

Smart Farming Market by IoT & AI Forecasts to 2032 – Global Analysis By Component (Hardware, Software and Services), Farm Size, Deployment Model, Application, End User and By Geography

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Abstracts

According to Statistics MRC, the Global Smart Farming Market by IoT & AI is accounted for \$24.18 billion in 2025 and is expected to reach \$55.16 billion by 2032 growing at a CAGR of 12.5% during the forecast period. Smart farming is the use of advanced technologies like IoT, AI, robotics, and big data to enhance agricultural productivity, efficiency, and sustainability. It enables real-time monitoring, data-driven decision-making, and precision farming practices, such as optimized irrigation, fertilization, and pest control. By integrating digital tools, smart farming helps farmers reduce resource use, lower costs, and increase crop yields while minimizing environmental impact and adapting to changing climate conditions.

According to a report by the U.S. Environmental Protection Agency (EPA), precision agriculture can reduce water usage by up to 30% and enhance crop yields by 20%.

Market Dynamics:

Driver:

Rising global food demand

Smart farming technologies are emerging as a critical solution to enhance productivity and sustainability. Precision agriculture tools such as IoT sensors, AI-driven analytics, and GPS-guided equipment enable farmers to optimize input usage and maximize yields. These innovations help reduce waste, conserve water, and improve soil health,

addressing both food security and environmental concerns. Governments and private stakeholders are increasingly investing in agri-tech to meet future food demands. As a result, smart farming is becoming a cornerstone of modern agricultural strategies worldwide.

Restraint:

Data privacy and security concerns

The integration of digital technologies in agriculture raises significant concerns around data privacy and cybersecurity. Farmers and agribusinesses are generating vast amounts of sensitive data, including crop performance, soil conditions, and proprietary farming practices. Without robust security protocols, this data is vulnerable to breaches, misuse, or unauthorized access. Small and medium-sized farms, in particular, may lack the resources to implement advanced cybersecurity measures. These concerns can slow the adoption of smart farming technologies, especially in regions with limited digital infrastructure.

Opportunity:

Integration of blockchain in agri-supply chains

Blockchain technology offers transformative potential for enhancing transparency and traceability in agricultural supply chains. By recording every transaction and movement of goods on a decentralized ledger, blockchain ensures data integrity and reduces fraud. Smart contracts can automate payments and logistics, improving efficiency and reducing disputes. As consumers demand more accountability in food sourcing, blockchain adoption is gaining momentum among producers and retailers. The convergence of blockchain with IoT and AI is expected to unlock new levels of trust and efficiency in agri-business operations.

Threat:

Standardization and interoperability issues

The smart farming ecosystem comprises a wide array of hardware, software, and data platforms from different vendors. A major challenge lies in the lack of standardization and interoperability among these systems. Incompatible technologies hinder seamless data exchange and integration, limiting the effectiveness of precision agriculture.

Farmers often struggle to synchronize equipment and platforms, leading to inefficiencies and increased costs. This fragmentation also discourages investment in new technologies, especially for smallholders.

Covid-19 Impact

The COVID-19 pandemic accelerated the adoption of smart farming technologies as labour shortages and supply chain disruptions exposed vulnerabilities in traditional agriculture. Farmers turned to automation, remote monitoring, and data-driven decision-making to maintain productivity under restricted conditions. Drones, autonomous tractors, and sensor-based irrigation systems gained traction as contactless solutions. The crisis also highlighted the importance of resilient and localized food systems, boosting interest in vertical farming and smart greenhouses. The pandemic served as a catalyst for long-term structural changes in the agri-tech landscape.

The software segment is expected to be the largest during the forecast period

The software segment is expected to account for the largest market share during the forecast period, due to its central role in data analytics, decision support, and farm management. Advanced platforms enable real-time monitoring of crop health, weather patterns, and equipment performance. Cloud-based solutions offer scalability and remote access, making them ideal for large-scale and distributed farming operations. Integration with AI and machine learning enhances predictive capabilities, allowing farmers to proactively manage risks.

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

Over the forecast period, the smart greenhouses segment is predicted to witness the highest growth rate, due to their ability to provide controlled environments for year-round cultivation. These systems leverage IoT sensors, climate control technologies, and AI algorithms to optimize temperature, humidity, and lighting. The result is higher crop yields, reduced resource consumption, and minimal pesticide use. Urbanization and the rise of vertical farming are further driving demand for smart greenhouse solutions.

Region with largest share:

During the forecast period, the Asia Pacific region is expected to hold the largest market share due to its vast agricultural base and rapid technological adoption. Countries like

China, India, and Japan are investing heavily in agri-tech to boost productivity and ensure food security. Increasing smartphone penetration and affordable IoT devices are enabling smallholder farmers to participate in the digital revolution. Government initiatives promoting digital agriculture and rural connectivity are accelerating market growth.

Region with highest CAGR:

Over the forecast period, the North America region is anticipated to exhibit the highest CAGR, owing to its advanced infrastructure and early adoption of precision agriculture. The U.S. and Canada are home to leading agri-tech companies and research institutions driving innovation. Farmers in the region are increasingly adopting AI, robotics, and data analytics to enhance efficiency and sustainability. Government support through subsidies and climate-smart agriculture programs is further fuelling growth.

Key players in the market

Some of the key players profiled in the Smart Farming Market by IoT & AI include Deere & Company, Ag Leader Technology, Trimble Inc., Arugga, AGCO Corporation, FarmWise, Topcon Corporation, Small Robot Company, CropIn Technology Solutions Pvt. Ltd., Intello Labs Pvt Ltd, DeHaat, Stellapps, Fasal, BouMatic Robotic B.V., and Raven Industries, Inc.

Key Developments:

In May 2025, John Deere announced the acquisition of Sentera, a leading provider of remote imagery solutions for agriculture headquartered in St. Paul, Minnesota. This acquisition will advance the capabilities of John Deere's existing technology offerings, providing farmers and ag service providers with a more comprehensive set of tools to generate and use data to make decisions that improve farm profitability, efficiency, and sustainability.

In April 2025, Trimble announced a new integration between its B2W Track and Trimble Siteworks software systems to automate and enhance progress quantity tracking for earthwork and civil contractors. This unique field-to-office connection allows contractors to compare actual material production quantities achieved to planned quantities more easily and accurately. Continuous assessment of field progress can be critical for civil contractors, enabling them to make timely operational adjustments.

Components Covered:

Hardware

Software

Services

Farm Sizes Covered:

Small Farms

Medium-Sized Farms

Large-Scale Farms

Deployment Models Covered:

On-Premise

Cloud-Based

Applications Covered:

Precision Farming

Automated Harvesting & Seeding

Livestock Monitoring

Crop Health Monitoring & Disease Detection

Smart Greenhouses

Weather Forecasting

Fish Farming / Aquaculture

Soil Monitoring

Irrigation Management

Supply Chain & Market Access Optimization

Other Applications

End Users Covered:

Individual Farmers

Agricultural Cooperatives

Research Institutes & Universities

Government Agencies

Agribusinesses

Other End Users

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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