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Agriculture Biotechnology Market Forecasts to 2030 – Global Analysis By Product (Transgenic Seeds, Biopesticides, Biofertilizers, Plant Growth Regulators and Other Products), Trait, Technology, End User and By Geography

https://marketpublishers.com/r/A756064C155DEN.html
Date: February 2025
Pages: 150
Price: US$ 4,150.00 (Single User License)
ID: A756064C155DEN

Abstracts

According to Stratistics MRC, the Global Agriculture Biotechnology Market is accounted for $128.52 billion in 2024 and is expected to reach $237.81 billion by 2030 growing at a CAGR of 10.8% during the forecast period. Agricultural biotechnology is the application of scientific techniques and tools, including genetic engineering, molecular markers, tissue culture, and bioinformatics, to modify and improve plants, animals, and microorganisms for agricultural purposes. It aims to enhance crop yields, resistance to pests and diseases, tolerance to environmental stresses, and nutritional content. This field also includes the development of bio-based products such as biofuels and biodegradable plastics. Agricultural biotechnology contributes to sustainable farming practices and addresses challenges like food security and environmental conservation.

According to the 2017 report published by the International Service for the Acquisition of Agri-biotech Applications (ISAAA), India planted 11.4 million hectares of biotech crop in 2017 which was a 5.6% increase from 10.8 million hectares in 2016.

Market Dynamics:

Driver:

Growing demand for food security

Biotechnology provides genetically engineered crops that are resilient to pests,

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diseases, and environmental stressors in light of the world's growing population and finite amount of arable land. These developments guarantee a steady supply of food by lowering crop losses and raising yields. Because biotechnology lessens the need for chemical inputs like fertilisers and pesticides, it also promotes sustainable farming. In order to fight malnutrition, the technology also makes it possible to grow crops that are enriched with nutrients. As nations prioritize food security, investment in agricultural biotechnology continues to expand, fostering market growth.

Restraint:

Limited adoption in developing regions

The limited use of agricultural biotechnology in poor nations is sometimes caused by financial limitations that make it challenging to make investments in new technologies. Inadequate research and distribution infrastructure further limits access to advancements in biotechnology. The sluggish uptake of genetically modified organisms (GMOs) is partly influenced by cultural opposition and scepticism. Inconsistent regulatory regimes also make it difficult for biotech businesses to join these markets. Because of this, agricultural biotechnology's potential to raise sustainability and production in these areas is still underutilised.

Opportunity:

Collaborative research and partnerships

Collaborative research and partnerships allow companies to pool resources, accelerating the development of advanced agricultural solutions. Advances in crop genetics and pest resistance are also fuelled by partnerships between biotech companies, academic institutions, and research centres. Collaborations aid in the commercialisation of emerging biotechnologies, increasing farmers' access to them. The industry grows as a result of the collaborative approach, which shortens the time to market for innovative goods. Consequently, these partnerships enhance sustainability, boost yields, and promote food security.

Threat:

Trade restrictions and geo-political issues

Trade restrictions and geopolitical issues or export bans on biotechnology products slow

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down market access and innovation. This results in delayed development and higher costs for agricultural biotech companies. Tensions between nations can create regulatory uncertainties, deterring investment in the sector. Additionally, restrictions on intellectual property rights and seed patents can hamper the global exchange of advanced agricultural techniques. Consequently, farmers and biotech firms face increased challenges in accessing cutting-edge solutions for improving crop yields and sustainability.

Covid-19 Impact

The market for agricultural biotechnology was greatly damaged by the COVID-19 epidemic, which delayed research projects and upset supply networks. Agricultural production was impacted by the lack of biotech seeds, fertilisers, and crop protection technologies due to logistical and transportation restrictions. The crisis did, however, highlight the significance of robust food systems, which led to investments in cutting-edge biotech technologies to improve crop output and disease resistance. Researchers and farmers benefited from the rise of digital technology and remote monitoring tools during lockdowns. Notwithstanding early obstacles, the industry is expected to expand as post-pandemic demand for efficient and sustainable farming methods increases.

