

Agriculture Industry demand rising sharply for AI, Automation and Advanced Data Analytics

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Research findings from the *AgTech Trends 2023* survey reveal that while there has been a significant surge in digital transformation initiatives across agribusinesses, many still grapple with deriving actionable insights from their data. The majority of agribusinesses are facing on-farm and off-farm challenges resulting from inaccurate yield predictions and inconsistencies due to complexities in data collection and analysis. Respondents signaled a strong need and desire for digital technology advancements that include AI and automation to support more precise, data-driven decision making across the agrifood value chain.

The feedback from 807 U.S.-based agribusiness workers, including executive decision-makers, on-farm managers, agronomists, data scientists, IT specialists and go-to-market professionals, offers a comprehensive look into the agrifood industry's current state and future trajectory.

Key findings include:

- **Anticipating the AI revolution:** 9 out of 10 respondents view artificial intelligence (AI) and data analytics as crucial, transformative forces for their future, anticipating substantial changes in agriculture jobs over the next five years.

- **Challenges in data utilization:** An overwhelming 92% of respondents find it hard to improve on-farm activities using the current data at their disposal.
- **The road to precision is via automation and AI:** More than half of respondents plan to increase investment in on-farm robotics or autonomous systems in the next 24 months in the field (54.8%), for harvesting (60.5%) and for packing (51.3%). Moreover, greater than three-quarters of agribusiness professionals (76.7%) believe that given the amount of data their organization needs to analyze, AI can improve data analysis and the accuracy of yield prediction and estimation.
- **AgTech investment on the rise, investing in the future:** In the upcoming year, 60% of agribusinesses are planning to increase their AgTech budget. Their main purchasing priorities are precision agriculture tools (66%), farm management software (60%) and data consolidation (45%). The top three areas of investment in specialty crops are precision agriculture tools, farm management software and data consolidation.
- **A cry for unified data platforms:** A significant 96% of respondents expressed the need for a consolidated platform to access essential data and apps for their operations from diverse vendors.
- **Impact of extreme weather:** Unpredictable weather, largely due to climate change, is a major concern, with 76% of agribusinesses identifying it as a primary stressor, underscoring the broader concerns about climate change's impact on yield outputs.

The independent industry research delves into the challenges and opportunities faced by agribusinesses concerning data quality, yield prediction accuracy, ROI, benefits and potential of AgTech solutions to transform the agriculture sector. The Yield sponsored the survey to validate the need for its precision yield management solution for specialty crops.

Industry optimistic that consistent data collection, predictive analytics, AI and precision agriculture tools will boost profitability amidst climate unpredictability and rising costs

The study underscores the urgency to establish consistency in data collection and interpretation. The hurdles, including labor shortages, escalating costs, supply chain inconsistencies and the effects of climate change, have pressed teams to seek more precise future crop yield predictions.

Climate change and its ramifications remain a focal concern, with 81.7% worried about its future implications on crop yields. Even with data from established sources like the NOAA, trust in weather predictions remains low. Enhanced and precise weather forecasting stands out as a potential solution, with many seeing it as a way to boost crop quality and reduce weather-related risks.

The silver lining is in the industry's optimism. A vast majority believe that AI and predictive analytics can refine their data analysis processes, driving better and more profitable outcomes. Furthermore, there is a strong and growing inclination towards agricultural technologies, with professionals in the sector foreseeing significant improvements in both on-farm and off-farm processes through AgTech.

Interestingly, despite the current challenges, respondents shared a clear positive disposition towards digital tools to comprehend their data and automation to collect data more accurately at scale. This is evident from the notable increases in budget allocations for precision agriculture tools and a future-forward approach to on-farm robotics and autonomous systems.

Agribusinesses also recognized the obstacles that stand in the way of digital technology adoption, such as connectivity issues, budget constraints and an overall skepticism towards AI-generated predictions. However, external pressures, including inflation and supply chain inconsistencies, act as catalysts pushing them towards AgTech adoption.

Ros Harvey, founder and CEO of The Yield, observed, "Despite a growing interest in and adoption of digital transformation initiatives, many agribusinesses today are struggling to get accurate yield predictions. The biggest challenge is leveraging available data effectively. As the 2023 AgTech Trends research reveals, there exists a palpable need for improving consistency across data collection and interpretation methods, especially as businesses aim for higher yield outcomes at reduced costs. As businesses navigate the complexities of data management, digital transformation emerges as the beacon for a more efficient, accurate and sustainable future. Our Precision Yield Management platform delivers AI-powered on-farm recommendations and yield predictions along the value chain to improve profitability and sustainability."

Key Findings from the Survey

Data collection challenges: While nearly 80% of businesses are at the "data exploration" stage or beyond, a mere 21.3% have fully automated their data collection processes. The remaining majority still rely on traditional means such as machinery, field apps and sensors.

The consequence? An overwhelming 73.5% of businesses are dedicating 11 or more hours weekly just for data collection, consolidation and analysis. Over a quarter (26.4%) are spending more than 16 hours per week.

The power of accurate predictions: The survey emphasizes the weight placed by agribusinesses on accurate yield predictions. Such predictions are vital not only for on-farm decisions but also play pivotal roles in logistics, distribution, post-harvest processing and achieving the best pricing.

Given the current state of data, the inaccurate predictions are posing significant risks throughout the supply chain.

The impact of weather unpredictability: A significant 90.2% of agribusinesses acknowledge that climate change is affecting their crop yields, with 36.7% observing it makes yields highly unpredictable.

The need for better, more accurate weather forecasting is evident, with nearly 80% of specialty crop respondents believing improved forecasts would enhance crop quality.

Barriers and drivers for AgTech adoption: Several barriers to AgTech adoption persist, including connectivity issues, mistrust in digital technology and budget constraints. However, the urgency of various macro-economic and environmental factors, such as inflation, potential recessions and supply chain inconsistencies, are pushing agribusinesses toward more aggressive AgTech adoption. Notably, nearly 60.5% of respondents cite labor shortages, adding to the urgency.

A glimpse into the future: The findings from the *2023 AgTech Trends* research convey a tech-positive mindset. Agribusinesses are hopeful that the convergence of their various data sources into a unified platform and the adoption of modern technologies like AI will not just simplify data interpretation but revolutionize agriculture itself