

# **Agriculture Sensor Market Forecasts to 2032 – Global Analysis By Type (Humidity Sensors, Electrochemical Sensors, Mechanical Sensors, Optical Sensors, Soil Sensors, Water Sensors, Airflow Sensors, Location Sensors and Other Types), Farm Type (Indoor Farming and Outdoor Farming), Application, End User and By Geography**

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## **Abstracts**

According to Statistics MRC, the Global Agriculture Sensor Market is accounted for \$2.2 billion in 2025 and is expected to reach \$5.1 billion by 2032 growing at a CAGR of 12.3% during the forecast period. A device that tracks and gathers data in real time from agricultural surroundings, such as soil, crops, or weather, is called an agriculture sensor. By monitoring variables including soil moisture, temperature, humidity, pH, and nutrient levels, these sensors aid in the optimization of farming operations. Agriculture sensors facilitate data-driven decision-making for sustainable and effective agricultural operations, enhance crop output, decrease resource waste, and assist precision farming by offering actionable insights.

According to digital farming sources, the global IoT sensor footprint in agriculture was approximately 12 million devices installed by 2023.

Market Dynamics:

Driver:

Rising adoption of precision farming techniques

The agriculture sensor market is being significantly propelled by the increasing adoption of precision farming techniques. Precision agriculture leverages advanced sensors, IoT, and AI to enable real-time monitoring and data-driven decision-making, optimizing resource allocation and enhancing crop yields. Furthermore, the integration of location, soil, and environmental sensors allows for targeted interventions, reducing waste and improving sustainability. As farmers strive to maximize productivity and minimize environmental impact, the demand for sensor-based solutions continues to rise, making precision farming a central driver of market expansion.

#### Restraint:

##### Lack of technical expertise

Lack of technical expertise among farmers and agricultural workers slows down market growth. Many end-users face challenges in understanding, installing, and maintaining complex sensor systems, which hinders widespread adoption, especially in developing regions. Additionally, the absence of standardized protocols and limited access to training programs exacerbate this issue, creating a barrier to fully realizing the benefits of advanced sensor technologies. This skills gap not only slows market penetration but also affects the efficiency and reliability of sensor-enabled farming practices.

#### Opportunity:

##### Growth in agritech start-ups

The rapid emergence and growth of agritech startups are at the forefront of innovation, introducing cost-effective, scalable, and user-friendly sensor solutions tailored to diverse agricultural needs. Moreover, increased investment and supportive government policies are fostering a vibrant ecosystem where startups can collaborate with established players, driving technological advancements and market accessibility. As a result, the proliferation of agritech startups is accelerating the adoption of smart farming practices and expanding the market's reach.

#### Threat:

##### Cybersecurity risks in connected farm systems

Cybersecurity risks pose a significant threat to the agriculture sensor market as farms increasingly depend on interconnected devices and cloud-based platforms.

Unauthorized access, data breaches, and system vulnerabilities can compromise sensitive farm data and disrupt operations. Additionally, as more agricultural processes become automated and remotely controlled, the potential impact of cyberattacks grows, threatening both productivity and safety.

#### Covid-19 Impact:

The Covid-19 pandemic had a mixed impact on the agriculture sensor market. While initial lockdowns disrupted supply chains, labor availability, and manufacturing, the crisis also accelerated the adoption of remote monitoring and digital farm management solutions. Farmers increasingly turned to sensor-based technologies to maintain operations with a reduced workforce and ensure food security. Furthermore, the pandemic highlighted the importance of resilient and automated agricultural systems, leading to a long-term boost in demand for smart farming tools, despite short-term market slowdowns and logistical challenges.

