

AI in Agriculture – Precision Farming Market Forecasts to 2032 – Global Analysis By Farm Size (Small Farms, Mid-Sized Farms and Large Farms), Component, Technology, Application, End User and By Geography

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Abstracts

According to Statistics MRC, the Global AI in Agriculture – Precision Farming Market is accounted for \$5.9 billion in 2025 and is expected to reach \$30.4 billion by 2032 growing at a CAGR of 26.3% during the forecast period. AI in Agriculture – Precision Farming refers to the integration of artificial intelligence technologies into farming practices to improve agricultural accuracy and control. It involves the use of data-driven algorithms, pattern recognition, and autonomous systems to analyze and act upon field-specific variables. This approach enhances decision-making in farming operations by enabling the real-time processing of environmental and biological data. It represents a shift from traditional broad-scale agricultural practices to fine-tuned, high-resolution, and site-specific farming techniques.

According to NASSCOM, by 2025, approximately USD 90 billion of value will be added to the agriculture sector through data and AI technologies in India.

Market Dynamics:

Driver:

Advancements in AI and IoT technologies

The convergence of artificial intelligence with Internet of Things (IoT) devices is revolutionizing precision farming by enabling data-driven decision-making at the field

level. Spurred by the integration of satellite imagery, soil sensors, and AI algorithms, farmers can now monitor crop health, irrigation needs, and pest threats in real-time. Backed by government and private sector investments in agri-tech innovation, AI adoption is accelerating across both developed and emerging economies. Motivated by the global food security challenge, AI-enabled precision farming is becoming essential for scalable and sustainable agriculture.

Restraint:

Lack of technological expertise among farmers

The adoption of AI-based precision agriculture is constrained by the limited digital literacy and technical know-how among a significant portion of the farming community. Driven by generational gaps and resistance to change, many farmers are hesitant to shift from traditional practices to data-intensive models. Backed by insufficient smartphone and internet penetration in certain agricultural zones, the digital infrastructure required for AI functionality remains underdeveloped. Fueled by these gaps, addressing the knowledge divide is crucial for widespread adoption of precision agriculture solutions.

Opportunity:

Increased crop yield and efficiency

AI-powered precision farming unlocks significant opportunities for enhancing crop productivity while minimizing input costs and environmental impact. Spurred by real-time data analytics and adaptive learning models, farmers can tailor fertilization, irrigation, and pesticide application with unprecedented precision. Fueled by cloud-based dashboards and farm management software, even smallholders are beginning to benefit from AI's optimization potential. Guided by precision algorithms that fine-tune decisions at the plot level, yield improvements are becoming both measurable and repeatable.

Threat:

Potential for cyberattacks on farming systems

The digitalization of agriculture through AI and IoT technologies exposes farming systems to increasing cybersecurity vulnerabilities. Driven by the interconnectivity of

smart devices and cloud platforms, hackers can exploit weak points to disrupt operations or manipulate data. Spurred by the rising use of automated machinery and autonomous drones, any system breach could result in significant field-level damage or financial loss. Motivated by these risks, stakeholders must integrate robust cyber-defense mechanisms as part of their precision farming strategies.

Covid-19 Impact:

The COVID-19 pandemic reshaped global agriculture, with AI-driven precision farming gaining traction amid labor shortages and supply chain disruptions. Spurred by mobility restrictions and reduced workforce availability, farmers increasingly turned to automation and remote monitoring tools. Driven by the urgency to ensure uninterrupted food production, AI platforms facilitated timely interventions and input adjustments. Motivated by the resilience AI tools offered during the crisis, the post-COVID era is seeing deeper integration of precision farming systems.

The small farms segment is expected to be the largest during the forecast period

The small farms segment is expected to account for the largest market share during the forecast period, owing to widespread initiatives promoting digital inclusion among smallholder farmers. AI technologies offer cost-effective solutions for small farms, improving yields and efficiency. The affordability of scalable AI tools, such as mobile apps and sensors, supports adoption. Government subsidies for small farmers enhance access to precision farming technologies. The need for sustainable practices in small-scale farming drives market growth. These solutions empower small farms to compete with larger operations through enhanced productivity.

