

# **Soil Health Monitoring Technologies Market Forecasts to 2034– Global Analysis By Parameter (Soil Moisture, Soil Nutrients (Nitrogen, Phosphorus, Potassium), Soil pH, Soil Organic Matter and Contaminants & Pollutants), Technology, Application, End User and By Geography**

<https://marketpublishers.com/r/SCE36D7759F7EN.html>

Date: April 2026

Pages: 200

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

ID: SCE36D7759F7EN

## **Abstracts**

According to Statistics MRC, the Global Soil Health Monitoring Technologies Market is accounted for \$1.01 billion in 2026 and is expected to reach \$3.21 billion by 2034 growing at a CAGR of 15.5% during the forecast period. Soil Health Monitoring Technologies refer to a range of advanced tools, sensors, and analytical systems used to assess and track the physical, chemical, and biological condition of soil in real time. These technologies include IoT enabled sensors, remote sensing, satellite imaging, and data analytics platforms that measure parameters such as moisture levels, nutrient content, pH, temperature, and microbial activity. By providing accurate, continuous insights, they enable farmers and agronomists to optimize fertilization, irrigation, and crop management practices, ultimately enhancing productivity, sustainability, and long term soil fertility.

### **Market Dynamics:**

#### **Driver:**

Rising demand for precision agriculture

The rising demand for precision agriculture is significantly driving the market. Farmers are increasingly adopting data-driven approaches to enhance crop yields, optimize

resource utilization, and minimize environmental impact. Advanced monitoring tools provide real-time insights into soil conditions, enabling precise application of fertilizers and pesticides. This not only reduces input costs but also improves productivity and sustainability. As global food demand continues to rise, precision agriculture practices are becoming essential, thereby accelerating the adoption of soil health monitoring solutions.

**Restraint:**

High initial investment costs

High initial investment costs remain a major restraint for the widespread adoption of soil health monitoring technologies. The deployment of advanced sensors, IoT-enabled devices, satellite imaging systems, and data analytics platforms requires substantial capital expenditure. Small and marginal farmers, particularly in developing regions, often lack the financial capacity to invest in such technologies. Additionally, ongoing maintenance, calibration, and software subscription costs further increase the financial burden. This economic barrier limits adoption rates and slows market penetration.

**Opportunity:**

Increasing awareness of soil health & productivity

Increasing awareness of soil health and its direct impact on agricultural productivity presents a significant growth opportunity for the market. Governments, agricultural organizations, and environmental agencies are actively promoting sustainable farming practices through education, and policy support. Farmers are becoming more conscious of soil degradation, and the long-term benefits of maintaining soil quality. This shift in mindset is encouraging the adoption of monitoring technologies that provide actionable insights. As awareness continues to grow, demand for efficient soil health solutions is expected to expand steadily.

**Threat:**

Complexity of system integration and data overload

The complexity of system integration and the challenge of managing large volumes of data pose significant threats to market growth. Soil health monitoring technologies often involve multiple components, including sensors and communication networks, which

must function seamlessly together. Integrating these systems can be technically challenging, particularly for users with limited digital expertise. Additionally, the vast amount of data generated can overwhelm farmers, making it difficult to extract meaningful insights. Without proper training and user friendly interfaces, this complexity may hinder adoption.

### **Covid-19 Impact:**

The COVID-19 pandemic had a mixed impact on the market. Initially, disruptions in supply chains, labor shortages, and restrictions on movement slowed the deployment of monitoring systems and delayed agricultural projects. However, the pandemic also highlighted the importance of resilient and technology driven farming practices. As a result, there was a growing interest in digital agriculture solutions that enable remote monitoring and decision-making. Post-pandemic recovery has accelerated the adoption of such technologies, as stakeholders seek to strengthen food security and improve operational efficiency in the agricultural sector.

The agricultural research segment is expected to be the largest during the forecast period

The agricultural research segment is expected to account for the largest market share during the forecast period, due to its critical role in advancing soil science and technology development. Research institutions and universities extensively utilize soil health monitoring tools for experimentation and analysis to improve crop productivity and sustainability. Continuous investments in research and development, along with government funding and academic collaborations, further drive segment growth. These institutions act as early adopters, validating new technologies, thereby strengthening their dominance in the market.

