

Remote Sensing Technology For Agriculture Market Forecasts to 2032 – Global Analysis By Component (Hardware, Software and Services), Deployment, Sensing Modality, Technology, Applications, and By Geography

<https://marketpublishers.com/r/R622A45A05E0EN.html>

Date: August 2025

Pages: 200

Price: US\$ 4,150.00 (Single User License)

ID: R622A45A05E0EN

Abstracts

According to Statistics MRC, the Global Remote Sensing Technology For Agriculture Market is accounted for \$3.6 billion in 2025 and is expected to reach \$8.4 billion by 2032 growing at a CAGR of 12.9% during the forecast period. Remote sensing technology for agriculture is the use of satellite imagery, aerial photography, and sensor-based systems to collect data about crops, soil, and environmental conditions without direct physical contact. It employs multispectral, hyperspectral, and thermal imaging to monitor plant health, moisture levels, nutrient status, and pest infestations. This technology enables farmers and researchers to assess agricultural fields remotely, providing accurate, timely, and spatially detailed information for effective crop management and resource optimization.

According to a report by the United States Department of Agriculture (USDA), precision agriculture, which heavily relies on remote sensing technologies, has been adopted by over 60% of U.S.

Market Dynamics:

Driver:

Increasing adoption of precision agriculture

The rising need for efficient farm management and optimized crop yields is fueling the

integration of remote sensing in precision agriculture. By enabling accurate monitoring of soil conditions, crop health, and irrigation needs, farmers can make data-driven decisions to boost productivity. Advanced sensing methods reduce wastage, improve resource allocation, and enhance sustainability. Governments and agricultural organizations are promoting smart farming practices, further spurring adoption. Consequently, the technology's role in precision farming is becoming indispensable for modern agricultural systems worldwide.

Restraint:

High implementation and maintenance costs

Despite its advantages, the high initial investment in remote sensing equipment, drones, satellite subscriptions, and advanced imaging tools poses a challenge for many farmers. Small and medium-sized farms, in particular, face budgetary constraints that limit technology adoption. Ongoing maintenance, calibration, and software updates add to operational costs. Additionally, the need for trained personnel to interpret data increases expenses. These cost barriers hinder widespread deployment, especially in developing regions, slowing the pace of remote sensing integration in the agricultural sector.

Opportunity:

Integration with AI and IoT

Combining remote sensing with artificial intelligence and IoT devices presents significant opportunities for agriculture. AI algorithms can analyze vast datasets from sensors and satellite imagery, enabling predictive analytics for yield estimation, pest detection, and disease prevention. IoT connectivity ensures real-time data transmission from field devices to farmers' dashboards. This synergy enhances decision-making accuracy and automates processes such as irrigation and fertilization. As technology advances, these integrated solutions promise to make remote sensing more intelligent, efficient, and accessible across diverse farming scales.

Threat:

Data privacy and cybersecurity risks

The digital nature of remote sensing systems makes them vulnerable to cyber threats and unauthorized access to sensitive agricultural data. Hackers targeting farm

management platforms or satellite-based systems can disrupt operations, manipulate data, or cause financial losses. Data breaches could compromise farmers' proprietary crop insights and operational strategies. Weak cybersecurity measures in rural deployments exacerbate the risk. Addressing these threats requires robust encryption, secure networks, and farmer awareness to maintain trust in remote sensing technologies for agricultural use.

Covid-19 Impact:

The COVID-19 pandemic accelerated the adoption of remote sensing in agriculture due to restrictions on physical field inspections. Farmers increasingly relied on satellite and drone imagery for monitoring crops and assessing damage. However, disruptions in hardware supply chains delayed some installations. Limited access to skilled technicians also hindered technology deployment. On the positive side, the crisis highlighted the value of contactless, data-driven farming solutions. This shift is expected to have a lasting impact, with remote sensing becoming a core element of post-pandemic agricultural strategies.

