

AI-Powered Soil Health Analytics Market Forecasts to 2034 – Global Analysis By Component (Solutions, Services and Software Platforms), Deployment Mode, Technology, Application, End User and By Geography

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Abstracts

According to Statistics MRC, the Global AI-Powered Soil Health Analytics Market is accounted for \$0.3 billion in 2026 and is expected to reach \$1.9 billion by 2034 growing at a CAGR of 25.0% during the forecast period. AI-powered soil health analytics refer to advanced computational systems that integrate artificial intelligence with soil sensor networks and remote sensing data to assess, monitor, and predict soil conditions. These platforms employ machine learning algorithms to analyze chemical, biological, and physical soil parameters including nutrient content, moisture levels, organic carbon, and microbial activity. They are deployed through cloud-based software platforms, mobile applications, and edge computing devices connected to IoT sensor arrays. The systems generate actionable insights for precision agriculture by identifying soil degradation patterns, optimizing fertilizer application, and forecasting crop suitability across diverse agricultural landscapes.

Market Dynamics:

Driver:

Precision Agriculture Adoption

AI-powered soil health analytics platforms are experiencing accelerating demand as global agriculture intensifies focus on sustainable input optimization and yield maximization. Farmers are increasingly deploying sensor networks and satellite imagery to transition from calendar-based to data-driven soil management practices.

Government subsidies for climate-smart agriculture and carbon sequestration monitoring create institutional procurement channels. Major agritech companies are integrating soil analytics into comprehensive farm management platforms. These converging trends generate sustained investment in artificial intelligence models trained on regional soil databases.

Restraint:

Sensor Infrastructure Costs

The substantial capital investment required for dense soil sensor networks represents a significant barrier to widespread adoption among smallholder farmers. Each monitoring point requires installation of moisture probes, nutrient sensors, and telemetry equipment, which elevates per-hectare deployment costs beyond the reach of many agricultural operations. Data connectivity limitations in rural areas constrain real-time transmission capabilities. Additionally, calibration requirements across diverse soil types and climatic zones complicate standardization. These economic and technical constraints limit market penetration primarily to large commercial farms and research institutions.

Opportunity:

Carbon Credit Verification

The emergence of voluntary and compliance carbon markets is creating substantial opportunities for AI soil health analytics in quantifying soil organic carbon sequestration. Agricultural technology platforms are developing machine learning models capable of predicting carbon accumulation rates across different tillage and cover crop regimes. Partnerships between analytics providers and carbon credit registries streamline the verification pipeline for farm-level carbon offsets. Government climate initiatives in North America and Europe increasingly mandate soil carbon monitoring. As carbon pricing mechanisms mature, the addressable market for soil health measurement expands beyond agronomy into environmental finance.

Threat:

Open Source Model Disruption

The proliferation of open-source geospatial analytics tools and publicly available

satellite soil moisture datasets poses competitive pressure on proprietary AI soil health platforms. Research institutions and government agencies are releasing freely accessible soil spectral libraries and machine learning models that reduce dependency on commercial solutions. These public alternatives benefit from continuous academic refinement and lack subscription fees. Major agricultural cooperatives are developing in-house analytics capabilities using open-source frameworks. As freely available tools improve accuracy, the willingness of farmers to pay premium prices for proprietary platforms may decline.

Covid-19 Impact:

The COVID-19 pandemic disrupted field sensor installation schedules while accelerating digital transformation across agricultural operations. Supply chain constraints delayed hardware deliveries, yet remote work protocols increased farmer reliance on cloud-based analytics dashboards. Post-pandemic, sustained labor shortages in agriculture have reinforced demand for automated soil monitoring systems that reduce dependence on manual sampling. Government stimulus packages targeting rural digital infrastructure have expanded connectivity for sensor networks.

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

The solutions segment is expected to account for the largest market share during the forecast period, due to comprehensive software platforms that integrate multi-source soil data into unified analytics dashboards. These solutions dominate procurement decisions because they provide end-to-end capabilities spanning data ingestion, model inference, and prescription generation. Major agritech vendors continue to expand their solution portfolios with proprietary AI models trained on regional soil databases. Agricultural consultants and enterprise farms routinely license integrated solutions rather than assembling discrete components, which reinforces consistent subscription revenue and platform stickiness throughout the forecast period.

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

Over the forecast period, the cloud-based segment is predicted to witness the highest growth rate, driven by scalable compute resources enabling complex machine learning inference on large soil datasets. Cloud deployments eliminate the need for on-farm server infrastructure while facilitating automatic model updates and remote access for agronomists. Major hyperscale providers are offering agriculture-specific cloud

instances optimized for geospatial analytics. Subscription pricing models reduce upfront capital requirements for farms. Regulatory acceptance of cloud-stored agricultural data across major jurisdictions accelerates enterprise adoption and stimulates vendor investment in platform development.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share, due to advanced precision agriculture infrastructure and high adoption rates of digital farming technologies. The United States leads regional demand through concentration of major agritech companies and extensive commercial farming operations. Strong presence of venture capital funding accelerates innovation in soil analytics startups. Government programs including USDA climate-smart initiatives create institutional demand. Favorable broadband expansion in rural areas supports sensor network connectivity, reinforcing North American market leadership throughout the forecast period.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR, due to expanding commercial farming sectors and government digitization programs across emerging economies. China and India drive regional growth through large agricultural populations and increasing awareness of soil degradation. National smart agriculture initiatives fund sensor network deployment across millions of hectares. Local technology partnerships with global analytics providers accelerate knowledge transfer. Rising food security concerns compel investment in data-driven soil management practices throughout the region.

Key players in the market

Some of the key players in AI-Powered Soil Health Analytics Market include CropX Inc., Agrivi d.o.o., Farmers Edge Inc., Teralytic Inc., Cropin Technology Solutions Private Limited, AgroCares B.V., Soil Scout Oy, Sentek Technologies Pty Ltd., Acclima Inc., and Monnit Corporation.

Key Developments:

In June 2026, CropX Inc. launched a next-generation soil health analytics platform integrating satellite imagery with ground sensor networks for real-time carbon

sequestration quantification across diverse agricultural soil types and climatic zones.

In June 2026, Agrivi d.o.o. expanded its artificial intelligence soil modeling capabilities with machine learning algorithms predicting nutrient leaching patterns for optimized fertilizer scheduling in large-scale row crop operations across Europe.

In April 2026, Farmers Edge Inc. secured a strategic partnership with a major carbon credit registry to provide automated soil organic carbon verification using its proprietary AI analytics platform for compliance offset programs.

Components Covered:

Solutions

Services

Software Platforms

Deployment Modes Covered:

Cloud-Based

On-Premise

Hybrid

Technologies Covered:

Artificial Intelligence

Machine Learning

Remote Sensing

IoT Sensors

GIS & Geospatial Analytics

Big Data Analytics

Predictive Analytics

Applications Covered:

Soil Nutrient Analysis

Soil Moisture Monitoring

Soil Carbon Assessment

Soil Fertility Mapping

Crop Suitability Analysis

Soil Salinity Monitoring

Sustainable Land Management

End Users Covered:

Commercial Farms

Agricultural Cooperatives

Agricultural Consultants

Government Agencies

Research Institutes

AgriTech Companies

Other End Users

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

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