

Mineral Soil Amendments for Carbon Sequestration Market Opportunity, Growth Drivers, Industry Trend Analysis, and Forecast 2025 - 2034

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Report description:

The Global Mineral Soil Amendments For Carbon Sequestration Market was valued at USD 726.3 million in 2024 and is estimated to grow at a CAGR of 8.6% to reach USD 1.7 billion by 2034. Growing attention toward climate change mitigation is significantly driving demand for nature-based solutions, with mineral soil amendments emerging as a powerful tool in this transformation. These materials-ranging from biochar to enhanced weathering minerals and lime-not only help lock carbon in the soil but also improve soil structure and fertility. Governments across the globe are backing this movement by offering policy incentives, research support, and carbon credit mechanisms. In parallel, industries and farming communities are adopting these practices to align with sustainability goals and improve land productivity. With heightened interest in regenerative agriculture and emissions reduction, mineral amendments are gaining traction across varied landscapes. Rising concerns about land degradation and the need for long-term environmental resilience continue to push this market forward.

As awareness of the environmental and economic benefits grows, mineral soil amendments are increasingly seen not just as a climate solution but also as a productivity enhancer for agricultural systems. Farmers and landowners are beginning to recognize that these amendments provide long-term value far beyond carbon sequestration. By improving soil structure, enhancing nutrient retention, and promoting beneficial microbial activity, mineral inputs such as biochar, basalt, lime, and olivine contribute directly to increased crop yields and soil resilience. This leads to better water efficiency, reduced reliance on chemical fertilizers, and greater resistance to erosion and extreme weather conditions. As a result, their integration into soil management plans is becoming a strategic move for sustainable agriculture.

The biochar segment generated USD 264.7 million by 2024, with a consistent CAGR of 8.7% throughout 2034. Biochar is a leading contributor within this market, thanks to its reliability in both carbon sequestration and enhancing soil quality. Created through pyrolysis, this porous material improves water retention, increases microbial life, and supports nutrient cycling in soil ecosystems. Innovations in technology, such as more mobile pyrolysis units and feedstock optimization techniques, are making biochar easier and more affordable to produce. This is expanding its adoption among large-scale farms and sustainability-driven enterprises. However, challenges such as inconsistent quality of feedstock inputs and the lack of standardized certification frameworks still need to be addressed to ensure broader market reliability and trust.

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In 2024, the cropland applications segment held 57.1% share and is expected to grow at a CAGR of 8.5% from 2025 through 2034. Cropland remains the dominant application area for mineral soil amendments, with increased use of materials like lime, basalt, and biochar to boost productivity and carbon sequestration. Farmers are turning to these inputs to retain moisture, stabilize nutrients, and boost yields, all while meeting climate goals. These soil treatments are not just improving the land's performance—they're also helping to offset emissions by storing carbon underground. As demand for sustainable agriculture increases, cropland applications are proving critical in the shift toward regenerative and carbon-conscious farming systems. North America Mineral Soil Amendments for Carbon Sequestration Market generated USD 220.9 million in 2024. United States maintained its dominant position with an 80% share, translating to USD 149.2 million. The U.S. has emerged as a frontrunner due to its progressive farming practices and significant financial support for sustainable agriculture initiatives. Research institutions, private companies, and government agencies are collaborating to enhance the use of soil amendments that trap carbon and improve soil vitality. This approach is backed by a framework of policies, subsidies, and state-level programs that support implementation, making the U.S. a key force in driving innovation and adoption across the region.