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

The hardware segment is expected to account for the largest market share during the forecast period, propelled by the widespread use of satellite receivers, multispectral cameras, and drone-based sensors in agricultural monitoring. These physical components form the foundation of remote sensing systems, enabling data collection across vast farmlands. Growing investments in advanced sensor technology and increasing affordability of drones have further boosted demand. Additionally, the integration of high-resolution imaging hardware enhances accuracy, making hardware indispensable for precision agriculture and field analysis applications.

The satellite-based systems segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the satellite-based systems segment is predicted to witness the highest growth rate, influenced by advancements in high-resolution imaging, multispectral analysis, and frequent revisit capabilities. Satellite platforms enable wide-area coverage, making them ideal for monitoring large agricultural regions. The growing availability of affordable satellite data services is increasing adoption among both commercial and government agricultural bodies. Furthermore, partnerships between space agencies and agri-tech firms are fostering innovation, enhancing the precision

and frequency of satellite-based agricultural monitoring.

Region with largest share:

During the forecast period, the Asia Pacific region is expected to hold the largest market share, fueled by extensive agricultural activity, government initiatives for smart farming, and rising food demand due to population growth. Countries such as India, China, and Japan are investing heavily in satellite-based agricultural monitoring systems.

Expanding rural internet connectivity is improving access to remote sensing platforms. Additionally, increasing adoption of precision agriculture tools by large-scale farms and agri-businesses is accelerating the integration of remote sensing technologies across the region.

Region with highest CAGR:

Over the forecast period, the North America region is anticipated to exhibit the highest CAGR, driven by strong technological infrastructure, early adoption of precision farming, and significant R&D investments. The presence of leading agri-tech companies and collaborations with satellite service providers are fueling innovation in the region.

Farmers in the U.S. and Canada are rapidly integrating drones, AI analytics, and IoT devices with remote sensing systems. Supportive policies, coupled with growing environmental awareness, are further boosting market expansion in North America's agricultural sector.

Key players in the market

Some of the key players in Remote Sensing Technology For Agriculture Market include John Deere (Deere & Company), Bayer CropScience (Climate Corporation/FieldView), Corteva Granular, IBM's The Weather Company, Indigo Agriculture, AGCO Corporation, Ag Leader Technology, Trimble Inc., Agribotix, ClearAg Operations, Conservis Corporation, FlyPix AI, EOS Data Analytics, AgroScout, and Yara International ASA.

Key Developments:

In May 2025, John Deere acquires Sentera, integrating advanced aerial field scouting imagery and analytics to the John Deere Operations Center™. This enhances capabilities for plant-level health assessments, stress detection, and weed mapping to drive data-based crop decisions.

In May 2025, Ceres AI integrated its advanced data analytics into Bayer's Climate FieldView platform, creating a unified data ecosystem. The collaboration delivers actionable risk intelligence to farmers, insurers, and capital stakeholders, enhancing underwriting accuracy, enabling hybrid parametric insurance models, and empowering better farm investment decisions through AI-powered field insights.

In May 2025, AGCO Corporation integrated advanced remote sensing into its FendtONE platform, enabling real-time crop and soil monitoring through satellite and drone data. The update improves variable-rate technology for seed and fertilizer application, enhancing yield optimization and resource efficiency.

Components Covered:

Hardware

Software

Services

Deployments Covered:

Satellite-Based Systems

Drone-Based Systems

Ground-Based Systems

Sensing Modalities Covered:

Passive Sensing

Active Sensing

Technologies Covered:

Optical

Radar

LiDAR

Other Technologies

Applications Covered:

Crop Monitoring

Soil Monitoring

Yield Mapping

Irrigation Management

Pest and Disease Monitoring

Field Mapping

Other Applications

Regions Covered:

North America

oUS

oCanada

oMexico

Europe

oGermany

oUK

oItaly

oFrance

oSpain

oRest of Europe

Asia Pacific

oJapan

oChina

oIndia

oAustralia

oNew Zealand

oSouth Korea

oRest of Asia Pacific

South America

oArgentina

oBrazil

oChile

oRest of South America

Middle East & Africa

oSaudi Arabia

oUAE

oQatar

oSouth Africa

oRest 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

oComprehensive profiling of additional market players (up to 3)

oSWOT Analysis of key players (up to 3)

