+357 96 030922
info@marketpublishers.com

# AI, IoT, and Blockchain Market in Modern Agriculture - A Global and Regional Analysis: Focus on Application, Product, and Country Analysis - Analysis and Forecast, 2025-2035

https://marketpublishers.com/r/A15FD9E17CE2EN.html
Date: March 2026
Pages: 160
Price: US$ 4,900.00 (Single User License)
ID: A15FD9E17CE2EN

## Abstracts

The AI, IoT, and blockchain market in modern agriculture is projected to grow from $24,301.3 million in 2025 to $154,546.5 million by 2035, registering a CAGR of 20.32%. Growth is being driven by rapid digital transformation across the agricultural value chain, including the widespread adoption of smart sensors, IoT-connected devices, AI-driven analytics, and blockchain-based traceability platforms. Increasing pressure to improve yield, reduce operational costs, enable climate-smart farming, and strengthen supply-chain transparency is accelerating the deployment of advanced digital tools in farms globally.

AI-powered agronomic models, autonomous machinery, drones, and connected farm equipment are reshaping operational efficiency, while IoT sensors, farm management systems, and satellite-based monitoring enable real-time decision-making. Blockchain adoption is growing as food companies and regulators prioritize traceability and sustainability verification. Despite strong overall momentum, the market faces challenges related to data interoperability, digital literacy among farmers, high upfront costs, and connectivity limitations in rural areas. With rising investment from equipment OEMs, agtech companies, and governments, the sector is set for robust expansion through 2035.

### Introduction of the AI, IoT, and Blockchain Market in Modern Agriculture

The study conducted by BIS Research identifies the AI, IoT, and blockchain market in modern agriculture as a core enabler of next-generation food production systems,

+357 96 030922
info@marketpublishers.com

driving the transition from traditional farming to data-driven, automated, and climate-smart agriculture. Digital technologies are evolving into multifunctional tools that support real-time crop intelligence, autonomous field operations, precise input management, and transparent supply chains.

AI models and machine vision systems strengthen early detection of pests, diseases, and nutrient deficiencies, while IoT sensors provide continuous monitoring of soil, weather, and equipment performance. The integration of satellite imagery, drones, and cloud analytics further enhances decision accuracy. Blockchain platforms support end-to-end traceability, ensuring food safety, quality assurance, and compliance with sustainability standards.

As global agriculture faces rising pressures, climate variability, labor shortages, food security concerns, and sustainability mandates, digital solutions offer farmers and agribusinesses a strategic advantage. The market is expected to grow significantly in the coming decade, supported by rising investment in smart farming technologies, government digital agriculture missions, and global efforts to increase farm productivity through technology-driven innovation.

**Market Introduction**

The AI, IoT, and blockchain market in modern agriculture is rapidly emerging as a foundational pillar of modern farming, driven by growing demand for real-time field intelligence, automated operations, and data-optimized decision-making. As food systems become more complex and climate risks intensify, digital agriculture technologies, ranging from smart sensors and robotics to advanced analytics platforms, enable farmers to manage crops, livestock, and resources with unprecedented precision.

AI enhances predictive modeling for yield, weather, and input requirements, while IoT devices connect farm machinery, environmental sensors, and livestock monitoring systems into a unified data ecosystem. Blockchain strengthens trust and transparency across the supply chain by verifying production practices, certifying sustainability, and preventing fraud.

With rising emphasis on climate-smart agriculture, resource efficiency, and traceable food systems, governments, agritech providers, and global agribusinesses are accelerating investment in digital agriculture. As these technologies continue to advance and become more integrated, AI, IoT, and blockchain are expected to play a pivotal role

+357 96 030922
info@marketpublishers.com

in shaping the future of global agriculture.

**Industrial Impact**

AI, IoT, and blockchain are reshaping modern agriculture by turning it into a more data-driven, efficient, and industrialized system. AI enables predictive insights such as yield forecasting, pest detection, and optimized input use, helping farms improve productivity while reducing costs and waste. IoT connects sensors, machinery, and equipment across fields, livestock operations, and storage facilities, providing real-time visibility into soil health, weather conditions, irrigation, and asset performance. Blockchain adds a trusted digital layer by improving traceability, transparency, and accountability across the agricultural value chain, from farm inputs to end consumers, supporting food safety, sustainability claims, and faster settlements. Together, these technologies shift agriculture from manual, reactive practices to scalable, automated, and performance-driven operations aligned with modern industrial standards.

