

# **Soil Moisture Sensors Market Forecasts to 2032 - Global Analysis By Sensor Type (Volumetric Soil Moisture Sensors and Soil Water Potential Sensors), Type, Connectivity, Application, End User and By Geography**

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## **Abstracts**

According to Statistics MRC, the Global Soil Moisture Sensors Market is accounted for \$432.95 million in 2025 and is expected to reach \$1276.26 million by 2032 growing at a CAGR of 16.7% during the forecast period. Soil moisture sensors are devices used to measure the amount of water present in the soil by detecting changes in electrical resistance, capacitance, or dielectric properties. These sensors help farmers, researchers, and land managers monitor soil water levels in real time to support efficient irrigation, crop health management, and water conservation. By providing accurate moisture data at different soil depths, soil moisture sensors enable optimized watering schedules, reduce water waste, prevent crop stress, and improve overall agricultural productivity and sustainability.

### **Market Dynamics:**

Driver:

Rising demand for food security

Rapid population growth and shrinking arable land are compelling farmers to maximize crop productivity through precise water management. Soil moisture sensors enable real-time monitoring of soil conditions, helping optimize irrigation schedules and reduce water stress on crops. Governments and agricultural bodies are promoting precision farming practices to ensure stable food supplies and improve yield predictability.

Climate variability and erratic rainfall patterns are further increasing reliance on sensor-based irrigation solutions. These technologies support sustainable farming by minimizing water wastage and improving resource efficiency. As food demand intensifies, soil moisture sensors are becoming critical tools for resilient agricultural systems.

#### Restraint:

##### Calibration and technical complexity

Accurate sensor performance depends on soil type, salinity, temperature, and installation depth, requiring frequent recalibration. Farmers with limited technical expertise often struggle to interpret sensor data effectively. Integration with farm management systems can be complicated, particularly in small and mid-sized farms. High dependence on technical support increases operational costs and slows adoption rates. Inconsistent readings due to improper installation can reduce trust in sensor-based decision-making. These technical limitations continue to restrain market penetration in developing agricultural regions.

#### Opportunity:

##### Integration with autonomous systems

The integration of soil moisture sensors with autonomous agricultural systems presents substantial growth opportunities. These sensors are increasingly being embedded into smart irrigation platforms, drones, and robotic farming equipment. Automated decision-making systems use sensor data to adjust irrigation in real time without human intervention. This integration enhances precision, reduces labor dependency, and improves operational efficiency. Advances in artificial intelligence and machine learning are further improving predictive irrigation models. Large-scale commercial farms are rapidly adopting autonomous solutions to optimize yields and reduce input costs.

#### Threat:

##### Data privacy and ownership risks

Sensor-generated data is often stored on cloud platforms managed by third-party service providers. Farmers face uncertainty regarding who owns, controls, and monetizes their agricultural data. Cybersecurity risks and unauthorized data access can

compromise sensitive farm information. Lack of clear regulatory frameworks around agricultural data governance adds to user apprehension. Concerns over data misuse may discourage adoption of connected sensor technologies.

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

The COVID-19 pandemic had a mixed impact on the soil moisture sensors market. Supply chain disruptions delayed sensor manufacturing and hardware deployment during lockdown periods. Labor shortages and restricted field access slowed installation and maintenance activities. However, the pandemic accelerated the adoption of digital and remote farm monitoring solutions. Farmers increasingly relied on sensor-based systems to manage crops with minimal physical presence. Governments recognized agri-tech as essential infrastructure and supported precision farming initiatives. Post-pandemic recovery strategies are now focused on automation, resilience, and digital agriculture expansion.

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

The capacitance sensors segment is expected to account for the largest market share during the forecast period. These sensors offer a strong balance between cost-effectiveness and measurement accuracy. They are widely compatible with different soil types and farming environments. Capacitance sensors consume less power, making them suitable for long-term field deployment. Their ease of integration with wireless and IoT-based platforms supports smart agriculture applications. Farmers prefer these sensors due to lower maintenance requirements compared to resistance-based alternatives.

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

Over the forecast period, the smart irrigation providers segment is predicted to witness the highest growth rate. Growing water scarcity is driving demand for automated irrigation solutions powered by soil moisture data. Service providers are offering integrated platforms combining sensors, analytics, and cloud-based control systems. Subscription-based business models are lowering upfront costs for farmers. These providers deliver value-added services such as predictive irrigation and real-time alerts. Adoption is particularly strong among commercial farms and protected cultivation facilities.

### Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share. The region benefits from early adoption of precision agriculture technologies. Farmers in the U.S. and Canada are increasingly investing in data-driven irrigation systems. Strong government support for water conservation and sustainable farming practices is boosting sensor deployment. The presence of major agri-tech companies enhances product innovation and distribution. High awareness levels and advanced digital infrastructure support widespread adoption.

### Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR. Rapid agricultural modernization in countries such as China, India, and Australia is driving sensor adoption. Increasing pressure on water resources is accelerating demand for efficient irrigation management. Government initiatives promoting smart farming and digital agriculture are strengthening market growth. Rising investments in protected cultivation and horticulture are further supporting sensor deployment. Declining sensor costs are making the technology accessible to small and marginal farmers.

### Key players in the market

Some of the key players in Soil Moisture Sensors Market include Acclima, Inc., Netafim Ltd., METER Group, Inc., Davis Instruments Corporation, Campbell Scientific, Inc., IMKO Micromodultechnik GmbH, The Toro Company, AquaCheck, Irrrometer Company, Inc., Soilmoisture Equipment Corp., Delta-T Devices Ltd., Pessl Instruments GmbH, Sentek Technologies, Stevens Water Monitoring Systems, Inc., and Spectrum Technologies, Inc.

### Key Developments:

In October 2025, SALIC and Syngenta Signs Agreement to Explore Joint Agriculture Projects that Enhance Food Security in Saudi Arabia and Around the World. Saudi Agricultural and Livestock Investment Company (SALIC) and global agri-tech leader Syngenta Crop Protection AG (Syngenta), have signed a Letter of Intent (LOI) to combine their expertise to create a resilient agri-food sector in Saudi Arabia and globally.

In June 2025, FMC Corporation announced a strategic agreement with Corteva Agriscience that will expand FMC's fluindapyr fungicide technology in the U.S. corn and soybean markets. The collaboration between the two agricultural companies will enable more U.S. growers to combat challenging foliar diseases, such as tar spot and southern rust, with this novel fungicide active ingredient.

#### Sensor Types Covered:

Volumetric Soil Moisture Sensors

Soil Water Potential Sensors

#### Types Covered:

Volumetric Soil Moisture

Soil Water Potential

#### Connectivity Covered:

Wired

Wireless

Connectivity Technologies

#### Applications Covered:

Field Agriculture

Residential

Landscaping & Ground Care

Construction & Mining

Forestry

Sports Turf

Weather Forecasting

Research & Education

Other Applications

End Users Covered:

Commercial Farms

Research Institutions

Government & Agencies

Smart Irrigation Providers

Residential 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

## 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 Application Analysis
- 3.7 End User 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 SOIL MOISTURE SENSORS MARKET, BY SENSOR TYPE**

- 5.1 Introduction
- 5.2 Volumetric Soil Moisture Sensors
  - 5.2.1 Time Domain Transmissiometry (TDT)
  - 5.2.2 Capacitance Sensors
  - 5.2.3 Probes
- 5.3 Soil Water Potential Sensors
  - 5.3.1 Tensiometers
  - 5.3.2 Gypsum Blocks
  - 5.3.3 Granular Matrix Sensors

## **6 GLOBAL SOIL MOISTURE SENSORS MARKET, BY TYPE**

- 6.1 Introduction
- 6.2 Volumetric Soil Moisture
- 6.3 Soil Water Potential

## **7 GLOBAL SOIL MOISTURE SENSORS MARKET, BY CONNECTIVITY**

- 7.1 Introduction
- 7.2 Wired
- 7.3 Wireless
- 7.4 Connectivity Technologies

## **8 GLOBAL SOIL MOISTURE SENSORS MARKET, BY APPLICATION**

- 8.1 Introduction
- 8.2 Agriculture
- 8.3 Residential
- 8.4 Landscaping & Ground Care
- 8.5 Construction & Mining
- 8.6 Forestry
- 8.7 Sports Turf
- 8.8 Weather Forecasting
- 8.9 Research & Education
- 8.10 Other Applications

## **9 GLOBAL SOIL MOISTURE SENSORS MARKET, BY END USER**

- 9.1 Introduction
- 9.2 Commercial Farms
- 9.3 Research Institutions
- 9.4 Government & Agencies
- 9.5 Smart Irrigation Providers
- 9.6 Residential Users

## **10 GLOBAL SOIL MOISTURE SENSORS 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
  - 10.3.6 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
  - 10.4.6 South Korea
  - 10.4.7 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 Acclima, Inc.