Regional Segmentation

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

Competitive Benchmarking

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

Contents

1 EXECUTIVE SUMMARY

2 PREFACE

- 2.1 Abstract
- 2.2 Stake Holders
- 2.3 Research Scope
- 2.4 Research Methodology
 - 2.4.1 Data Mining
 - 2.4.2 Data Analysis
 - 2.4.3 Data Validation
 - 2.4.4 Research Approach
- 2.5 Research Sources
 - 2.5.1 Primary Research Sources
 - 2.5.2 Secondary Research Sources
 - 2.5.3 Assumptions

3 MARKET TREND ANALYSIS

- 3.1 Introduction
- 3.2 Drivers
- 3.3 Restraints
- 3.4 Opportunities
- 3.5 Threats
- 3.6 Technology Analysis
- 3.7 Application Analysis
- 3.8 Emerging Markets
- 3.9 Impact of Covid-19

4 PORTERS FIVE FORCE ANALYSIS

- 4.1 Bargaining power of suppliers
- 4.2 Bargaining power of buyers
- 4.3 Threat of substitutes
- 4.4 Threat of new entrants
- 4.5 Competitive rivalry

5 GLOBAL REMOTE SENSING TECHNOLOGY FOR AGRICULTURE MARKET, BY COMPONENT

- 5.1 Introduction
- 5.2 Hardware
- 5.3 Software
- 5.4 Services

6 GLOBAL REMOTE SENSING TECHNOLOGY FOR AGRICULTURE MARKET, BY DEPLOYMENT

- 6.1 Introduction
- 6.2 Satellite-Based Systems
- 6.3 Drone-Based Systems
- 6.4 Ground-Based Systems

7 GLOBAL REMOTE SENSING TECHNOLOGY FOR AGRICULTURE MARKET, BY SENSING MODALITY

- 7.1 Introduction
- 7.2 Passive Sensing
- 7.3 Active Sensing

8 GLOBAL REMOTE SENSING TECHNOLOGY FOR AGRICULTURE MARKET, BY TECHNOLOGY

- 8.1 Introduction
- 8.2 Optical
- 8.3 Radar
- 8.4 LiDAR
- 8.5 Other Technologies

9 GLOBAL REMOTE SENSING TECHNOLOGY FOR AGRICULTURE MARKET, BY APPLICATION

- 9.1 Introduction
- 9.2 Crop Monitoring
- 9.3 Soil Monitoring
- 9.4 Yield Mapping

- 9.5 Irrigation Management
- 9.6 Pest & Disease Monitoring
- 9.7 Field Mapping
- 9.8 Other Applications

10 GLOBAL REMOTE SENSING TECHNOLOGY FOR AGRICULTURE MARKET, BY GEOGRAPHY

- 10.1 Introduction
- 10.2 North America
 - 10.2.1 US
 - 10.2.2 Canada
 - 10.2.3 Mexico
- 10.3 Europe
 - 10.3.1 Germany
 - 10.3.2 UK
 - 10.3.3 Italy
 - 10.3.4 France
 - 10.3.5 Spain
 - 10.3.10 Rest of Europe
- 10.4 Asia Pacific
 - 10.4.1 Japan
 - 10.4.2 China
 - 10.4.3 India
 - 10.4.4 Australia
 - 10.4.5 New Zealand
 - 10.4.5 South Korea
 - 10.4.6 Rest of Asia Pacific
- 10.5 South America
 - 10.5.1 Argentina
 - 10.5.2 Brazil
 - 10.5.3 Chile
 - 10.5.4 Rest of South America
- 10.6 Middle East & Africa
 - 10.6.1 Saudi Arabia
 - 10.6.2 UAE
 - 10.6.3 Qatar
 - 10.6.4 South Africa
 - 10.6.5 Rest of Middle East & Africa