**Market Segmentation:**

Segmentation 1: by Application

- Crop Production Optimization
- Water and Nutrient Management
- Smart Farm Monitoring and Automation
- Livestock Management

Crop Production Optimization to Dominate the AI, IoT, and Blockchain Market in Modern Agriculture (by Application)

In the AI, IoT, and blockchain market in modern agriculture, crop production optimization is projected to remain the dominant application segment throughout 2025-2035. The segment is expected to grow from $8,795.5 million in 2025 to $51,733.6 million by 2035, registering a strong CAGR of 19.39%.

This growth is attributed to the increasing adoption of AI-driven crop modeling, precision input application, smart imaging, and sensor-integrated field monitoring, all of which

+357 96 030922
info@marketpublishers.com

enhance yield, reduce waste, and optimize resource use. Farmers and enterprises are rapidly integrating AI-powered decision tools, satellite analytics, and IoT sensor grids to monitor crop stress, automate input delivery, and achieve season-long productivity improvements.

Water and nutrient management is expected to be the fastest-growing segment, expanding from $4,575.1 million in 2025 to $32,858.1 million by 2035, with an impressive CAGR of 21.79%.

The surge is driven by rising pressure on water resources, the need for fertilizer optimization, and the integration of soil moisture sensors, electrochemical nutrient monitors, automated irrigation systems, and AI-based fertigation models. Smart irrigation IoT platforms and predictive analytics are being deployed widely to reduce operational costs, conserve water, and increase crop health consistency.

Smart farm monitoring and automation is projected to grow from $5,777.5 million in 2025 to $38,239.8 million by 2035, at a CAGR of 20.80%. Key drivers include the adoption of:

- autonomous farm machinery
- computer-vision-enabled robot platforms
- drone-based field analytics
- climate monitoring stations
- connected farm management systems

These technologies allow farms to move toward “hands-off” operations, improve real-time monitoring, and reduce labor dependency.

Segmentation 2: by Product

- Artificial Intelligence (AI)
- Internet of Things

+357 96 030922
info@marketpublishers.com

Blockchain Platform

Internet of Things (IoT) to Maintain Dominance in the AI, IoT, and Blockchain Market in Modern Agriculture (by Product)

According to the latest market estimates, the Internet of Things (IoT) segment is projected to remain the dominant product category in the AI, IoT, and blockchain market in modern agriculture through 2035. Valued at $21,659.5 million in 2025, the IoT segment is expected to reach $120,555.6 million by 2035, growing at a robust CAGR of 18.73%.

IoT's continued dominance is driven by its critical role in enabling connected and automated farming operations. Sensor networks, connectivity modules, and gateway devices form the backbone of smart agriculture by generating real-time data on soil conditions, crop health, climate parameters, machinery operations, and livestock behavior. As farms transition toward data-driven decision-making and automation, IoT platforms remain central to improving yield, reducing input usage, and optimizing resource management.

Within IoT, sensor devices, including optical sensors, electrochemical sensors, and location sensors, account for the largest share due to their widespread deployment in field monitoring, irrigation automation, and precision nutrient management. Increasing integration of sensor systems with cloud dashboards and mobile applications is further accelerating adoption across small, medium, and large farm operations.

Overall, IoT technologies will continue to anchor the digital farm ecosystem, supporting everything from real-time monitoring to predictive analytics, and ensuring its position as the leading product category in the market.

Segmentation 3: by Region

North America: U.S., Canada, and Mexico

Europe: Germany, France, U.K., Netherlands, Spain, and Rest-of-Europe

Asia-Pacific: China, Japan, India, Australia, and Rest-of-Asia-Pacific

Rest-of-the-World: South America and the Middle East and Africa

+357 96 030922
info@marketpublishers.com

North America is expected to maintain its dominant position in the global AI, IoT, and blockchain market in modern agriculture, achieving the highest regional market value throughout the forecast period. The market is projected to grow from $8,515.2 million in 2025 to $47,084.9 million by 2035, registering a strong CAGR of 18.65%. This growth is driven by the rapid adoption of precision farming technologies, widespread use of IoT-enabled sensors and farm automation systems, and strong digital infrastructure supporting data-driven agriculture. The U.S. leads the region due to heavy investments in AI-driven crop analytics, autonomous machinery, smart irrigation, and digital farm management platforms.

