An Industry Update:

2024 Trends in the Agriculture Market

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The industry is adapting through innovation while focusing on improving efficiency, sustainability, and data integration.

The agricultural heavy equipment industry in 2024 is facing challenges and growth opportunities shaped by evolving market conditions and technological advancements. The market for new equipment is mixed. While some OEMs express cautious optimism, driven by a resilient agricultural economy and technological advancements, there is also concern about declining sales. Nearly 48% of dealers forecasted a decrease in new equipment revenues for 2024.[1]

Conversely, the demand for used equipment, especially high-horsepower tractors, remains strong. Inventory levels have significantly increased, with values continuing to rise year-over-year. However, dealers report that inventory shortages persist, and auction activity has slowed, suggesting that OEMs need to offer better financing options to stimulate sales.

Supply chain disruptions and fluctuating commodity prices remain factors that impact the availability and cost of agricultural equipment. Manufacturers remain optimistic that the industry will successfully navigate these challenges.

The big picture is clear: The industry is adapting through innovation while managing economic pressures and fluctuating demand. Technological advancements focusing on improving efficiency, sustainability, and data integration are the drivers.

Sustainability

As sustainability becomes a priority, manufacturers are developing electric and hybrid equipment that reduces fuel consumption and emissions and aligns with global sustainability goals. Electric tractors and machinery are expected to be increasingly integrated into farming fleets, especially for small-to-medium-scale operations.

Some other key innovation trends and examples are expected to shape the industry. Smart sprayers, such as those introduced by Verdant Robotics, which can reduce chemical use by up to 95%, highlight a growing trend toward more efficient and environmentally friendly equipment. These technologies are expanding from specialty crops into larger-scale operations like corn and soybeans.

Internet of Things (IoT)

As we've seen in many other industries, the Internet of Things (IoT) will be significant in the future of heavy ag equipment by connecting farm machinery to networks and providing real-time data on machine performance, field conditions, and crop status. These data-driven insights help farmers make more informed decisions, optimize resource use, and reduce downtime due to maintenance.

Cloud solutions are emerging to store and analyze the vast data generated by farm equipment. Centralized platforms enable predictive maintenance, fleet management, and operational optimization.

Artificial Intelligence

Artificial intelligence is making significant strides in the agricultural sector, with new tools designed to boost productivity, enhance decision-making, and reduce resource use. It is being used to improve machinery by analyzing vast amounts of data in real time to make it smarter and more efficient. (Ag Equipment Intelligence) Everything from soil conditions to crop health can be measured by precision sensors integrated into machinery, allowing for more targeted interventions. This is critical for managing inputs like water and fertilizer as well as reducing waste and costs. Ultimately, this helps to optimize planting schedules, monitor soil health, and predict crop yields. Here are some examples of AI-powered technologies being introduced into the ag sector:

- The AI-powered app **Plantix** helps farmers diagnose plant diseases using smartphone cameras. Farmers take pictures of their crops, and the app identifies diseases, pests, and nutrient deficiencies and suggests appropriate treatments.

- **Taranis** is a platform that uses AI to analyze high-resolution aerial images and identify crop health issues, such as early-stage pest infestations or diseases. It helps farmers act early to avoid crop loss.

- **BASF** developed **Xarvio®** an AI digital farming tool that predicts optimal times for applying fertilizers and pesticides by analyzing weather, soil conditions, and crop growth data. The platform also provides personalized recommendations for each farm field, enhancing productivity while minimizing waste.

- **Climate FieldView** is another AI tool designed to aggregate data from various farm sensors and satellite imagery to provide real-time insights on crop health, moisture levels, and yield potential. It enables farmers to make informed decisions about irrigation, planting, and fertilizer use.

- From the owners of **John Deer, Blue River Technology's "See & Spray"** technology uses computer vision and machine learning to identify weeds and apply herbicide only where needed, reducing chemical usage by up to 90%. This technology is a game-changer in reducing input costs and environmental impact.

- **IBM Food Trust**, a blockchain and AI-powered platform, allows farmers and consumers to trace the journey of food products from farm to table. It improves supply chain transparency, reduces waste, and ensures the authenticity of organic or sustainably grown products.

- The AI tool **Granular**, developed by **Corteva**, combines data from satellites, sensors, and field equipment to predict crop yields and analyze profitability for each field. Farmers can use this data to adjust inputs and optimize yields.

- The AI-powered system from **Prospera Technologies** helps farmers monitor field conditions and predict yields by analyzing data from drones and sensors, giving them a more accurate forecast for harvest and input needs.

The integration of AI into farming processes is expected to continue growing as the technology becomes more accessible and refined.

New technologies will continue to pave the way for a more efficient, sustainable, and data-rich future in agriculture businesses.

Additional Technologies

Some additional technologies might not be top-of-mind in the context of heavy ag equipment but are nonetheless helping to shape the future.

- Drones equipped with multi-spectral sensors are being used for crop monitoring, aerial imaging, and spraying pesticides or fertilizers. This aerial perspective allows for faster and more accurate assessments of large fields.

- Blockchain technology is being explored for agricultural applications, notably supply chain transparency. By tracking products from field to market, blockchain can ensure the authenticity of organic and sustainably grown products, reduce fraud, and optimize logistics.

- 3D printing is emerging as a potential game-changer for equipment repairs. Farmers could print replacement parts for their machinery on-site, reducing downtime and dependency on long supply chains.

- Driverless tractors and combines, capable of operating without human intervention, are becoming more prevalent. Using GPS, sensors, and AI to navigate fields, they perform tasks like plowing, seeding, and harvesting. OEMs such as John Deere and Case IH are already introducing semi-autonomous solutions.

As companies continue to innovate, these trends will pave the way for a more efficient, sustainable, and data-rich future in agriculture. Farmers will be able to make more informed, data-driven decisions with the subsequent benefits of reduced operational costs, enhanced productivity, and improved environmental outcomes.

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[1] Farm Equipment, “48% of Dealers Forecast Declines for 2024 New Equipment Revenue”, October 13, 2023.

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