

Agricultural Carbon Monitoring Market Forecasts to 2034 – Global Analysis By Carbon Pool (Soil Carbon, Biomass Carbon, Crop Carbon, Residue Carbon and Other Carbon Pools), Measurement Method, Data Source, Monitoring Output, End User, and Geography

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Abstracts

According to Statistics MRC, the Global Agricultural Carbon Monitoring Market is accounted for \$0.9 billion in 2026 and is expected to reach \$3.4 billion by 2034 growing at a CAGR of 18.1% during the forecast period. Agricultural carbon monitoring comprises technologies and digital platforms used to measure, track, and analyze carbon emissions and carbon sequestration across agricultural operations. These solutions integrate remote sensing, satellite imagery, IoT sensors, soil measurements, farm management data, and artificial intelligence to assess greenhouse gas emissions and carbon storage across crops, soils, livestock, and farming activities. Agricultural carbon monitoring supports carbon accounting, sustainability reporting, regenerative agriculture, and participation in agricultural carbon markets. Increasing focus on agricultural decarbonization, climate-smart farming, and carbon reduction initiatives is driving adoption of agricultural carbon monitoring solutions globally.

Market Dynamics

Driver:

Growing demand for agricultural carbon credits

Growing global demand for agricultural carbon credits is driving significant investment in monitoring solutions that enable accurate measurement and verification of soil carbon sequestration across diverse farming systems. Corporate net-zero commitments and increasing voluntary carbon market participation are creating sustained demand for

verifiable agricultural carbon data that meets rigorous verification standards. Regulatory requirements for emissions reporting and carbon accounting are accelerating adoption of comprehensive monitoring solutions across all major agricultural regions worldwide. Farmers are increasingly seeking to monetize carbon sequestration through participation in carbon credit programs that require robust monitoring protocols. Carbon credit registries are implementing stricter verification requirements that drive demand for advanced monitoring technologies.

Restraint:

High cost and complexity of measurement

High cost and complexity of comprehensive soil carbon measurement present significant barriers to widespread adoption across smaller farming operations with limited resources and technical capabilities. Limited standardization of monitoring protocols and methodologies creates challenges for data comparability and verification across different carbon programs and registries. Data interpretation and integration with farm management systems require specialized expertise that is often unavailable in rural agricultural communities. Long measurement timelines for carbon stock changes may affect project economics and farmer participation decisions, particularly where land tenure is uncertain. Many farmers lack the capital resources to invest in comprehensive monitoring systems without external financial support.

Opportunity:

Integration with precision agriculture platforms

Integration of carbon monitoring with precision agriculture platforms and farm management systems presents significant growth opportunities for solution providers seeking to streamline data collection and analysis. Development of low-cost, scalable monitoring technologies is expanding addressable markets to smaller farming operations that were previously unable to participate in carbon markets. AI and machine learning applications are improving measurement accuracy and reducing costs through automated data processing and predictive analytics. Partnerships with carbon credit platforms are creating simplified pathways for farmer participation in carbon markets. Digital platforms are enabling real-time carbon monitoring and immediate feedback on practice effectiveness.

Threat:

Regulatory uncertainty and verification standards

Regulatory uncertainty regarding carbon credit methodologies and verification

standards poses significant risks to market development and investment confidence across the agricultural carbon monitoring sector. Competition from alternative monitoring approaches and satellite-based solutions is intensifying across all market segments as technology costs decrease. Data privacy and ownership concerns may affect farmer participation in monitoring programs where data sharing requirements are perceived as intrusive. Limited interoperability between monitoring platforms creates fragmentation challenges for carbon market participants seeking consistent data. Changes in government policy regarding carbon markets could significantly impact monitoring demand and investment returns.

Covid-19 Impact:

The COVID-19 pandemic temporarily slowed adoption of agricultural carbon monitoring as farm operations prioritized essential activities and supply chain disruptions affected equipment availability across global markets. However, the post-pandemic period has witnessed accelerated interest in carbon markets and agricultural sustainability as governments and corporations increase climate commitments. Growing corporate commitments to net-zero emissions are driving demand for verifiable agricultural carbon credits that support supply chain decarbonization. Digital transformation across agriculture has accelerated monitoring solution adoption as remote capabilities gained importance during movement restrictions. Investment in agricultural carbon monitoring continues to grow as carbon markets mature and verification requirements become more stringent.