The Asia-Pacific (APAC) region is projected to be the fastest-growing market, expanding from $5,829.0 million in 2025 to $45,067.9 million by 2035, at an impressive CAGR of 22.70%. This rapid acceleration is fueled by rising food demand, large-scale digital agriculture initiatives in China, India, Japan, South Korea, and Australia, and increasing adoption of IoT sensors, AI-powered crop intelligence platforms, and smart irrigation systems. APAC countries are prioritizing farm automation, climate-smart agriculture, and digital advisory tools to increase productivity and sustainability.

Europe remains a technologically advanced and mature market, rising from $6,602.6 million in 2025 to $42,678.0 million in 2035, with a CAGR of 20.52%. The region benefits from strong regulatory support for sustainable farming, high adoption of farm management software, greenhouse automation, robotics, and blockchain-based traceability platforms. Countries such as Germany, France, the U.K., and the Netherlands continue to lead in smart farming research, controlled-environment agriculture, and precision livestock management.

The Rest-of-the-World (RoW), comprising South America and the Middle East and Africa, is projected to grow from $3,354.5 million in 2025 to $19,715.6 million by 2035, at a solid CAGR of 19.38%. Growth is supported by increasing adoption of irrigation automation, crop monitoring tools, and digital advisory platforms, especially in water-scarce regions.

**Demand: Drivers, Limitations, and Opportunities**

Market Demand Drivers: Rising Need for Precision, Sustainability, and Data-Driven Farming

+357 96 030922
info@marketpublishers.com

The AI, IoT, and blockchain market in modern agriculture has been experiencing robust demand growth as the global farming sector undergoes rapid digital transformation. Key factors driving market expansion include the rising need for precision agriculture, resource optimization, and climate-resilient farming practices.

One of the primary drivers is the growing adoption of IoT-enabled sensors, which provide real-time data on soil moisture, nutrient levels, crop health, and weather conditions. These insights allow farmers to optimize input usage, such as water, fertilizer, and pesticides, resulting in higher productivity and lower environmental impact. AI-powered analytics further enhance decision-making by enabling predictive modeling, yield forecasting, and early detection of crop diseases, thereby reducing economic losses and improving farm profitability.

Climate change and increasing water scarcity are also accelerating demand for advanced digital tools. Technologies such as smart irrigation systems, AI-guided water management, and automated greenhouse controls help farmers maintain production stability despite shifting environmental conditions. Simultaneously, rising global food demand is pushing growers to adopt automation and robotics to address labor shortages and improve field efficiency.

The supply chain side of agriculture is also a major contributor to demand. Blockchain platforms are increasingly being deployed to ensure traceability, food safety, and transparent farm-to-fork logistics, driven by tighter regulatory requirements and consumer expectations for verifiable food quality.

Together, these developments are making AI, IoT, and blockchain essential tools in modern agriculture, enabling farmers and agribusinesses to operate with greater precision, sustainability, and resilience.

**Market Limitations: Data Gaps, High Costs, and Infrastructure Constraints**

Despite strong adoption momentum, the AI, IoT, and blockchain market in modern agriculture faces several challenges that could hinder large-scale deployment.

A major limitation is the lack of digital infrastructure in rural regions, particularly in developing countries. Limited broadband connectivity, low smart-device penetration, and inconsistent power supply reduce the effectiveness of IoT sensors, connected equipment, and cloud-based data platforms.

+357 96 030922
info@marketpublishers.com

Cost remains a key barrier. The upfront investment required for AI-enabled machinery, drones, IoT sensor networks, and data management platforms can be prohibitive for small and medium-sized farmers. Even when hardware costs decrease, ongoing expenses related to subscription platforms, data storage, and equipment maintenance can slow adoption.

Data fragmentation also poses challenges. Farm data is often collected using incompatible systems, multiple devices, and proprietary platforms, leading to interoperability issues and information silos. Many growers struggle with data literacy, limiting their ability to fully utilize analytics and decision-support tools.

Cybersecurity risks are another concern. As farms become more connected, the risk of data breaches, unauthorized access to equipment, and manipulation of supply chain records increases. This necessitates stronger safeguards and standards for agricultural data protection.

Finally, limited technical skills and a shortage of trained personnel reduce the pace at which digital solutions can be implemented and managed, especially in emerging markets.

