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Agriculture Biotechnology Market by Type of Organism (Plant, Animal, and Microbes), by Type, by Technology, and by Application - Global Forecast to 2030

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Abstracts

The agriculture biotechnology market is estimated at USD 92.19 billion in 2025 and is projected to reach USD 144.25 billion by 2030, at a CAGR of 9.4%.

The growth of the agriculture biotechnology market is mainly driven by increasing global food demand, diminishing arable land, and the need for sustainable farming solutions. Biotechnology provides advanced methods to increase crop yields, improve soil health, and boost livestock productivity while reducing environmental impact. The rising use of genetically modified (GM) crops, microbial inoculants, and biofertilizers supports better resource management and less reliance on chemicals. Moreover, climate change pressures have sped up the adoption of drought-tolerant and pest-resistant crop varieties, ensuring greater resilience in farming. Governments and international groups are encouraging biotech innovations through supportive regulations, research funding, and sustainability efforts. Additionally, quick progress in genome editing, molecular diagnostics, and microbial engineering is broadening the use of agricultural biotechnology in plant, animal, and microbial systems. Collectively, these factors are driving a shift toward high-tech, eco-friendly, and high-yield agriculture worldwide.

“Plant biotechnology is projected to dominate the market during the forecast period.”

The plant biotechnology segment is expected to dominate the global agriculture biotechnology market during the forecast period. This leadership is due to widespread adoption of genetically modified (GM) crops, advancements in seed trait development, and increased use of biofertilizers and biopesticides. Rising global food demand,

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combined with the need for higher crop yields with limited natural resources, is fueling the adoption of plant biotechnology solutions. Farmers are increasingly opting for GM varieties that offer herbicide tolerance, pest resistance, and improved stress tolerance to achieve better yields and profits. Additionally, innovations in CRISPR and molecular breeding technologies are enhancing precision in crop improvement, enabling faster commercialization of new varieties. Supportive government policies promoting sustainable agriculture, along with public-private R&D investments, are further reinforcing this segment's position. The growing need for climate-resilient and nutrient-rich crops will continue to make plant biotechnology a key driver of innovation in modern agriculture throughout the forecast period.

"The genetic engineering and genome editing subsegment is projected to dominate the agriculture biotechnology market during the forecast period."

The genetic engineering and genome editing segment is expected to lead the agriculture biotechnology market during the forecast period due to its transformative effect on crop and livestock improvement. Technologies like CRISPR-Cas9, TALEN, and RNA interference (RNAi) are allowing scientists to create precise, high-yield varieties with better yield, stress tolerance, and nutritional content. An example is Calyxt's gene-edited soybean, which produces healthier high-oleic oil and was among the first CRISPR-based crops to be commercialized in the US. Likewise, Corteva Agriscience has developed drought-tolerant maize using advanced gene-editing methods, greatly enhancing resilience in water-scarce areas.

In livestock, Genus PLC has developed pigs resistant to Porcine Reproductive and Respiratory Syndrome (PRRS), a breakthrough that enhances animal welfare and cuts economic losses. Governments in Brazil, the US, and Argentina have also relaxed regulations on gene-edited crops, supporting faster commercialization. Supported by strong R&D investments, global partnerships, and evolving biosafety frameworks, genetic engineering and genome editing are set to remain the leading technologies that drive efficiency, sustainability, and innovation in agricultural biotechnology through 2030.

"Asia Pacific is projected to be the fastest-growing market during the forecast period."

The Asia Pacific region is expected to see the fastest growth in the agriculture biotechnology market during the forecast period, fueled by increasing food demands, expanding agricultural modernization, and government-supported initiatives that promote sustainable farming practices. Countries like China, India, Japan, and the

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Philippines are increasingly investing in biotechnology R&D to improve crop yields, livestock health, and soil fertility. The rising adoption of genetically modified (GM) crops, microbial biofertilizers, and bio-based pest control products is transforming the region's agricultural landscape.

