

Biological Seed Treatment Market Size & Share Analysis - Growth Trends and Forecast (2025 - 2030)

> **Industry:** Biologicals, Biopesticides & Crop Protection (Agriculture & Agribusiness)
> **Source:** <https://www.mordorintelligence.com/industry-reports/biological-seed-treatment-market>
> **Scraped Date:** 2026-09-17

Executive Market Summary

Market Metric	Details
Base Market Size	USD 1.63 billion
Projected Forecast (2031)	USD 1.63 billion
Growth Rate (CAGR)	11.10 %
Largest Market Region	N/A
Fastest-Growing Region	N/A

Market Visualizations & Infographics

! [Major players in Biological Seed Treatment industry] (images/chart_2.png)

! [Biological Seed Treatment Market Size] (images/chart_3.png)

! [Biological Seed Treatment Market Share by Type, 2024] (images/chart_4.png)

! [Biological Seed Treatment Market Share by Crop Type, 2024] (images/chart_5.png)

! [Biological Seed Treatment Market Growth Rate by Region] (images/chart_6.png)

! [Biological Seed Treatment Market Concentration] (images/chart_7.png)

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Comprehensive Research Analysis

Overview Points List Flex 49 Share Feature End

Market OverviewStudy Period | 2017 - 2030 |
Market Size (2025) | USD 1.63 Billion |
Market Size (2030) | USD 2.76 Billion |
Growth Rate (2025 - 2030) | 11.10 % |
Fastest Growing Market | North America |
Largest Market | Asia Pacific |
Market Concentration | Medium |
Major Players*Disclaimer: Major Players sorted in no particular order

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Market Overview

Biological Seed Treatment Market Analysis by Mordor Intelligence The biological seed treatment market size stands at USD 1.63 billion in 2025 and is forecast to reach USD 2.76 billion by 2030, translating into an 11.1% CAGR for the period. This momentum is anchored in regulatory shifts that favor biological inputs, proven yield gains of up to 21%, and disease-control efficacy reaching 55% in controlled trials. In 2024, mandatory residue limits in controlled-environment agriculture, a EUR 1.6 billion (USD 1.7 billion) European biocontrol push, and rising investments in agricultural biotechnology in China and India further elevate demand [1]Source: European Commission Directorate-General for Health and Food Safety, "Sustainable Use of Pesticides Directive," ec.europa.eu. . . Competitive intensity is moderate; the top five companies hold a significant share, enabling innovators to capture emerging niches through nano-encapsulation and precision application technologies. The market is experiencing significant structural changes in its supply chain and distribution networks. Major agricultural input companies are establishing dedicated biological product divisions and investing in specialized production facilities. For instance, in May 2022, Corteva Agriscience opened a new Center for Seed Applied Technologies (CSAT) laboratory in South Africa, demonstrating the industry's commitment to regional expansion and technological advancement.

Key Report Takeaways* By type, Microbial held 70.4% of the Biological seed treatment market share in 2024, while botanicals are predicted to grow at a 14.2% CAGR through 2030.

* By function, seed protection held 43.0% of the biological seed treatment market size in 2024, while Seed enhancement emerges as the fastest-growing segment at a 12.8% CAGR to 2030.

* By crop type, grains and cereals accounted for a 39.5% share of the biological seed treatment market size in 2024, and vegetables recorded the highest projected CAGR at 11.4% through 2030.

* By geography, North America led with 33.2% revenue share in 2024, whereas Asia-Pacific is forecast to post the fastest regional CAGR at 13.7% to 2030.

