

# **Agriculture Enzymes Market Forecasts to 2030 – Global Analysis By Enzyme Type (Phosphatases, Dehydrogenases, Proteases, Lipases, Cellulases, Amylases and Other Enzyme Types), Crop Type, Source, Formulation, Mode Of Action, Application and By Geography**

<https://marketpublishers.com/r/A271227B2E1BEN.html>

Date: February 2025

Pages: 150

Price: US\$ 4,150.00 (Single User License)

ID: A271227B2E1BEN

## **Abstracts**

According to Statistics MRC, the Global Agriculture Enzymes Market is accounted for \$596.42 million in 2024 and is expected to reach \$1127.66 million by 2030 growing at a CAGR of 11.2% during the forecast period. Agricultural enzymes are biocatalysts used in farming and crop production to enhance soil health, improve nutrient availability, and support plant growth. They break down complex organic matter into simpler compounds, facilitating processes like nutrient cycling, biodegradation, and pest control. Agricultural enzymes can be applied to soil, plants, and crops to improve crop yield, disease resistance, and overall plant vitality. These enzymes are integral to sustainable farming practices by reducing the need for chemical inputs.

According to a research carried out by Carl R. Woese Institute for Genomic Biology, University of Illinois in 2016; use of agricultural enzymes increases photosynthesis by around 20%.

Market Dynamics:

Driver:

Increasing global food demand

As the world population grows, there is a heightened need for higher agricultural productivity to meet food requirements. Agricultural enzymes help improve crop yield, enhance nutrient absorption, and support soil health, making them essential in addressing these demands. They enable farmers to optimize resources, reduce waste, and improve the quality of crops, thus ensuring a sustainable food supply. As a result, the focus on efficient farming practices to boost productivity and meet food demand is leading to greater adoption of agricultural enzymes in the market.

Restraint:

#### Stringent regulations

Agricultural enzymes have stringent regulations due to the rigorous approval processes for enzyme-based products in many countries. These regulations are often designed to ensure the safety and effectiveness of agricultural chemicals, but they can lead to delays in product development and market entry. Additionally, the requirement for extensive testing, certification, and compliance with local environmental and health standards increases costs for manufacturers which thereby hinders the market expansion.

Opportunity:

#### Rising demand for sustainable farming

Agricultural enzymes improve soil health, nutrient availability, and crop productivity while reducing the need for synthetic fertilizers and pesticides. As consumers and governments increasingly prioritize sustainability, the adoption of enzyme-based solutions grows. Enzymes support organic farming by enhancing biodegradation, promoting natural pest control, and improving the efficiency of nutrient cycles. This shift towards sustainable practices fosters a greater market demand for agricultural enzymes, accelerating their use in crop production and contributing to market growth.

Threat:

#### Competition from chemical alternatives

Chemical alternatives to agricultural enzymes include synthetic fertilizers, pesticides, herbicides, and fungicides. These chemicals are widely used to enhance soil fertility, control pests, and promote crop growth. Additionally, chemical products often deliver

faster results, making them more attractive to farmers, particularly in regions with limited awareness or resources for sustainable alternatives. The competition from these chemical alternatives hampers the growth of the agricultural enzymes market by offering lower-cost, more readily available solutions.

### Covid-19 Impact

The covid-19 pandemic disrupted the agricultural enzymes market by causing supply chain delays, labor shortages, and reduced production capacity. Lockdowns and restrictions affected the manufacturing and distribution of enzymes. However, the pandemic also highlighted the need for sustainable farming practices, which drove interest in bio-based solutions like agricultural enzymes. The increased demand for food security and the shift toward organic and eco-friendly farming during the pandemic boosted the market's recovery, with long-term growth prospects.

The microbial-based enzymes segment is expected to be the largest during the forecast period

The microbial-based enzymes segment is expected to account for the largest market share during the forecast period. Microbial-based enzymes in agriculture are derived from microorganisms like bacteria, fungi, and yeasts. These enzymes play a crucial role in breaking down organic matter in soil, improving nutrient availability, and enhancing plant growth. They support sustainable farming practices by reducing the need for chemical inputs, improving crop yields, and promoting environmental health.

The soil fertility management segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the soil fertility management segment is predicted to witness the highest growth rate. Agricultural enzymes play a vital role in soil fertility management by enhancing nutrient availability and promoting soil health. They break down complex organic matter, releasing essential nutrients like nitrogen, phosphorus, and potassium, which are crucial for plant growth. By improving soil fertility naturally, agricultural enzymes reduce the need for synthetic fertilizers, supporting sustainable farming practices and improving long-term soil productivity.

Region with largest share:

During the forecast period, the Asia Pacific region is expected to hold the largest market

share, due to increasing demand for sustainable farming practices and higher crop yields. Countries like China, India, and Japan are leading the adoption of agricultural enzymes to improve soil health, enhance nutrient efficiency, and boost crop productivity. Key players in the market include Novozymes, BASF, Syngenta, and Biolchim, all of which offer enzyme solutions tailored to the region's agricultural needs. The region's expanding agricultural sector and rising awareness of organic farming drive the market.

Region with highest CAGR:

Over the forecast period, the North America region is anticipated to exhibit the highest CAGR, driven by advanced farming practices and a strong focus on sustainable agriculture. The U.S. and Canada are key markets, where technological innovations in enzyme formulations enhance crop productivity, soil health, and pest control. The growing demand for eco-friendly solutions further fuels market expansion. Key players in the region include Novozymes, BASF, Dupont, FMC Corporation, and Syngenta, all contributing to innovations in enzyme applications for agriculture.

Key players in the market

Some of the key players profiled in the Agriculture Enzymes Market include BASF SE, DuPont de Nemours, Inc., Novozymes A/S, Syngenta AG, Bayer CropScience, FMC Corporation, Sumitomo Chemical Corporation, Chr. Hansen Holding A/S, Kemin Industries Inc., Evonik Industries AG, DSM Nutritional Products, Fermbox Bio Private Limited, Adama Agricultural Solutions, Elemental Enzymes, AB Enzymes GmbH, Adisseo France S.A.S. and Green Biologics Limited.

Key Developments:

In August 2024, ADAMA partnered with Elemental Enzymes, a US-based life sciences company, to introduce an innovative biological fungicide to the Australian market. The biological fungicide developed through this partnership incorporates advanced enzyme technology, which enhances the natural defense mechanisms of crops, promoting healthier growth and minimizing the need for chemical interventions.

In May 2024, Fermbox Bio launched EN3ZYME, a cutting-edge enzyme cocktail designed to enhance both the efficiency and cost-effectiveness of transforming pre-treated agri-based residues into fermentable, cellulosic sugars. The technology and its applications support sustainable processes and resource optimization, aligning with global environmental goals.

### Enzyme Types Covered:

Phosphatases

Dehydrogenases

Proteases

Lipases

Cellulases

Amylases

Other Enzyme Types

### Crop Types Covered:

Cereals & Grains

Fruits & Vegetables

Oilseeds & Pulses

Turf & Ornamentals

Other Crop Types

### Sources Covered:

Plant-Based Enzymes

Microbial-Based Enzymes

Animal-Based Enzymes

**Formulations Covered:**

Liquid

Dry

**Mode Of Actions Covered:**

Hydrolysis Enzymes

Oxidation-Reduction Enzymes

Transferase Enzymes

Other Mode Of Actions

**Applications Covered:**

Soil Fertility Management

Crop Protection

Animal Feed

Residue Degradation

Seed Treatment

Other Applications

**Regions Covered:**

North America

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

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

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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