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

Over the forecast period, the farmers segment is predicted to witness the highest growth rate, due to increasing adoption of smart farming practices and growing accessibility of cost-effective monitoring solutions. With rising awareness of soil health and the need to maximize crop yields, farmers are gradually integrating technology into their operations. Government subsidies, training programs, and digital agriculture initiatives are also supporting adoption. Additionally, the availability of user friendly and scalable solutions is encouraging even small scale farmers to embrace soil monitoring technologies, driving rapid growth in this segment.

**Region with largest share:**

During the forecast period, the North America region is expected to hold the largest market share, due to early adoption of advanced agricultural technologies and strong presence of key market players. The region benefits from well-established infrastructure, high investment capacity, and widespread use of precision farming techniques. Supportive government policies and funding for sustainable agriculture further enhance market growth. Additionally, increasing focus on environmental conservation and efficient resource management continues to drive the demand for soil health monitoring technologies across the United States and Canada.

**Region with highest CAGR:**

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR, owing to increasing awareness of sustainable farming practices. The region's large agricultural base, coupled with rising population and food demand, is driving the need for improved productivity. Governments are actively promoting digital agriculture through subsidies and initiatives, encouraging farmers to adopt advanced technologies. Furthermore, the growing penetration of IoT and mobile-based solutions is making soil health monitoring more accessible, fueling strong market growth across emerging economies such as India and China.

**Key players in the market**

Some of the key players in Soil Health Monitoring Technologies Market include CropX Technologies, METER Group, Sentek Technologies, The Toro Company, Trimble Inc., SGS Group, Element Materials Technology, Campbell Scientific, Spectrum Technologies, Inc., Acclima, Stevens Water Monitoring Systems, Pessler Instruments, Sensegrass, Sensoil and Biome Technologies Pvt. Ltd.

**Key Developments:**

In March 2026, Trimble and Hitachi expanded their collaboration to deliver advanced grade control solutions across Europe, integrating factory-fit and upgradeable systems on excavators. These technologies improve precision, automate operations, and enhance productivity by enabling real-time positioning and accurate grading, reducing material waste and increasing construction efficiency.

In September 2025, Kobelco and Trimble expanded their collaboration to offer Trimble Earthworks 2D grade control systems through certified dealer networks across North America. This initiative enables easier access to advanced machine guidance, improving excavation accuracy, productivity, and efficiency while supporting upgrades to more advanced 3D solutions.

#### Parameters Covered:

Soil Moisture

Soil Nutrients (Nitrogen, Phosphorus, Potassium)

Soil pH

Soil Organic Matter

Contaminants & Pollutants

#### Technologies Covered:

Soil Sensors

Remote Sensing Technologies

IoT-Based Monitoring Systems

Geographic Information System (GIS)

Other Technologies

#### Applications Covered:

Precision Farming

Agricultural Research

Environmental Monitoring

## Forestry & Horticulture

### End Users Covered:

Farmers

Agritech Companies

Government & Research Institutions

Environmental Agencies

### Regions Covered:

North America

United States

Canada

Mexico

Europe

United Kingdom

Germany

France

Italy

Spain

Netherlands

Belgium

Sweden

Switzerland

Poland

Rest of Europe

#### Asia Pacific

China

Japan

India

South Korea

Australia

Indonesia

Thailand

Malaysia

Singapore

Vietnam

Rest of Asia Pacific

#### South America

Brazil

Argentina

Colombia

Chile

Peru

Rest of South America

Rest of the World (RoW)

Middle East

Saudi Arabia

United Arab Emirates

Qatar

Israel

Rest of Middle East

Africa

South Africa

Egypt

Morocco

Rest of 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 2023, 2024, 2025, 2026, 2027, 2028, 2030, 2032 and 2034

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

## Contents

### **1 EXECUTIVE SUMMARY**

- 1.1 Market Snapshot and Key Highlights
- 1.2 Growth Drivers, Challenges, and Opportunities
- 1.3 Competitive Landscape Overview
- 1.4 Strategic Insights and Recommendations

### **2 RESEARCH FRAMEWORK**

- 2.1 Study Objectives and Scope
- 2.2 Stakeholder Analysis
- 2.3 Research Assumptions and Limitations
- 2.4 Research Methodology
  - 2.4.1 Data Collection (Primary and Secondary)
  - 2.4.2 Data Modeling and Estimation Techniques
  - 2.4.3 Data Validation and Triangulation
  - 2.4.4 Analytical and Forecasting Approach