12.2 Netafim Ltd.

12.3 METER Group, Inc.

12.4 Davis Instruments Corporation

12.5 Campbell Scientific, Inc.

12.6 IMKO Micromodultechnik GmbH

12.7 The Toro Company

12.8 AquaCheck

12.9 Irrrometer Company, Inc.

12.10 Soilmoisture Equipment Corp.

12.11 Delta-T Devices Ltd.

12.12 Pessl Instruments GmbH

12.13 Sentek Technologies

12.14 Stevens Water Monitoring Systems, Inc.

12.15 Spectrum Technologies, Inc.

## List Of Tables

### LIST OF TABLES

Table 1 Global Soil Moisture Sensors Market Outlook, By Region (2024-2032) (\$MN)

Table 2 Global Soil Moisture Sensors Market Outlook, By Sensor Type (2024-2032) (\$MN)

Table 3 Global Soil Moisture Sensors Market Outlook, By Volumetric Soil Moisture Sensors (2024-2032) (\$MN)

Table 4 Global Soil Moisture Sensors Market Outlook, By Time Domain Transmissiometry (TDT) (2024-2032) (\$MN)

Table 5 Global Soil Moisture Sensors Market Outlook, By Capacitance Sensors (2024-2032) (\$MN)

Table 6 Global Soil Moisture Sensors Market Outlook, By Probes (2024-2032) (\$MN)

Table 7 Global Soil Moisture Sensors Market Outlook, By Soil Water Potential Sensors (2024-2032) (\$MN)

Table 8 Global Soil Moisture Sensors Market Outlook, By Tensiometers (2024-2032) (\$MN)

Table 9 Global Soil Moisture Sensors Market Outlook, By Gypsum Blocks (2024-2032) (\$MN)

Table 10 Global Soil Moisture Sensors Market Outlook, By Granular Matrix Sensors (2024-2032) (\$MN)

Table 11 Global Soil Moisture Sensors Market Outlook, By Type (2024-2032) (\$MN)

Table 12 Global Soil Moisture Sensors Market Outlook, By Volumetric Soil Moisture (2024-2032) (\$MN)

Table 13 Global Soil Moisture Sensors Market Outlook, By Soil Water Potential (2024-2032) (\$MN)

Table 14 Global Soil Moisture Sensors Market Outlook, By Connectivity (2024-2032) (\$MN)

Table 15 Global Soil Moisture Sensors Market Outlook, By Wired (2024-2032) (\$MN)

Table 16 Global Soil Moisture Sensors Market Outlook, By Wireless (2024-2032) (\$MN)

Table 17 Global Soil Moisture Sensors Market Outlook, By Connectivity Technologies (2024-2032) (\$MN)

Table 18 Global Soil Moisture Sensors Market Outlook, By Application (2024-2032) (\$MN)

Table 19 Global Soil Moisture Sensors Market Outlook, By Agriculture (2024-2032) (\$MN)

Table 20 Global Soil Moisture Sensors Market Outlook, By Residential (2024-2032) (\$MN)

Table 21 Global Soil Moisture Sensors Market Outlook, By Landscaping & Ground Care (2024-2032) (\$MN)

Table 22 Global Soil Moisture Sensors Market Outlook, By Construction & Mining (2024-2032) (\$MN)

Table 23 Global Soil Moisture Sensors Market Outlook, By Forestry (2024-2032) (\$MN)

Table 24 Global Soil Moisture Sensors Market Outlook, By Sports Turf (2024-2032) (\$MN)

Table 25 Global Soil Moisture Sensors Market Outlook, By Weather Forecasting (2024-2032) (\$MN)

Table 26 Global Soil Moisture Sensors Market Outlook, By Research & Education (2024-2032) (\$MN)

Table 27 Global Soil Moisture Sensors Market Outlook, By Other Applications (2024-2032) (\$MN)

Table 28 Global Soil Moisture Sensors Market Outlook, By End User (2024-2032) (\$MN)

Table 29 Global Soil Moisture Sensors Market Outlook, By Commercial Farms (2024-2032) (\$MN)

Table 30 Global Soil Moisture Sensors Market Outlook, By Research Institutions (2024-2032) (\$MN)

Table 31 Global Soil Moisture Sensors Market Outlook, By Government & Agencies (2024-2032) (\$MN)

Table 32 Global Soil Moisture Sensors Market Outlook, By Smart Irrigation Providers (2024-2032) (\$MN)

Table 33 Global Soil Moisture Sensors Market Outlook, By Residential Users (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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