce costs. Cooperative farming models, where farmers share equipment, labor and expertise, allow for more effective labor management while spreading risks and benefits. These approaches are particularly beneficial for smaller farms that face resource limitations.

Figure 5 — Specific Solutions to Labor Shortages Across the Value Chain



Source: FTI Consulting

Innovators and Investors: Implications and Solutions

As the labor crisis reshapes U.S. agriculture and food manufacturing, innovators and investors are positioned to drive solutions and capitalize on emerging opportunities. The need for automation, digital transformation and strategic investments has never been more pressing, presenting significant potential for both groups.

For innovators, the focus must be on creating scalable, effective solutions that integrate into existing systems. Innovators should focus on areas where automation and robotics can have the biggest impact, such as planting, harvesting and processing. For example, California-based company GUSS Automation has deployed autonomous sprayers in orchards and vineyards, reducing labor needs by up to 75% while improving precision.[29] Incorporating digital technologies, such as IoT-enabled equipment or AI-based tools for predictive maintenance and crop management, can also help producers and manufacturers optimize operations and reduce their reliance on manual labor. For example, John Deere's See & Spray technology uses computer vision and machine learning to reduce herbicide use by up to 77%, proving how AI and IoT tools are transforming field operations.[30]

For investors, the opportunity lies in recognizing this as a megatrend and placing bets on companies and technologies poised to define the future of food production. Investors should focus on sectors where labor shortages are most acute and where automation or digital tools can create a competitive edge. A 2024 report by AgFunder reported Agtech investment exceeded $10 billion globally in 2023, with labor-saving technologies such as robotics, automation, and farm management platforms seeing the highest growth.[31]

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