India's approval of GM mustard (Dhara Mustard Hybrid-11) in 2023 and China's increasing commercialization of gene-edited soybean and maize varieties highlight the region's progressive regulatory approach. Additionally, strong support from regional organizations and public-private partnerships is driving innovation in genome editing, fermentation technologies, and microbial applications. With rapid population growth, limited arable land, and growing focus on food security, the Asia Pacific region is expected to remain the most dynamic and opportunity-rich area in the agriculture biotechnology market through 2030.

In-depth interviews were conducted with chief executive officers (CEOs), directors, and other executives from various key organizations in the agriculture biotechnology market.

By Company Type: Tier 1–25%, Tier 2–45%, and Tier 3–30%

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

By Region: North America–25%, Europe–20%, Asia Pacific–30%, South America–15%, and Rest of the World–10%

Prominent companies in the market include Bayer Crop Science, Corteva Agriscience, BASF SE, Syngenta AG, Zoetis Inc., Elanco Animal Health, and Novonesis (Novozymes and Chr. Hansen)

Research Coverage

This research report categorizes the agriculture biotechnology market by organism type (plants, animals, microbes), type (genetic modification, crop protection, soil enhancement, stress tolerance, transgenic animals, vaccines, feed additives, diagnostics, biofertilizers, biocontrol agents, microbial enzymes & biostimulants, microbial genomics & fermentation), technology (genetic engineering, molecular diagnostics, tissue culture, CRISPR, fermentation, metagenomics, synthetic biology, and molecular marker-assisted selection), application (crop protection, yield enhancement, disease resistance, animal health management, soil health improvement,

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and sustainable nutrient cycling), end user (farmers and producer groups, agribusinesses, seed and input companies, research institutions, and government agencies), and region (North America, Europe, Asia Pacific, South America, the Middle East, and Africa).

The report's scope includes detailed information about major factors such as drivers, restraints, challenges, and opportunities that influence the growth of agricultural biotechnology. A comprehensive analysis of key industry players offers insights into their businesses, services, key strategies, contracts, partnerships, agreements, product launches, mergers and acquisitions, and recent developments in the agriculture biotechnology market. This report also features a competitive analysis of emerging startups within the agriculture biotechnology ecosystem. Additionally, the study covers industry-specific trends such as technology analysis, ecosystem and market mapping, and patent and regulatory landscapes, among other topics.

Reasons to Buy This Report

The report will provide market leaders and new entrants with approximate revenue figures for the overall agriculture biotechnology sector and its subsegments. It will also help stakeholders understand the competitive landscape and gain insights to better position their businesses and develop effective go-to-market strategies. Additionally, the report helps stakeholders grasp the market pulse and offers information on key market drivers, restraints, challenges, and opportunities.

The report provides insights into the following points.

Analysis of key drivers (growing demand for sustainable and high-yield biotechnology-based agriculture), restraints (high regulatory hurdles and lengthy approval processes for GMOs), opportunities (increasing adoption of microbial and bio-based agricultural inputs globally), and challenges (public skepticism and ethical concerns over genetic modification technologies) influencing the growth of the agriculture biotechnology market

Product Development/Innovation: Detailed insights into ongoing R&D initiatives in genome editing, CRISPR applications, microbial biofertilizers, and biocontrol agents are included, along with emerging product launches across plant, animal, and microbial biotechnology segments.

Market Development: The report offers comprehensive information about

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expanding market opportunities across developed and emerging regions, emphasizing growing investment in biotechnology-enabled agriculture.

Market Diversification: Includes detailed analysis of new product innovations, regional adoption patterns, government-funded biotechnology initiatives, and expansion of key players into new applications such as climate-resilient crops and animal health solutions.

Competitive Assessment: In-depth assessment of market share, company strategies, product portfolios, and innovation footprints of leading players such as Bayer AG (Germany), Corteva Agriscience (US), BASF SE (Germany), Syngenta AG (Switzerland), Novonesis (Denmark), Ginkgo Bioworks (US), Zoetis Inc. (US), and ADM Animal Nutrition (US), among others in the agriculture biotechnology ecosystem.

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12 AGRICULTURE BIOTECHNOLOGY MARKET, BY APPLICATION

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14 AGRICULTURE BIOTECHNOLOGY MARKET, BY REGION

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15 COMPETITIVE LANDSCAPE

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List Of Tables

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List Of Figures

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