11 KEY DEVELOPMENTS

- 11.1 Agreements, Partnerships, Collaborations and Joint Ventures
- 11.2 Acquisitions & Mergers
- 11.3 New Product Launch
- 11.4 Expansions
- 11.5 Other Key Strategies

12 COMPANY PROFILING

- 12.1 John Deere (Deere & Company)
- 12.2 Bayer CropScience (Climate Corporation/FieldView)
- 12.3 Corteva Granular
- 12.4 IBM's The Weather Company
- 12.5 Indigo Agriculture
- 12.6 AGCO Corporation
- 12.7 Ag Leader Technology
- 12.8 Trimble Inc.
- 12.9 Agribotix
- 12.10 ClearAg Operations
- 12.11 Conservis Corporation
- 12.12 FlyPix AI
- 12.13 EOS Data Analytics
- 12.14 AgroScout
- 12.15 Yara International ASA

List Of Tables

LIST OF TABLES

Table 1 Global Remote Sensing Technology For Agriculture Market Outlook, By Region (2024-2032) (\$MN)

Table 2 Global Remote Sensing Technology For Agriculture Market Outlook, By Component (2024-2032) (\$MN)

Table 3 Global Remote Sensing Technology For Agriculture Market Outlook, By Hardware (2024-2032) (\$MN)

Table 4 Global Remote Sensing Technology For Agriculture Market Outlook, By Software (2024-2032) (\$MN)

Table 5 Global Remote Sensing Technology For Agriculture Market Outlook, By Services (2024-2032) (\$MN)

Table 6 Global Remote Sensing Technology For Agriculture Market Outlook, By Deployment (2024-2032) (\$MN)

Table 7 Global Remote Sensing Technology For Agriculture Market Outlook, By Satellite-Based Systems (2024-2032) (\$MN)

Table 8 Global Remote Sensing Technology For Agriculture Market Outlook, By Drone-Based Systems (2024-2032) (\$MN)

Table 9 Global Remote Sensing Technology For Agriculture Market Outlook, By Ground-Based Systems (2024-2032) (\$MN)

Table 10 Global Remote Sensing Technology For Agriculture Market Outlook, By Sensing Modality (2024-2032) (\$MN)

Table 11 Global Remote Sensing Technology For Agriculture Market Outlook, By Passive Sensing (2024-2032) (\$MN)

Table 12 Global Remote Sensing Technology For Agriculture Market Outlook, By Active Sensing (2024-2032) (\$MN)

Table 13 Global Remote Sensing Technology For Agriculture Market Outlook, By Technology (2024-2032) (\$MN)

Table 14 Global Remote Sensing Technology For Agriculture Market Outlook, By Optical (2024-2032) (\$MN)

Table 15 Global Remote Sensing Technology For Agriculture Market Outlook, By Radar (2024-2032) (\$MN)

Table 16 Global Remote Sensing Technology For Agriculture Market Outlook, By LiDAR (2024-2032) (\$MN)

Table 17 Global Remote Sensing Technology For Agriculture Market Outlook, By Other Technologies (2024-2032) (\$MN)

Table 18 Global Remote Sensing Technology For Agriculture Market Outlook, By

Application (2024-2032) (\$MN)

Table 19 Global Remote Sensing Technology For Agriculture Market Outlook, By Crop Monitoring (2024-2032) (\$MN)

Table 20 Global Remote Sensing Technology For Agriculture Market Outlook, By Soil Monitoring (2024-2032) (\$MN)

Table 21 Global Remote Sensing Technology For Agriculture Market Outlook, By Yield Mapping (2024-2032) (\$MN)

Table 22 Global Remote Sensing Technology For Agriculture Market Outlook, By Irrigation Management (2024-2032) (\$MN)

Table 23 Global Remote Sensing Technology For Agriculture Market Outlook, By Pest & Disease Monitoring (2024-2032) (\$MN)

Table 24 Global Remote Sensing Technology For Agriculture Market Outlook, By Field Mapping (2024-2032) (\$MN)

Table 25 Global Remote Sensing Technology For Agriculture Market Outlook, By Other Applications (2024-2032) (\$MN)

Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

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