The soil carbon segment is expected to be the largest during the forecast period

The soil carbon segment is expected to account for the largest market share during the forecast period as soil represents the largest and most significant carbon pool in agricultural systems with the greatest potential for carbon sequestration through improved management practices. Soil carbon monitoring is essential for carbon credit generation and agricultural sustainability programs across all crop types and farming systems. Growing recognition of soil health benefits and carbon sequestration potential is driving sustained demand for soil carbon monitoring solutions worldwide. Established measurement protocols and scientific consensus support soil carbon as the primary focus of agricultural carbon monitoring efforts. Soil carbon dynamics directly influence agricultural productivity, resilience, and climate change mitigation potential.

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

Over the forecast period, the remote sensing segment is predicted to witness the highest growth rate driven by increasing availability of satellite and drone-based monitoring technologies offering scalable, cost-effective carbon measurement across large agricultural areas. Remote sensing enables frequent, repeatable measurements without extensive field sampling requirements, significantly reducing monitoring costs

and expanding accessibility. Advances in spectral analysis and AI-powered data interpretation are accelerating adoption of remote sensing solutions by improving measurement accuracy and reducing data processing time. Growing satellite constellation coverage is expanding monitoring accessibility to previously underserved agricultural regions. Remote sensing offers the potential for near real-time carbon monitoring across entire agricultural landscapes.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share owing to well-established carbon markets, early adoption of agricultural monitoring technologies, and strong presence of carbon project developers with extensive farmer networks. The United States hosts major agricultural carbon monitoring companies with established verification protocols and significant research investments in monitoring technology development. Favorable policy environment and corporate sustainability commitments from major food companies reinforce regional market leadership and drive continued innovation. Growing participation of farmers in carbon programs supported by USDA incentives and private sector initiatives expands monitoring adoption. Strong venture capital investment in agricultural technology supports continued market growth across the region.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR driven by growing agricultural sector, increasing carbon market participation, and rising government support for sustainable agriculture across major economies. China, India, and Australia are expanding agricultural carbon monitoring capabilities to support emissions reduction commitments and participate in growing carbon markets. Growing awareness of soil carbon benefits and carbon credit opportunities is accelerating market expansion across the region as farmers seek new revenue sources. Government programs supporting sustainable agriculture and climate-smart farming are creating favorable policy environments for monitoring adoption. Significant agricultural land area and large farming populations create substantial addressable market opportunities.

Key players in the market

Some of the key players in the Agricultural Carbon Monitoring Market include Agreeana ApS, Regrow Agriculture, Inc., Boomitra, Inc., Perennial Climate Inc., Soil Capital SAS, Downforce Technologies Ltd., Yard Stick PBC, EarthOptics, Inc., Agricarbon Ltd., CarbonFarm Technology Pty Ltd., FarmLab Pty Ltd., CIBO Technologies, Inc., Trace Genomics, Inc., Planet Labs PBC, and Descartes Labs, Inc.

Key Developments:

In May 2025, Agreea ApS launched an enhanced agricultural carbon monitoring platform integrating remote sensing, soil sampling, and process modeling capabilities. The platform provides comprehensive carbon measurement, reporting, and verification services for carbon project developers. The development responds to growing demand for scalable, verifiable agricultural carbon monitoring solutions.

In March 2025, Regrow Agriculture, Inc. announced significant enhancements to its carbon monitoring platform with new AI-powered analytics and integration with farm management systems. The enhancements enable more accurate carbon measurement and simplified farmer participation in carbon markets.

Carbon Pools Covered:

Soil Carbon

Biomass Carbon

Crop Carbon

Residue Carbon

Other Carbon Pools

Measurement Methods Covered:

Remote Sensing

Soil Sampling

Spectral Sensing

Process Modeling

Hybrid Measurement

Other Measurement Methods

Data Sources Covered:

Satellite Data

Soil Data

Farm Data

Weather Data

Crop Data

Other Data Sources

Monitoring Outputs Covered:

Carbon Stocks

Carbon Sequestration

Carbon Emissions

Carbon Balance

Carbon Credits

Other Monitoring Outputs

End Users Covered:

Farmers

Agribusinesses

Food Companies

Carbon Project Developers

Government Agencies

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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