

Soil Microbial Genomics Market Forecasts to 2032 – Global Analysis By Technology (Next-Generation Sequencing, Polymerase Chain Reaction-based Methods, Microarrays and Other Technologies), Application, End User and By Geography

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Abstracts

According to Statistics MRC, the Global Soil Microbial Genomics Market is accounted for \$269.8 million in 2025 and is expected to reach \$650.8 million by 2032 growing at a CAGR of 13.4% during the forecast period. Soil microbial genomics is the study of genetic material from diverse microorganisms in soil ecosystems to understand their functions, interactions, and roles in nutrient cycling, soil fertility, and environmental sustainability. By leveraging sequencing technologies and bioinformatics, it reveals microbial diversity, metabolic pathways, and responses to environmental changes. This field supports advancements in agriculture, carbon management, and bioremediation, offering critical insights for optimizing soil health and addressing global challenges in food security and climate resilience.

According to ScienceDirect, studies using GeoChip data detected a total of 946 genes, 4,342 taxa, 102 phyla, and 995 genera in soil microbial functional gene datasets.

Market Dynamics:

Driver:

Growing demand for sustainable agriculture

The escalating global focus on sustainable agricultural practices is fundamentally driving the soil microbial genomics market expansion. Farmers and agricultural

stakeholders increasingly recognize soil microbiomes as critical determinants of crop productivity, nutrient cycling, and ecosystem health. Regulatory pressures and consumer demands for environmentally responsible farming methods are compelling agricultural producers to adopt microbiome-based solutions. Moreover, the proven ability of beneficial soil microorganisms to reduce chemical fertilizer dependency while enhancing crop yields is attracting significant investment from both public and private sectors, thereby accelerating market growth.

Restraint:

Lack of standardized protocols

The absence of universally accepted standardized protocols for soil microbial genomics is a significant market restraint. This limitation creates inconsistencies in data collection, processing methodologies, and result interpretation across different laboratories and research institutions. The lack of standardization hampers effective comparison of research findings and limits the scalability of commercial applications. Moreover, regulatory bodies face challenges in establishing approval frameworks without clear industry standards, consequently slowing product development timelines and market adoption rates.

Opportunity:

Precision agriculture integration

Advanced data analytics platforms can now process complex genomic datasets alongside real-time soil monitoring systems to provide farmers with actionable microbiome insights. The convergence of artificial intelligence, IoT sensors, and genomic sequencing enables site-specific microbial interventions that optimize crop performance. Moreover, this technological synergy facilitates the development of predictive models for soil health management, creating new revenue streams for agricultural technology companies and enhancing the economic viability of genomic-based farming solutions.

Threat:

High cost of genomic sequencing & data analysis

Small-scale farmers and developing regions often cannot justify the high upfront costs

associated with comprehensive soil microbial genomic assessments. The need for specialized bioinformatics expertise and computational resources creates ongoing operational expenses that limit market accessibility. Moreover, the rapid evolution of sequencing technologies necessitates frequent equipment upgrades, further escalating total ownership costs. This economic barrier restricts market penetration and potentially concentrates benefits among well-funded agricultural enterprises.

Covid-19 Impact:

The COVID-19 pandemic initially disrupted soil microbial genomics market growth through supply chain interruptions and reduced agricultural research funding. Laboratory closures and restricted fieldwork significantly delayed ongoing studies and product development timelines. However, the crisis subsequently accelerated interest in food security and sustainable agriculture, driving increased investment in agricultural biotechnology. Additionally, government stimulus packages included funding for agricultural innovation, partially offsetting initial setbacks. The pandemic ultimately highlighted the importance of resilient food production systems, creating long-term opportunities for soil microbiome-based solutions.

The next-generation sequencing (NGS) segment is expected to be the largest during the forecast period

The next-generation sequencing (NGS) segment is expected to account for the largest market share during the forecast period due to its superior analytical capabilities and cost-effectiveness compared to traditional sequencing methods. NGS platforms enable comprehensive soil microbiome profiling through high-throughput processing of multiple samples simultaneously, making large-scale agricultural applications economically viable. Moreover, declining sequencing costs and increasing availability of user-friendly NGS systems are democratizing access to advanced genomic analysis capabilities for agricultural researchers and commercial stakeholders.

The agrochemical and agricultural companies segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the agrochemical and agricultural companies segment is predicted to witness the highest growth rate as these organizations increasingly recognize soil microbial genomics as a competitive differentiator. Leading agrochemical corporations are integrating microbiome analysis into their product development pipelines to create more targeted and effective agricultural solutions. Additionally, the

shift toward biologics and sustainable crop protection products is driving substantial R&D investments in microbial genomics research. Moreover, strategic partnerships between agrochemical giants and genomics companies are accelerating innovation cycles and market penetration, positioning this segment for exceptional growth momentum.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share, driven by substantial agricultural research infrastructure and advanced technological adoption rates. The region benefits from significant government funding for agricultural biotechnology research and a robust ecosystem of genomics companies and academic institutions. North American farmers demonstrate higher willingness to adopt innovative agricultural technologies, supported by favorable regulatory frameworks and established precision agriculture practices. Moreover, the presence of major agrochemical corporations and biotechnology firms creates conducive environment for soil microbial genomics commercialization and widespread market acceptance.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR due to rapidly expanding agricultural sectors and increasing government support for sustainable farming initiatives. Growing population pressures and food security concerns are driving regional investments in agricultural innovation and productivity enhancement technologies. Additionally, improving research infrastructure and rising awareness of soil health importance among Asian farmers are creating favorable market conditions. The increasing collaboration between international genomics companies and local agricultural organizations is accelerating technology transfer and market development, positioning Asia Pacific as the most dynamic growth region.

Key players in the market

Some of the key players in Soil Microbial Genomics Market include Novozymes, Bayer, BASF, Corteva, Syngenta, Marrone Bio Innovations, Certis Biologicals, Indigo Ag, AgBiome, Pivot Bio, Ginkgo Bioworks, BioConsortia, Chr. Hansen, Valent BioSciences, Evogene, and Lallemand.

Key Developments:

In November 2022, BASF has expanded R&D on biodegradability and soil microbial interactions. Their research advances developing biodegradable products like mulch films that break down in soil via microbial action. They collaborate extensively to understand and improve how materials biodegrade in soil and wastewater treatment systems, aiming to support sustainable agriculture and reduce environmental impact.

In October 2022, Corteva entered a multi-year European distribution agreement with STI Biotechnologie to bring *Lactobacillus* strains-based biostimulants (Utrisha™ Rhizo) to market. These microbial products enhance soil and rhizosphere health, supporting crop resilience and nutrient uptake under varied conditions. Corteva's biologicals pipeline emphasizes sustainable innovation and natural-origin solutions.

Technologies Covered:

Next-Generation Sequencing (NGS)

Polymerase Chain Reaction (PCR)-based Methods

Microarrays

Other Technologies

Applications Covered:

Soil Microbiome Characterization

Functional Genomics

Agricultural Applications

Environmental Applications

Biotechnology Applications

End Users Covered:

Academic and Research Institutions

Government Agencies and Research Laboratories

Agrochemical and Agricultural Companies

Biotechnology and Life Sciences Companies

Environmental Organizations

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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