Leading entities operating in the Global Mineral Soil Amendments for Carbon Sequestration Market include Indigo Agriculture, Mati Carbon, Lithos Carbon, Biochar Supreme, Nori, Pacific Biochar, Regen Network, Cool Planet, Soil Capital, UNDO Carbon Ltd., InPlanet, Dagan, Carbonfuture, Silicate, and Carbofex. These companies play a crucial role in scaling up climate-smart soil solutions and advancing product availability. Many are investing in R&D to develop high-performance mineral blends and biochar products tailored for various soil types and climates. Strategic partnerships with agricultural cooperatives and carbon offset platforms are helping to build robust supply chains and access new customer segments. Some firms are focusing on building mobile processing units and localized production hubs to reduce logistics costs and increase adoption rates. Additionally, several players are working toward certification and verification frameworks to enhance market trust and integrate their products into carbon credit systems. This multifaceted approach enables them to remain competitive and expand their reach in a rapidly evolving market.

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Comprehensive Market Analysis and Forecast

- Industry trends, key growth drivers, challenges, future opportunities, and regulatory landscape
- Competitive landscape with Porter's Five Forces and PESTEL analysis
- Market size, segmentation, and regional forecasts
- In-depth company profiles, business strategies, financial insights, and SWOT analysis

Table of Contents:

Report Content

Chapter 1 Methodology & Scope

- 1.1 Market scope & definitions
- 1.2 Base estimates & calculations
- 1.3 Forecast calculations
- 1.4 Data sources
 - 1.4.1 Primary
 - 1.4.2 Secondary
 - 1.4.2.1 Paid sources
 - 1.4.2.2 Public sources

Chapter 2 Executive Summary

- 2.1 Industry synopsis, 2021-2034

Chapter 3 Industry Insights

- 3.1 Industry ecosystem analysis

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- 3.1.1 Supplier Landscape
- 3.1.2 Profit Margin
- 3.1.3 Value addition at each stage
- 3.1.4 Factor affecting the value chain
- 3.1.5 Disruptions
- 3.2 Impact forces
 - 3.2.1 Growth drivers
 - 3.2.1.1 Climate policy and net-zero commitments
 - 3.2.1.2 Carbon credit market development and pricing
 - 3.2.1.3 Agricultural sustainability and soil health initiatives
 - 3.2.1.4 Technology advancement and cost reduction
 - 3.2.2 Industry pitfalls & challenges
 - 3.2.2.1 High implementation costs and economic barriers
 - 3.2.2.2 Measurement, reporting, and verification complexity
 - 3.2.3 Market opportunities
- 3.3 Growth potential analysis
- 3.4 Regulatory landscape
- 3.5 Porter's analysis
- 3.6 PESTEL analysis
- 3.7 Price trends
 - 3.7.1 By region
 - 3.7.2 By product
- 3.8 Future market trends
- 3.9 Technology and Innovation landscape
- 3.10 Patent Landscape
- 3.11 Trade statistics (HS code) (Note: the trade statistics will be provided for key countries only)
 - 3.11.1 Major importing countries
 - 3.11.2 Major exporting countries
- 3.12 Sustainability and environmental aspects
 - 3.12.1 Sustainable practices
 - 3.12.2 Waste reduction strategies
 - 3.12.3 Energy efficiency in production
 - 3.12.4 Eco-friendly initiatives

Chapter 4 Competitive Landscape, 2024

- 4.1 Introduction
- 4.2 Company market share analysis
 - 4.2.1 By region
 - 4.2.1.1 North America
 - 4.2.1.2 Europe
 - 4.2.1.3 Asia Pacific
 - 4.2.1.4 Latin America
 - 4.2.1.5 Middle East Africa
- 4.3 Company matrix analysis
- 4.4 Competitive analysis of major market players
- 4.5 Competitive positioning matrix
- 4.6 Key developments

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- 4.6.1 Mergers & acquisitions
- 4.6.2 Partnerships & collaborations
- 4.6.3 New product launches
- 4.6.4 Expansion plans

Chapter 5 Market Estimates & Forecast, By Amendment Type, 2021-2034 (USD Million) (Kilo Tons)