**Market Opportunities: Autonomous Farming, Climate-Smart Solutions, and Blockchain Traceability**

Emerging technologies are creating significant opportunities for growth within the AI, IoT, and blockchain market in modern agriculture.

One of the strongest opportunities lies in autonomous and robotic farming systems, including self-driving tractors, drone spraying, automated harvesting equipment, and robotic weeders. These technologies help address labor shortages, improve efficiency, and support large-scale operations.

Climate-smart agriculture presents another major opportunity. Advanced analytics, machine learning models, and IoT-based weather monitoring can help farmers better manage extreme climate events, optimize resource use, and improve resilience. Solutions such as AI-driven crop disease prediction, real-time irrigation automation, and sensor-based greenhouse optimization are especially in demand.

Blockchain offers transformative potential for the agricultural supply chain. By enabling end-to-end transparency, from seed to shelf, it enhances food safety, prevents fraud,

+357 96 030922
info@marketpublishers.com

and strengthens consumer trust. Governments and global food companies are increasingly mandating digital traceability, creating substantial opportunities for blockchain platform providers.

Additionally, the integration of satellite imagery, drone imaging, and ground-based sensors is opening new markets for AI-powered crop intelligence platforms, which can serve growers, input companies, financial institutions, insurers, and food processors.

Overall, as digital ecosystems mature, the integration of AI, IoT, and blockchain will continue to create new value pools across the agricultural sector, from on-farm optimization to global supply chain digitization.

**How can this report add value to an organization?**

Product/Innovation Strategy: This report offers organizations a detailed understanding of how AI, IoT, and blockchain technologies are transforming modern agriculture. It highlights emerging innovations such as AI-driven crop intelligence, IoT-enabled sensing networks, autonomous farm machinery, digital twins, and blockchain-based traceability systems. These technologies are enabling real-time farm monitoring, predictive analytics, and resource-efficient operations. By mapping technological advancements, ranging from machine vision for crop health to distributed ledger systems for supply chain transparency, the report provides actionable insights for product development teams, R&D departments, and innovation leaders. Companies can use these insights to design next-generation precision farming tools, enhance interoperability across devices and platforms, and build scalable digital agriculture solutions aligned with evolving market needs.

Growth/Marketing Strategy: The AI, IoT, and blockchain market in modern agriculture offers robust growth potential across all major agricultural regions. This report outlines key strategies adopted by leading players, including mergers and acquisitions (e.g., CNH Industrial’s acquisition of Raven), strategic partnerships (such as Deere & Company’s automation collaborations), and the expansion of cloud-based farm management platforms. It also identifies growth hotspots such as smart irrigation, livestock automation, autonomous tractors, greenhouse digitalization, and blockchain-enabled supply chain systems. With farmers, cooperatives, input suppliers, and food companies increasingly adopting data-driven practices, organizations can leverage the report to refine their market positioning, tailor their go-to-market strategies, and enter high-potential segments using targeted product offerings and value-added services.

+357 96 030922
info@marketpublishers.com

Competitive Strategy: The report provides a comprehensive competitive landscape of the digital agriculture ecosystem, profiling major players across equipment manufacturers, agtech startups, IoT sensor providers, AI analytics companies, and blockchain-based platforms. It examines strategic moves such as partnerships, technology collaborations, joint ventures, platform integrations, and product launches that shape competitive dynamics. Through competitive benchmarking, organizations can identify white-space opportunities, assess competitor capabilities, and evaluate emerging threats. As agriculture rapidly shifts toward automation, remote sensing, cloud analytics, and decentralized data systems, competition will intensify around innovation speed, interoperability, data ownership, and ecosystem integration. The insights in this report help organizations strengthen their long-term competitive positioning and capture a larger share of the evolving digital agriculture market.

**Research Methodology**

Factors for Data Prediction and Modelling

The base currency considered for the AI, IoT, and blockchain market in modern agriculture analysis is the US$. Currencies other than the US$ have been converted to the US$ for all statistical calculations, considering the average conversion rate for that particular year.

The currency conversion rate has been taken from the historical exchange rate of the Oanda website.

Nearly all the recent developments from January 2021 to March 2024 have been considered in this research study.

The information rendered in the report is a result of in-depth primary interviews, surveys, and secondary analysis.

Where relevant information was not available, proxy indicators and extrapolation were employed.