The location sensors segment is expected to be the largest during the forecast period

The location sensors segment is expected to account for the largest market share during the forecast period. Location sensors, which utilize GPS and other satellite technologies, provide precise geospatial data critical for mapping fields, monitoring machinery, and optimizing planting patterns. Moreover, the expansion of IoT applications in agriculture has amplified the importance of location sensors, enabling remote monitoring and data-driven decisions. As environmental sustainability and resource efficiency become priorities, location sensors are increasingly adopted to minimize waste and maximize yield, solidifying their dominance in the market.

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

Over the forecast period, the indoor farming segment is predicted to witness the highest growth rate. Indoor farming leverages advanced sensors to maintain optimal environmental conditions, such as temperature, humidity, and light, ensuring consistent crop quality and yield. Additionally, the integration of IoT-enabled sensors allows for real-time monitoring and automation, reducing labor requirements and resource consumption. As traditional agriculture faces land and climate constraints, the scalability and efficiency of indoor farming, supported by sensor technology, are driving its rapid expansion.

### Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share, attributed to early adoption of precision agriculture, strong government support, and substantial investments in smart farming infrastructure. Furthermore, the presence of leading technology providers and robust research initiatives has accelerated the deployment of advanced sensor solutions across the United States and Canada. The region's focus on maximizing productivity with limited resources and addressing labor shortages continues to drive the widespread use of agriculture sensors, maintaining North America's leadership position.

### Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR. Rapid technological advancements, rising food demand, and supportive government initiatives are fueling sensor adoption in countries like China and India. Additionally, the proliferation of agri-tech startups and increased investment in digital agriculture are transforming traditional farming practices. The integration of IoT, AI, and advanced sensors is enabling farmers to optimize yields and resource use, making Asia Pacific the fastest-growing region.

### Key players in the market

Some of the key players in Agriculture Sensor Market include John Deere (Deere & Company), Trimble Inc., CropX Inc., Sentera LLC, Libelium Comunicaciones Distribuidas S.L., Texas Instruments Incorporated, Yara International ASA, Ag Leader Technology, Pessler Instruments GmbH, Bosch, Teralytic, METER Group, Auroras S.r.l., Pycno Agriculture, The Yield Pty Ltd, Acclima Inc., Soil Scout Oy, and Climate LLC.

### Key Developments:

In January 2025, Sentera, a leader in scalable precision agriculture solutions announced key updates to its Aerial WeedScout platform, including a rebranding to SmartScript™ for the 2025 growing season. This name change underscores Sentera's commitment to delivering actionable, prescription-driven insights that empower farmers to optimize their operations. SmartScript™ Weeds more accurately reflects the platform's advanced remote sensing capabilities and positions Sentera for continued growth, providing a solid foundation for expansion into areas such as disease and fertility management. The rebranding also highlights the intelligent new features and

product enhancements for the 2025 season, including weed classification, weed size detection, stand counts, and seamless integration with John Deere Operations Center and other third-party tools—further enhancing weed control and operational efficiency for farmers and their advisors.

In September 2024, CropX acquired EnGeniousAg, integrating advanced nitrogen-sensing technology into its platform. This enables in-field nitrogen measurements and data-driven recommendations, improving nitrogen use efficiency and sustainability.

In August 2024, Libelium releases a new version of its Smart Agriculture sensor node improving maximum accuracy for crop monitoring. The enhanced Waspote Plug & Sense! Smart Agriculture Xtreme device includes top market performance sensors for the most exigent field applications such as vineyards, fruit orchards and greenhouse cultivations, among others.

#### Types Covered:

Humidity Sensors

Electrochemical Sensors

Mechanical Sensors

Optical Sensors

Soil Sensors

Airflow Sensors

Location Sensors

Other Types

#### Farm Types Covered:

Indoor Farming

Outdoor Farming

#### Applications Covered:

- Crop Monitoring
- Climate Monitoring
- Irrigation and Water Management
- Soil Management
- Livestock and Dairy Management
- Smart Greenhouse Management
- Other Applications

#### End Users Covered:

- Farmers
- Agricultural Cooperatives
- Research Institutions
- Government Agencies
- Agribusinesses

#### 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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