

Agricultural Biotechnology Market Size, Share, Trends, Analysis, and Forecast 2025-2034 | Global Industry Growth, Competitive Landscape, Opportunities, and Challenges

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Abstracts

Global Agricultural Biotechnology Market is valued at USD 60.5 billion in 2025. Further, the market is expected to grow at a CAGR of 9.6% to reach USD 137.8 billion by 2034.

The agricultural biotechnology market is growing rapidly, driven by increasing demand for high-yielding and climate-resilient crops. Agricultural biotechnology involves genetic modification (GM), gene editing, and molecular breeding techniques to develop crops with improved traits such as drought tolerance, pest resistance, and enhanced nutritional content. Biotechnology is also being used to develop bioengineered seeds, biopesticides, and microbial solutions that improve agricultural productivity. With rising global food demand and climate change challenges, biotechnology is playing a crucial role in ensuring food security and sustainable farming. The expansion of precision breeding and genome editing tools, such as CRISPR, is further accelerating market advancements.

In 2024, the agricultural biotechnology market is witnessing significant progress in gene editing technologies, with CRISPR-based crops gaining regulatory approvals in multiple countries. Innovations in synthetic biology are leading to the development of engineered microbes that enhance nitrogen fixation and reduce the need for synthetic fertilizers. The integration of AI in plant breeding is optimizing genetic trait selection, improving crop resilience and productivity. Governments worldwide are investing in biotech research to develop climate-resilient crops, addressing challenges posed by extreme weather conditions. Additionally, the expansion of cellular agriculture and lab-grown food technology is opening new opportunities for biotech-driven agricultural solutions.

Looking ahead to 2025 and beyond, the agricultural biotechnology market is expected to see broader adoption of RNA interference (RNAi) technology for pest and disease management. AI-powered bioinformatics tools will enhance the precision of crop improvement programs, reducing breeding cycles and accelerating genetic advancements. The commercialization of genome-edited crops with improved taste, nutritional value, and shelf life will gain traction. The integration of agricultural biotechnology with vertical farming and controlled environment agriculture (CEA) will enhance food production efficiency in urban areas. As global food security concerns intensify, biotechnology will remain a key driver of agricultural innovation, ensuring resilient and sustainable farming systems.

Key Market Trends

Advancements in CRISPR Gene Editing: CRISPR-based genome editing is transforming agricultural biotechnology by enabling precise genetic modifications.

Expansion of Bioengineered Microbes: Engineered microbes are being developed to enhance soil health and nutrient uptake, reducing dependency on chemical inputs.

Rise of RNA Interference (RNAi) Technology: RNAi-based solutions are gaining traction for targeted pest and disease management in crops.

AI-Powered Crop Breeding: AI-driven data analytics are improving genetic trait selection and accelerating crop breeding processes.

Integration with Vertical and Smart Farming: Biotechnology is being integrated into controlled environment agriculture (CEA) to enhance urban food production.

Key Market Drivers

Rising Global Food Demand: Population growth and food security concerns are driving the adoption of biotech crops with higher yields and nutritional benefits.

Climate Change and Crop Resilience Needs: Biotech innovations are helping develop crops that can withstand extreme weather conditions and climate-related stress.

Government Investments in Agricultural R&D: Public and private sector funding is accelerating research in agricultural biotechnology.

Reduction in Chemical Fertilizer and Pesticide Use: Biotechnology is providing sustainable alternatives to reduce reliance on synthetic agrochemicals.

Key Market Challenge

Regulatory and Ethical Concerns: The approval and commercialization of genetically modified crops face regulatory hurdles and public resistance in certain regions.