- 5.1 Key trends
- 5.2 Biochar
- 5.3 Enhanced weathering materials
 - 5.3.1 Basalt and olivine
 - 5.3.2 Other silicate minerals (e.g., wollastonite, serpentine)
- 5.4 Lime and limestone applications
- 5.5 Zeolites and clay minerals
- 5.6 Organic-mineral hybrid amendments
- 5.7 Emerging amendment technologies
- 5.8 Nano-enhanced mineral amendments
- 5.9 Functionalized carbon materials
- 5.10 Microbial-mineral combinations

Chapter 6 Market Estimates & Forecast, By Application, 2021-2034 (USD Million) (Kilo Tons)

- 6.1 Key trends
- 6.2 Cropland applications
 - 6.2.1 Annual crop systems
 - 6.2.2 Perennial crop systems
 - 6.2.3 Soil health and productivity enhancement
- 6.3 Grassland and pasture management
 - 6.3.1 Livestock grazing systems
 - 6.3.2 Forage production enhancement
 - 6.3.3 Carbon sequestration in grasslands
- 6.4 Forestry and agroforestry
 - 6.4.1 Forest soil management
 - 6.4.2 Agroforestry systems
 - 6.4.3 Tree plantation management
- 6.5 Land restoration and rehabilitation
 - 6.5.1 Degraded land recovery
 - 6.5.2 Mine site rehabilitation
 - 6.5.3 Wetland and riparian restoration

Chapter 7 Market Estimates & Forecast, By End Use Sector, 2021-2034 (USD Million) (Kilo Tons)

- 7.1 Key trends
- 7.2 Commercial agriculture
 - 7.2.1 Large-scale farming operations
 - 7.2.2 Precision agriculture integration
 - 7.2.3 Sustainable agriculture certification
- 7.3 Smallholder and family farming
 - 7.3.1 Small-scale producer applications
 - 7.3.2 Extension service integration

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- 7.3.3 Financial inclusion and support
- 7.4 Carbon farming and offset projects
 - 7.4.1 Dedicated carbon sequestration projects
 - 7.4.2 Voluntary carbon market integration
 - 7.4.3 Compliance carbon market applications
- 7.5 Research and development
 - 7.5.1 Academic research institutions
 - 7.5.2 Private sector R&D
 - 7.5.3 Pilot and demonstration projects
- 7.6 Government and public sector
 - 7.6.1 National climate programs
 - 7.6.2 Agricultural policy implementation
 - 7.6.3 Land management agencies

Chapter 8 Market Estimates & Forecast, By Region, 2021-2034 (USD Million) (Kilo Tons)

- 8.1 Key trends
- 8.2 North America
 - 8.2.1 U.S.
 - 8.2.2 Canada
- 8.3 Europe
 - 8.3.1 Germany
 - 8.3.2 UK
 - 8.3.3 France
 - 8.3.4 Spain
 - 8.3.5 Italy
 - 8.3.6 Rest of Europe
- 8.4 Asia Pacific
 - 8.4.1 China
 - 8.4.2 India
 - 8.4.3 Japan
 - 8.4.4 Australia
 - 8.4.5 South Korea
 - 8.4.6 Rest of Asia Pacific
- 8.5 Latin America
 - 8.5.1 Brazil
 - 8.5.2 Mexico
 - 8.5.3 Argentina
 - 8.5.4 Rest of Latin America
- 8.6 MEA
 - 8.6.1 Saudi Arabia
 - 8.6.2 South Africa
 - 8.6.3 UAE
 - 8.6.4 Rest of Middle East and Africa

Chapter 9 Company Profiles

- 9.1 UNDO Carbon Ltd.
- 9.2 InPlanet

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- 9.3 Silicate
- 9.4 Lithos Carbon
- 9.5 Mati Carbon
- 9.6 Carbonfuture
- 9.7 Pacific Biochar
- 9.8 Biochar Supreme
- 9.9 Carbofex
- 9.10 Cool Planet
- 9.11 Nori
- 9.12 Indigo Agriculture
- 9.13 Regen Network
- 9.14 Soil Capital
- 9.15 Dagan

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