Any economic downturn in the future has not been taken into consideration for the market estimation and forecast.

Technologies currently used are expected to persist through the forecast with no major technological breakthroughs.

+357 96 030922
info@marketpublishers.com

## Market Estimation and Forecast

This research study involves the usage of extensive secondary sources, such as certified publications, articles from recognized authors, white papers, annual reports of companies, directories, and major databases, to collect useful and effective information for an extensive, technical, market-oriented, and commercial study of the AI, IoT, and blockchain market in modern agriculture

The market engineering process involves the calculation of the market statistics, market size estimation, market forecast, market crackdown, and data triangulation (the methodology for such quantitative data processes has been explained in further sections). The primary research study has been undertaken to gather information and validate the market numbers for segmentation types and industry trends of the key players in the market.

## Primary Research

The primary sources involve industry experts from the AI, IoT, and blockchain market in modern agriculture and various stakeholders in the ecosystem. Respondents such as CEOs, vice presidents, marketing directors, and technology and innovation directors have been interviewed to obtain and verify both qualitative and quantitative aspects of this research study.

The key data points taken from primary sources include:

- validation and triangulation of all the numbers and graphs
- validation of report segmentations and key qualitative findings
- understanding the competitive landscape
- validation of the numbers of various markets for the market type
- percentage split of individual markets for geographical analysis

## Secondary Research

+357 96 030922
info@marketpublishers.com

This research study involves the usage of extensive secondary research, directories, company websites, and annual reports. It also makes use of databases, such as Hoovers, Bloomberg, Businessweek, and Factiva, to collect useful and effective information for an extensive, technical, market-oriented, and commercial study of the global market. In addition to the data sources, the study has been undertaken with the help of other data sources and websites, such as the Census Bureau, OICA, and ACEA.

Secondary research has been done to obtain crucial information about the industry's value chain, revenue models, the market's monetary chain, the total pool of key players, and the current and potential use cases and applications.

The key data points taken from secondary research include:

- segmentations and percentage shares
- data for market value
- key industry trends of the top players in the market
- qualitative insights into various aspects of the market, key trends, and emerging areas of innovation
- quantitative data for mathematical and statistical calculations

Data Triangulation

This research study involves the usage of extensive secondary sources, such as certified publications, articles from recognized authors, white papers, annual reports of companies, directories, and major databases, to collect useful and effective information for an extensive, technical, market-oriented, and commercial study of the AI, IoT, and blockchain market in modern agriculture.

The process of market engineering involves the calculation of the market statistics, market size estimation, market forecast, market crackdown, and data triangulation (the methodology for such quantitative data processes has been explained in further sections). The primary research study has been undertaken to gather information and

+357 96 030922
info@marketpublishers.com

validate the market numbers for segmentation types and industry trends of the key players in the market.

**Key Market Players and Competition Synopsis**

The companies profiled in the AI, IoT, and blockchain market in modern agriculture have been selected based on expert inputs regarding their technological capabilities, solution breadth, global footprint, and market penetration across digital agriculture value chains.

Leading Players in the AI, IoT, and Blockchain Market in Modern Agriculture

- Deere & Company
- Robert Bosch GmbH
- CNH Industrial N.V
- Trimble Inc.
- Signify Holding
- Taranis
- CropIn Technology Solutions
- Plantix (PEAT GmbH)
- Ceres Imaging
- Climate LLC (The Climate Corporation)
- AGRIVI
- Regen Network Development
- SZ DJI Technology Co., Ltd. (DJI)
- OSRAM GmbH (ams OSRAM)

+357 96 030922
info@marketpublishers.com

Granular Inc.

Companies that are not a part of the aforementioned pool have been well represented across different sections of the AI, IoT, and blockchain market in modern agriculture report (wherever applicable).

+357 96 030922
info@marketpublishers.com

# Contents

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

# List Of Figures

## LIST OF FIGURES

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

# List Of Tables

## LIST OF TABLES

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

## I would like to order

Product name: AI, IoT, and Blockchain Market in Modern Agriculture - A Global and Regional Analysis: Focus on Application, Product, and Country Analysis - Analysis and Forecast, 2025-2035

Product link: https://marketpublishers.com/r/A15FD9E17CE2EN.html

Price: US$ 4,900.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:
info@marketpublishers.com

## Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page https://marketpublishers.com/r/A15FD9E17CE2EN.html