### **3 MARKET DYNAMICS AND TREND ANALYSIS**

- 3.1 Market Definition and Structure
- 3.2 Key Market Drivers
- 3.3 Market Restraints and Challenges
- 3.4 Growth Opportunities and Investment Hotspots
- 3.5 Industry Threats and Risk Assessment
- 3.6 Technology and Innovation Landscape
- 3.7 Emerging and High-Growth Markets
- 3.8 Regulatory and Policy Environment
- 3.9 Impact of COVID-19 and Recovery Outlook

### **4 COMPETITIVE AND STRATEGIC ASSESSMENT**

- 4.1 Porter's Five Forces Analysis
  - 4.1.1 Supplier Bargaining Power
  - 4.1.2 Buyer Bargaining Power
  - 4.1.3 Threat of Substitutes
  - 4.1.4 Threat of New Entrants

- 4.1.5 Competitive Rivalry
- 4.2 Market Share Analysis of Key Players
- 4.3 Product Benchmarking and Performance Comparison

## **5 GLOBAL SOIL HEALTH MONITORING TECHNOLOGIES MARKET, BY PARAMETER**

- 5.1 Soil Moisture
- 5.2 Soil Nutrients (Nitrogen, Phosphorus, Potassium)
- 5.3 Soil pH
- 5.4 Soil Organic Matter
- 5.5 Contaminants & Pollutants

## **6 GLOBAL SOIL HEALTH MONITORING TECHNOLOGIES MARKET, BY TECHNOLOGY**

- 6.1 Soil Sensors
- 6.2 Remote Sensing Technologies
- 6.3 IoT-Based Monitoring Systems
- 6.4 Geographic Information System (GIS)
- 6.5 Other Technologies

## **7 GLOBAL SOIL HEALTH MONITORING TECHNOLOGIES MARKET, BY APPLICATION**

- 7.1 Precision Farming
- 7.2 Agricultural Research
- 7.3 Environmental Monitoring
- 7.4 Forestry & Horticulture

## **8 GLOBAL SOIL HEALTH MONITORING TECHNOLOGIES MARKET, BY END USER**

- 8.1 Farmers
- 8.2 Agritech Companies
- 8.3 Government & Research Institutions
- 8.4 Environmental Agencies

## **9 GLOBAL SOIL HEALTH MONITORING TECHNOLOGIES MARKET, BY**

## **GEOGRAPHY**

### 9.1 North America

9.1.1 United States

9.1.2 Canada

9.1.3 Mexico

### 9.2 Europe

9.2.1 United Kingdom

9.2.2 Germany

9.2.3 France

9.2.4 Italy

9.2.5 Spain

9.2.6 Netherlands

9.2.7 Belgium

9.2.8 Sweden

9.2.9 Switzerland

9.2.10 Poland

9.2.11 Rest of Europe

### 9.3 Asia Pacific

9.3.1 China

9.3.2 Japan

9.3.3 India

9.3.4 South Korea

9.3.5 Australia

9.3.6 Indonesia

9.3.7 Thailand

9.3.8 Malaysia

9.3.9 Singapore

9.3.10 Vietnam

9.3.11 Rest of Asia Pacific

### 9.4 South America

9.4.1 Brazil

9.4.2 Argentina

9.4.3 Colombia

9.4.4 Chile

9.4.5 Peru

9.4.6 Rest of South America

### 9.5 Rest of the World (RoW)

9.5.1 Middle East

- 9.5.1.1 Saudi Arabia
- 9.5.1.2 United Arab Emirates
- 9.5.1.3 Qatar
- 9.5.1.4 Israel
- 9.5.1.5 Rest of Middle East
- 9.5.2 Africa
  - 9.5.2.1 South Africa
  - 9.5.2.2 Egypt
  - 9.5.2.3 Morocco
  - 9.5.2.4 Rest of Africa

## **10 STRATEGIC MARKET INTELLIGENCE**

- 10.1 Industry Value Network and Supply Chain Assessment
- 10.2 White-Space and Opportunity Mapping
- 10.3 Product Evolution and Market Life Cycle Analysis
- 10.4 Channel, Distributor, and Go-to-Market Assessment

## **11 INDUSTRY DEVELOPMENTS AND STRATEGIC INITIATIVES**

- 11.1 Mergers and Acquisitions
- 11.2 Partnerships, Alliances, and Joint Ventures
- 11.3 New Product Launches and Certifications
- 11.4 Capacity Expansion and Investments
- 11.5 Other Strategic Initiatives