Key Market Trends

Market Trends and Insights Drivers Impact Analysis of Biological Seed Treatment Market*Driver | (~) % Impact on CAGR Forecast | Geographic Relevance | Impact Timeline |

Rising adoption of organic and sustainable agriculture | +2.8% | North America and Europe lead, global relevance | Medium term (2-4 years) |

Regulatory support and subsidies for bio-based inputs | +2.1% | North America, Europe, Brazil, India | Short term (≤ 2 years) |

Higher yields and stress tolerance delivered by bio-priming | +1.9% | Asia-Pacific, South America, and global | Medium term (2-4 years) |

Growing R&D investment from agro-biotech firms | +1.7% | North America, Europe, and China | Long term (≥ 4 years) |

Expansion of controlled-environment agriculture requiring residue-free seeds | +1.4% | North America, Europe, Japan, and Singapore | Short term (≤ 2 years) |

Source: Mordor Intelligence |

Competitive Landscape

Competitive Landscape

The biological seed treatment market exhibits moderate concentration, with the top players including BASF SE, Bayer AG, Syngenta AG, Corteva Agriscience, and Novozymes. These players are creating opportunities for specialized biological com

panies to capture white-space segments through innovative formulations and targeted crop applications. The competitive landscape favors companies with proprietary microbial strain libraries, regulatory expertise, and global distribution networks that can navigate complex approval processes while scaling production efficiently. Emerging disruptors like Indigo Ag deploy digital-biological platforms that integrate seed treatment with precision agriculture systems, creating differentiated value propositions that established players struggle to replicate quickly.

Technology convergence around nano-encapsulation, precision application systems, and multi-functional formulations is reshaping competitive dynamics as companies invest in R&D capabilities that enable sustainable differentiation. Patent analysis reveals increasing focus on controlled-release mechanisms and microbial strain optimization, with companies filing 340% more biological seed treatment patents in 2024 compared to 2020, indicating intensifying innovation competition.

Opportunities exist in specialized crop segments, emerging markets with inadequate cold-chain infrastructure, and controlled environment agriculture applications where biological treatments command premium pricing without direct synthetic competition. The competitive intensity reflects industry recognition that biological platforms offer sustainable advantages through proprietary technologies and regulatory positioning that create barriers to entry for new competitors while enabling market share capture from synthetic alternatives.

Biological Seed Treatment Industry Leaders* BASF SE

- * Bayer AG
- * Syngenta AG
- * Corteva Agriscience
- * Novozymes A/S

* *Disclaimer: Major Players sorted in no particular order
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Component Component 3 Scope Of The Report Bottom

Global Biological Seed Treatment Market Report ScopeBiological seed treatments include active ingredients such as microbes (fungi and bacteria), plant extracts, and algae extracts. These treatments are applied to seeds in either powder or liquid form before planting. The Biological Seed Treatment Market is segmented by Function (Seed Protection, Seed Enhancement, and Other Functions), Crop Type (Grains and Cereal, Oil Seeds, Vegetables, and Other Crop Types), Geography (North America, Europe, Asia-Pacific, South America, and Middle-East and Africa). The report offers market size and forecasts in terms of value (USD) for all the above segments.

TypeMicrobial |
Botanicals |
Others (biofermentation products and natural polymers & derivatives) |

Segmentation Accordion Item

GeographyNorth America | United States |
| Canada |
| Mexico |
| Rest of North America |
Europe | Spain |
| United Kingdom |
| France |

- | Germany |
- | Russia |
- | Italy |
- | Rest of Europe |
- Asia-Pacific | China |
- | Japan |
- | India |
- | Thailand |
- | Vietnam |
- | Australia |
- | Rest of Asia-Pacific |
- South America | Brazil |
- | Argentina |
- | Rest of South America |
- | Middle East and Africa |

Frequently Asked Questions

How fast is the biological seed treatment market expected to grow to 2030?

It is projected to post an 11.1% CAGR, rising from USD 1.63 billion in 2025 to USD 2.76 billion in 2030.

Which region leads the current demand for biological seed treatments?

North America holds the largest share at 33.2% owing to advanced infrastructure and favorable EPA(Environmental Protection Agency) approvals.

Which segment is expanding the quickest within the market?

Seed enhancement functions are forecast to grow at a 12.8% CAGR as growers adopt multi-benefit formulations.

Why are vegetables a high-growth crop category for biological treatments?

Greenhouse and hydroponic systems demand residue-free seeds, and premium pricing offsets higher input costs, driving an 11.4% CAGR.

What technological trend is helping biological products reach new markets?

Nano-encapsulation extends shelf life to 18-24 months under ambient temperatures, reducing cold-chain dependence and logistics costs.