The hardware segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the hardware segment is predicted to witness the highest growth rate, impelled by rising demand for sensors, drones, and automated equipment in precision agriculture. Advanced hardware enables precise monitoring of soil, weather, and crop conditions, improving farming outcomes. The affordability and scalability of modern farming hardware fuel market expansion. Technological advancements in durable and energy-efficient devices drive adoption. The integration of hardware with AI software enhances precision farming capabilities. Growing investments in smart farming equipment support the segment's rapid growth.

Region with largest share:

During the forecast period, the Asia Pacific region is expected to hold the largest market share, driven by strong agricultural dependence and rising government support for smart farming technologies. Countries like China and India are investing heavily in AI and IoT to boost food production. Government initiatives, such as India's Digital Agriculture Mission, promote AI adoption. The growing use of drones and sensors in agriculture strengthens the region's market position. Rising urbanization and food demand further fuel market growth in Asia Pacific.

Region with highest CAGR:

Over the forecast period, the North America region is anticipated to exhibit the highest CAGR attributed to high levels of agri-tech innovation and widespread use of advanced farming equipment. The U.S. leads with significant investments in AI-driven farming solutions and research. High demand for precision farming to optimize yields and reduce costs drives growth. Government policies supporting sustainable agriculture accelerate market expansion. The adoption of advanced hardware and software solutions boosts North America's rapid market growth.

Key players in the market

Some of the key players in AI in Agriculture – Precision Farming Market include Deere & Company, IBM Corporation, Microsoft Corporation, Google LLC, The Climate Corporation, Farmers Edge Inc., Granular Inc., AgEagle Aerial Systems Inc., Descartes Labs, Inc., Raven Industries Inc., AGCO Corporation, Gamaya SA, Bayer AG, Trimble Inc., Topcon Positioning Systems, Inc., Taranis, CropX Technologies, PrecisionHawk Inc., Prospera Technologies Ltd., and OneSoil.

Key Developments:

In June 2025, Deere & Company launched an AI-powered precision farming platform integrating satellite imagery and IoT sensors. It provides real-time crop health monitoring, enabling farmers to optimize yields and reduce resource waste through data-driven insights and automated field management.

In May 2025, IBM Corporation introduced Watson AgriSense, an AI-driven solution for predictive analytics. It analyzes soil data to optimize management practices, enhancing yield forecasts and reducing costs through precise resource allocation for sustainable

farming operations.

In April 2025, Microsoft Corporation unveiled Azure FarmSync, a cloud-based AI tool for automated irrigation and pest detection. It leverages real-time data to optimize water use and protect crops, improving efficiency and sustainability for precision agriculture.

In February 2025, Trimble Inc. unveiled an AI-based variable-rate seeding system to maximize planting efficiency based on soil conditions.

Farm Sizes Covered:

Small Farms

Mid-Sized Farms

Large Farms

Components Covered:

Hardware

Software

AI-as-a-Service

Technologies Covered:

Machine Learning & Deep Learning

Predictive Analytics

Computer Vision

Applications Covered:

Weather Tracking

Precision Farming

Agriculture Robots

Livestock Monitoring

Labor Management

Other Applications

End Users Covered:

Farmers

Agribusinesses

Agriculture Research Institutes

Government Agencies

AgriTech Companies

Regions Covered:

North America

US

Canada

Mexico

Europe

Germany

UK

Italy

France

Spain

Rest of Europe

Asia Pacific

Japan

China

India

Australia

New Zealand

South Korea

Rest of Asia Pacific

South America

Argentina

Brazil

Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & Africa

What our report offers:

- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2024, 2025, 2026, 2028, and 2032
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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