

**Biopesticides Market by Type (Bioinsecticides, Biofungicides, Bionematicides), Crop Type (Cereals & Grains, Oilseeds & Pulses), Formulation (Liquid and Dry), Source (Microbials, Biochemicals), Mode of Application, & Region - Global Forecast to 2029**

Market Report | 2024-10-02 | 354 pages | MarketsandMarkets

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**Report description:**

The global biopesticides market is estimated at USD 7.72 billion in 2024 and is projected to reach USD 15.66 billion by 2029, at a CAGR of 15.2% during the forecast period. The adoption of AI in the biopesticides industry is transforming product development, enhancing pest control effectiveness, and optimizing market strategies. Companies, such as FMC Corporation, are using AI to rapidly discover and commercialize new biopesticides. In May 2024, FMC Corporation announced a collaboration with Optibrium, the lead AI solutions company for small molecule discovery, as part of its strategic move to expand its discovery process. Coupled with Optibrium's Augmented Chemistry AI technologies, this will speed up the discovery of promising compounds and optimize their properties in the development of new sustainable solutions for growers. As AI continues to play a critical role in sustainable product development, it positions the biopesticides market for significant growth and innovation.

Opportunities and disruption in the biopesticides market

Biopesticides offer significant business opportunities for both farmers and manufacturers, driven by the increasing shift toward sustainable agriculture. For the farmer, the use of biopesticides can reduce dependency on chemical pesticides, improve crop quality, and enjoy consumers' demand for ecological-friendly products, thus opening up improved profitability and access to markets. Manufacturer benefits from this trend in that the global demand for sustainable agricultural inputs, which are increasing in demand, provide opportunities to expand the product portfolios, invest in R&D, and tie up strategic alliances. Thus, the prospects of this emerging market landscape are promising and lead to long-term sustainability and growth across the agricultural supply chain. The biopesticides market is experiencing significant disruptions driven by technological advancements, regulatory changes, and evolving consumer preferences. Some of the key disruptions in the biopesticides market include:

- AI-driven product discovery: Artificial intelligence (AI) and machine learning are accelerating the identification and optimization of active compounds in biopesticides, which help in fast and efficient product development.

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-□Advanced delivery technologies: Innovations like microencapsulation and controlled-release formulations improve the performance of biopesticides by enhancing their efficiency and durability.

-□Precision application technologies: The integration of drones, smart sensors, and GPS-based tools helps in accurate and efficient application of biopesticides, hence reducing the wastage of product.

"In 2023, Bioinsecticides stood as the major segment within the type segment of the biopesticides market. "

The bioinsecticides hold a major share in the segment type of biopesticides market because of their potential to target an enormous range of insect pests while remaining nontoxic to many other beneficial organisms. These include biopesticides emanating from natural sources, bacteria, fungi, and plant extracts that reportedly are harmless and serve as alternatives for chemical insecticides. Due to increasing awareness of pesticide resistance and lethal effects on the environment and human health from synthetic chemicals, bioinsecticides have emerged among the favored options for integrated pest management. Its aptitude for sustainable pest control delivery across different crops, especially high-valued fruit and vegetable production, sustained the leading edge in the biopesticides market.

"Within the formulation segment, liquid formulation holds the highest share."

Liquid formulation holds the maximum share in the biopesticides market due to its wide usage and versatility. They are preferred for the ease of application and better coverage of large acres. Liquid biopesticides provide a high active content, which is required in commercial formulation as they aid with spray drifting. Rovensa Next launched a new biofungicide named Milarum in Brazil in June 2024. FMC India introduced ENTAZIA biofungicide in August 2023. Both are liquid products in form, bringing extra versatility and value to their applications.

"Europe is expected to grow at the highest rate in the global biopesticides market."