Market Segmentation

By Organism Type

Plants

Animal

Microbes

By Technology

Genetic Engineering

Tissue Culture

Embryo Rescue

Somatic Hybridization

Molecular Diagnostics

Vaccine

Other Technologies

By Application

Vaccine Development

Transgenic Crop And Animals

Antibiotic Development

Nutritional Supplements

Flower Culturing

Biofuels

By Geography

North America (USA, Canada, Mexico)

Europe (Germany, UK, France, Spain, Italy, Rest of Europe)

Asia-Pacific (China, India, Japan, Australia, Vietnam, Rest of APAC)

The Middle East and Africa (Middle East, Africa)

South and Central America (Brazil, Argentina, Rest of SCA)

What You Receive

Global Agricultural Biotechnology market size and growth projections (CAGR), 2024- 2034

Impact of recent changes in geopolitical, economic, and trade policies on the demand and supply chain of Agricultural Biotechnology.

Agricultural Biotechnology market size, share, and outlook across 5 regions and 27 countries, 2025- 2034.

Agricultural Biotechnology market size, CAGR, and Market Share of key products, applications, and end-user verticals, 2025- 2034.

Short and long-term Agricultural Biotechnology market trends, drivers, restraints, and opportunities.

Porter's Five Forces analysis, Technological developments in the Agricultural Biotechnology market, Agricultural Biotechnology supply chain analysis.

Agricultural Biotechnology trade analysis, Agricultural Biotechnology market price analysis, Agricultural Biotechnology Value Chain Analysis.

Profiles of 5 leading companies in the industry- overview, key strategies, financials, and products.

Latest Agricultural Biotechnology market news and developments.

The Agricultural Biotechnology Market international scenario is well established in the report with separate chapters on North America Agricultural Biotechnology Market, Europe Agricultural Biotechnology Market, Asia-Pacific Agricultural Biotechnology Market, Middle East and Africa Agricultural Biotechnology Market, and South and Central America Agricultural Biotechnology Markets. These sections further fragment the regional Agricultural Biotechnology market by type, application, end-user, and country.

Who can benefit from this research

The research would help top management/strategy formulators/business/product development/sales managers and investors in this market in the following ways

1. The report provides 2024 Agricultural Biotechnology market sales data at the global, regional, and key country levels with a detailed outlook to 2034, allowing companies to calculate their market share and analyze prospects, uncover new markets, and plan market entry strategy.
2. The research includes the Agricultural Biotechnology market split into different types and applications. This segmentation helps managers plan their products and budgets based on the future growth rates of each segment
3. The Agricultural Biotechnology market study helps stakeholders understand the breadth and stance of the market giving them information on key drivers, restraints, challenges, and growth opportunities of the market and mitigating risks
4. This report would help top management understand competition better with a detailed

SWOT analysis and key strategies of their competitors, and plan their position in the business

5. The study assists investors in analyzing Agricultural Biotechnology business prospects by region, key countries, and top companies' information to channel their investments.

Available Customizations

The standard syndicate report is designed to serve the common interests of Agricultural Biotechnology Market players across the value chain and include selective data and analysis from entire research findings as per the scope and price of the publication.

However, to precisely match the specific research requirements of individual clients, we offer several customization options to include the data and analysis of interest in the final deliverable.

Some of the customization requests are as mentioned below –

Segmentation of choice – Our clients can seek customization to modify/add a market division for types/applications/end-uses/processes of their choice.

Agricultural Biotechnology Pricing and Margins Across the Supply Chain, Agricultural Biotechnology Price Analysis / International Trade Data / Import-Export Analysis

Supply Chain Analysis, Supply–Demand Gap Analysis, PESTLE Analysis, Macro-Economic Analysis, and other Agricultural Biotechnology market analytics

Processing and manufacturing requirements, Patent Analysis, Technology Trends, and Product Innovations

Further, the client can seek customization to break down geographies as per their requirements for specific countries/country groups such as South East Asia, Central Asia, Emerging and Developing Asia, Western Europe, Eastern Europe, Benelux, Emerging and Developing Europe, Nordic countries, North Africa, Sub-Saharan Africa, Caribbean, The Middle East and North Africa (MENA), Gulf Cooperation Council (GCC) or any other.

Capital Requirements, Income Projections, Profit Forecasts, and other parameters to

prepare a detailed project report to present to Banks/Investment Agencies.

Customization of up to 10% of the content can be done without any additional charges.

Note: Latest developments will be updated in the report and delivered within 2 to 3 working days.

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