## **12 COMPANY PROFILES**

- 12.1 CropX Technologies
- 12.2 METER Group
- 12.3 Sentek Technologies
- 12.4 The Toro Company
- 12.5 Trimble Inc.
- 12.6 SGS Group
- 12.7 Element Materials Technology
- 12.8 Campbell Scientific
- 12.9 Spectrum Technologies, Inc.
- 12.10 Acclima
- 12.11 Stevens Water Monitoring Systems

12.12 Pessler Instruments

12.13 Sensegrass

12.14 Sensoil

12.15 Biome Technologies Pvt. Ltd.

## List Of Tables

### LIST OF TABLES

Table 1 Global Soil Health Monitoring Technologies Market Outlook, By Region (2023-2034) (\$MN)

Table 2 Global Soil Health Monitoring Technologies Market Outlook, By Parameter (2023-2034) (\$MN)

Table 3 Global Soil Health Monitoring Technologies Market Outlook, By Soil Moisture (2023-2034) (\$MN)

Table 4 Global Soil Health Monitoring Technologies Market Outlook, By Soil Nutrients (Nitrogen, Phosphorus, Potassium) (2023-2034) (\$MN)

Table 5 Global Soil Health Monitoring Technologies Market Outlook, By Soil pH (2023-2034) (\$MN)

Table 6 Global Soil Health Monitoring Technologies Market Outlook, By Soil Organic Matter (2023-2034) (\$MN)

Table 7 Global Soil Health Monitoring Technologies Market Outlook, By Contaminants & Pollutants (2023-2034) (\$MN)

Table 8 Global Soil Health Monitoring Technologies Market Outlook, By Technology (2023-2034) (\$MN)

Table 9 Global Soil Health Monitoring Technologies Market Outlook, By Soil Sensors (2023-2034) (\$MN)

Table 10 Global Soil Health Monitoring Technologies Market Outlook, By Remote Sensing Technologies (2023-2034) (\$MN)

Table 11 Global Soil Health Monitoring Technologies Market Outlook, By IoT-Based Monitoring Systems (2023-2034) (\$MN)

Table 12 Global Soil Health Monitoring Technologies Market Outlook, By Geographic Information System (GIS) (2023-2034) (\$MN)

Table 13 Global Soil Health Monitoring Technologies Market Outlook, By Other Technologies (2023-2034) (\$MN)

Table 14 Global Soil Health Monitoring Technologies Market Outlook, By Application (2023-2034) (\$MN)

Table 15 Global Soil Health Monitoring Technologies Market Outlook, By Precision Farming (2023-2034) (\$MN)

Table 16 Global Soil Health Monitoring Technologies Market Outlook, By Agricultural Research (2023-2034) (\$MN)

Table 17 Global Soil Health Monitoring Technologies Market Outlook, By Environmental Monitoring (2023-2034) (\$MN)

Table 18 Global Soil Health Monitoring Technologies Market Outlook, By Forestry &

Horticulture (2023-2034) (\$MN)

Table 19 Global Soil Health Monitoring Technologies Market Outlook, By End User (2023-2034) (\$MN)

Table 20 Global Soil Health Monitoring Technologies Market Outlook, By Farmers (2023-2034) (\$MN)

Table 21 Global Soil Health Monitoring Technologies Market Outlook, By Agritech Companies (2023-2034) (\$MN)

Table 22 Global Soil Health Monitoring Technologies Market Outlook, By Government & Research Institutions (2023-2034) (\$MN)

Table 23 Global Soil Health Monitoring Technologies Market Outlook, By Environmental Agencies (2023-2034) (\$MN)

Note: Tables for North America, Europe, APAC, South America, and Rest of the World (RoW) are also represented in the same manner as above.

## I would like to order

Product name: Soil Health Monitoring Technologies Market Forecasts to 2034– Global Analysis By Parameter (Soil Moisture, Soil Nutrients (Nitrogen, Phosphorus, Potassium), Soil pH, Soil Organic Matter and Contaminants & Pollutants), Technology, Application, End User and By Geography

Product link: <https://marketpublishers.com/r/SCE36D7759F7EN.html>

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

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

[info@marketpublishers.com](mailto:info@marketpublishers.com)

## Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/SCE36D7759F7EN.html>