The biofertilizers segment is expected to be the largest during the forecast period

The biofertilizers segment is expected to account for the largest market share during the forecast period by promoting sustainable farming practices. These natural products enhance soil fertility and increase crop yields without harming the environment. By reducing the dependency on chemical fertilizers, biofertilizers help lower production costs for farmers. They improve soil health, leading to long-term agricultural productivity. Furthermore, the growing awareness of environmental issues drives the adoption of eco-friendly biofertilizers.

The farmers segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the farmers segment is predicted to witness the highest growth rate by adopting innovative biotechnological solutions to enhance crop yield and quality. Through genetically modified organisms (GMOs), they can ensure better resistance to pests, diseases, and environmental stress. Biotechnology also aids in developing crops with improved nutritional content, which benefits both farmers and consumers. By using biotechnological advancements, farmers reduce the need for chemical pesticides and fertilizers, promoting sustainable farming practices.

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Furthermore, these technologies help farmers manage crops more efficiently, leading to reduced waste and increased productivity.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share due to increasing demand for genetically modified crops and sustainable farming practices. Advances in gene editing technologies, such as CRISPR, are driving innovation in crop production and pest resistance. Companies are investing heavily in research and development to improve yield efficiency and reduce environmental impact. North America, particularly the United States, leads in biotechnology applications for agriculture, with strong regulatory frameworks supporting product commercialization.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR driven by advancements in genetic modification and innovative farming technologies. Countries like India, China, and Japan are leading in the adoption of biotech solutions to enhance crop yield, pest resistance, and nutritional content. The region's increasing population and demand for sustainable food production are key factors fuelling this growth. Government policies and investments are also fostering research and development in agricultural biotech. With a focus on reducing environmental impact and improving food security, the market is poised for continued expansion.

Key players in the market

Some of the key players profiled in the Agriculture Biotechnology Market include Syngenta, Bayer CropScience, Monsanto, Novozymes, KWS SAAT, Rallis India Limited, Nufarm Limited, Corteva Agriscience, BASF SE, Evogene Ltd., Valent BioSciences, ADAMA Agricultural Solutions, Bejo Zaden B.V., Agrinos, Performance Plants Inc., GreenLight Biosciences, Pivot Bio and Marrone Bio Innovations.

Key Developments:

In November 2024, Syngenta partnered with McDonald's and one of its meat suppliers to introduce Enogen corn, a genetically modified crop designed to reduce methane emissions from cattle. Enogen corn contains an enzyme that enables cattle to reach market weight faster, thereby producing fewer greenhouse gases.

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In June 2024, Rallis India introduced 'Mark Plus,' a new herbicide formulated for effective weed control in soybean and groundnut crops. Initially launched in Maharashtra, Madhya Pradesh, and Gujarat, the product was planned for a nationwide rollout.

In April 2023, Syngenta entered into a strategic partnership with Biotalys, an agricultural technology company specializing in protein-based biocontrol solutions. The collaboration focuses on researching, developing, and commercializing new biocontrol solutions to manage key pests across various crops, leveraging Biotalys' AGROBODY™ technology platform.

Products Covered:

- Transgenic Seeds
- Biopesticides
- Biofertilizers
- Plant Growth Regulators
- Animal Biotechnology Products
- Other Products

Traits Covered:

- Herbicide Tolerance
- Insect Resistance
- Drought Tolerance
- Disease Resistance
- Enhanced Nutritional Content

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- Other Traits

Technologies Covered:

- Genetic Engineering
- Genome Editing
- Molecular Breeding
- Marker-Assisted Breeding
- Synthetic Biology
- RNA Interference (RNAi) Technology
- Bioinformatics
- Other Technologies

End Users Covered:

- Farmers
- Research Institutes
- Agribusiness Companies
- Government and Regulatory Bodies
- Other End Users

Regions Covered:

- North America

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- US
- Canada
- Mexico

Europe

- Germany
- UK
- Italy
- France
- Spain
- Rest of Europe

Asia Pacific

- Japan
- China
- India
- Australia
- New Zealand
- South Korea
- Rest of Asia Pacific

South America

- Argentina

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Brazil

Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & Africa

What our report offers:
- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2022, 2023, 2024, 2026, and 2030
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

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Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

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