The European region is expected to record the highest growth rate in the global pesticides market due to increasing demand for organic and sustainable farming practices, stringent environmental regulations, and strong governmental support towards environmental-friendly crop protection solutions. The regional market has concentrated on the decline in the utilization of chemical pesticides, increasing integrated pest management, thereby accelerating the demand for biopesticides and other alternative solutions in the region. The "Farm to Fork" strategy by the European Commission includes the ambition of using 25% of EU farmland for organic farming by 2030. An action plan is designed within the strategy that offers direct financial support to organic producers on a per-hectare payment basis, thus incentivizing the adoption and long-term maintenance of organic farming practices. This kind of incentive will go a long way in fast-tracking the conversion process to organic agriculture. These per-hectare payments are justified to incentivize the positive externalities associated with organic farming and are partly financed by pesticide taxes. This approach creates a favorable environment for the biopesticides market in Europe.

The Break-up of Primaries:

By Company Type: Tire 1- 35%, Tire 2- 40%, Tire 3- 25%

By Designation: CXOs - 30%, Managers - 50%, Executives - 20%

By Region: North America - 25%, Europe - 25%, Asia Pacific - 30%, South America - 10%, RoW - 10%

Key players in this market include BASF SE (Germany), Bayer AG (Germany), Syngenta Group (Switzerland), UPL (India), Corteva (US), FMC Corporation (US), Nufarm (Australia), Sumitomo Chemical Co., Ltd. (Japan), Certis USA L.L.C. (US), Bioceres Crop Solutions (Argentina), Novonosis Group (Denmark), Koppert (Netherlands), Biobest Group NV (Belgium), Gowan Company (US), and Lallemand Inc (Canada).

Research Coverage:

The report segments the biopesticides market based on type, crop type, mode of application, source, formulation, and region. In terms of insights, this report has focused on various levels of analyses-the competitive landscape, end-use analysis, and company profiles, which together comprise and discuss views on the emerging & high-growth segments of the biopesticides market, high-growth regions, countries, government initiatives, drivers, restraints, opportunities, and challenges. A detailed analysis of the key industry players has been done to provide insights into their business overview, solutions, services, key strategies, Contracts, partnerships, and agreements. New product launches, mergers and acquisitions, and recent developments associated with the biopesticides market. Competitive analysis of upcoming startups in the biopesticides market ecosystem is covered in this report.

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Reasons to buy this report:

The report will help the market leaders/new entrants in this market with information on the closest approximations of the revenue numbers for the overall biopesticides market and the subsegments. This report will help stakeholders understand the competitive landscape and gain more insights to position their businesses better and plan suitable go-to-market strategies. The report also helps stakeholders understand the pulse of the market and provides them with information on key market drivers, restraints, challenges, and opportunities. The report provides insights on the following pointers:

- Analysis of key drivers (increase in exports of fruits & vegetables, chemical pesticide bans and awareness programs by government agencies, and increase in organic food sales) restraints (technological limitations to use biological products and slow and variable performance) opportunities (advancements in microbial research by key players and adaption and increase in IPM practices) and challenges (high cost of biopesticides compared to synthetic pesticides and lack of awareness and technical knowledge among farmers).
- Product Development/Innovation: Detailed insights on research & development activities and new product launches in the biopesticides market.
- Market Development: Comprehensive information about lucrative markets - the report analyses the biopesticides market across varied regions.
- Market Diversification: Exhaustive information about new products, untapped geographies, recent developments, and investments in the biopesticides market
- Competitive Assessment: In-depth assessment of market shares, growth strategies, and product offerings of leading players like BASF SE (Germany), Bayer AG (Germany), Syngenta Group (Switzerland), UPL (India), Corteva (US), FMC Corporation (US), Nufarm (Australia), Sumitomo Chemical Co., Ltd. (Japan), Certis USA L.L.C. (US), Bioceres Crop Solutions (Argentina), Novonosis Group (Denmark), Koppert (Netherlands), Biobest Group NV (Belgium), Gowan Company (US), and Lallemand Inc (Canada) in the biopesticides market.

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