

Agriculture Enzymes Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Type (Phosphatases, Dehydrogenases, Proteases, Sulfatases and Others), By Crop Type (Cereals & Grains, Oilseeds & Pulses, Fruits & Vegetables, Turf & Ornamentals and Others), By Region and Competition, 2020-2030F

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Abstracts

Global Agriculture Enzymes Market was valued at USD 589.15 Million in 2024 and is expected to reach USD 830.64 Million by 2030 with a CAGR of 8.85% during the forecast period. Enzymes, which are typically proteins, serve as biological catalysts that accelerate chemical reactions. In agriculture, enzymes act as catalysts that unlock nutrients in the soil, making them available to plant roots. By replacing the use of chemicals in food production and protection, these enzymes ensure that essential nutrients, which would otherwise remain bound to the soil, are made accessible to plants. Incorporating agricultural enzymes into feed promotes higher plant yield and improved quality.

Moreover, agricultural enzymes play a crucial role in enhancing crop fertility and safeguarding plants against pests and diseases. They find extensive application in various biotechnological processes, including fiber bio-processing, crop and crop residue processing, enzyme-assisted silage fermentation, and the production of animal feed supplements. Enzymes are vital for the growth of oilseeds, pulses, fruits and vegetables, grains, and cereals. The increasing popularity of agricultural enzymes is attributed to their ability to modify the quality of end-products. The widespread use of agricultural enzymes in the industry has been driven by their proven ability to boost crop production. In January 2023, BASF SE and Cargill, Incorporated strengthened their

partnership to enhance the development and delivery of high-performance enzyme solutions across key industries, including animal health and wellness, agriculture, and industrial applications.

Additionally, they facilitate the decomposition of plant residues, support root development, and promote early sprouting during the initial stages of plant growth. Furthermore, the application of agricultural enzymes plays a crucial role in combating land degradation, addressing climate change, and addressing food security challenges. Technological advancements in the agricultural enzyme field, such as the development of phytases and silage fermentation techniques, have significantly expanded both their manufacturing capacity and application.

Key Market Drivers

Rising Inclination for Organic Food

The global trend towards organic food is steadily increasing, which in turn is expected to drive the demand for agriculture enzymes. Organic farming practices rely heavily on natural methods of enhancing crop productivity and maintaining soil health, creating an ideal platform for the use of agricultural enzymes. These biocatalysts play a crucial role in enhancing nutrient absorption, promoting plant growth, and protecting crops from pests and diseases. As consumers become more health-conscious and aware of the environmental impact of conventional farming, the demand for organically grown food has skyrocketed. In February 2025, a newly discovered enzyme class found in Brazilian soil marks a significant breakthrough in sustainable energy and chemical production. This enzyme enhances the breakdown of cellulose, a crucial step in bioenergy and biochemical production. Published in *Nature*, the discovery was led by researchers from the Brazilian Center for Research in Energy and Materials (CNPEM) in Campinas, in collaboration with the French National Research Institute for Agriculture, Food and Environment (INRAE) at Aix-Marseille University and the Technical University of Denmark (DTU). Identified from the genetic material of a microbial community in biomass residues collected from Brazilian soils, the enzyme features a novel mechanism of action and the ability to generate its own co-substrate, making it a powerful tool for plant biomass deconstruction.

This rising preference for organic food has prompted farmers to seek eco-friendly and efficient farming solutions, elevating the importance of agricultural enzymes in organic farming. Moreover, the enzymes' capacity to replace harmful agricultural chemicals is found to be crucial in maintaining the ecological balance and reducing the

environmental footprint. The continuous research efforts to innovate and develop effective and tailored enzyme solutions for diverse agricultural needs further boost their demand.

Therefore, the burgeoning inclination towards organic food is expected to significantly influence the agricultural enzymes market, potentially leading to unprecedented growth rates globally.

Key Market Challenges

High Cost of Production & Pricing of Agricultural Enzymes

The high cost of production and pricing of agricultural enzymes is a significant challenge that could potentially decrease global demand. Agricultural enzymes are robust catalysts used in facilitating complex biochemical reactions that enhance soil fertility, crop protection, and plant growth regulation. However, their production involves complex extraction processes and stringent purification methods, all of which contribute to the elevated costs. High pricing of these enzymes is a direct consequence of these expensive production processes. Many small-scale farmers and developing countries find it difficult to afford these high-cost enzymes, which makes them less attractive, despite their numerous benefits. The underprivileged farmers still rely on traditional farming methods due to the high upfront costs of these enzymes. Furthermore, limited knowledge and understanding of the effectiveness of these enzymes also contribute to the lower demand, particularly in developing regions. Therefore, while agricultural enzymes hold great promise for the future of sustainable farming and improved crop yield, their high production costs and subsequent pricing stand as an obstacle to widespread adoption, threatening to dampen global demand.

Key Market Trends

Enhancing Soil Fertility & Crop Quality

Soil fertility and crop quality are integral components of agricultural productivity. The rising global demand for high-quality, nutrient-rich crops necessitates innovative solutions to enhance soil fertility and crop yield. This presents an opportunity for the increased utilization of agricultural enzymes. These bio-stimulants, derived from natural sources, are known to improve soil health, nutrient absorption, and plant growth. They facilitate essential processes such as nitrogen fixation, phosphorus solubilization, and organic matter decomposition, which are crucial in maintaining soil fertility.

Increasing awareness about the detrimental effects of chemical fertilizers on soil health and ecosystem balance is nudging farmers towards organic and sustainable farming practices, including the use of agricultural enzymes. Additionally, the enzymes increase the nutritional value and quality of the produce, thereby meeting the consumer demand for healthier food options. On June 20, 2024, ZymoChem announced the launch of BAYSE™, the world's first scalable, 100% bio-based and biodegradable superabsorbent polymer. In a press release, the company highlighted this breakthrough as a significant step toward a fossil-free future, aiming to combat climate change, reduce environmental pollution, and prevent microplastic accumulation. This innovation showcases ZymoChem's commitment to transforming the hygiene industry through the fusion of enzymes and chemistry. The use of agricultural enzymes also aligns with the global movement towards sustainable agriculture, as they reduce the reliance on non-renewable resources and limit the environmental impact of farming. Consequently, the demand for agricultural enzymes is expected to surge globally, driven by the need to improve soil fertility and enhance crop quality. This trend is amplified by supportive government policies promoting sustainable farming and the growing need to ensure food security amid rising global population.

Key Market Players

Novozymes A/S

China National Chemical Corporation

DuPont de Nemours, Inc

Koninklijke DSM N.V.

BASF SE

Bayer CropScience AG

Agrinos AS

Stoller USA, Inc.

BioWorks, Inc.

Ab Enzymes GmbH

Report Scope:

In this report, the Global Agriculture Enzymes Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Agriculture Enzymes Market, By Type:

Phosphatases

Dehydrogenases

Proteases

Sulfatases

Others

Agriculture Enzymes Market, By Crop Type:

Cereals & Grains

Oilseeds & Pulses

Fruits & Vegetables

Turf & Ornamentals

Others

Agriculture Enzymes Market, By Region:

North America

United States

Canada

Mexico

Europe

France

United Kingdom

Italy

Germany

Spain

Asia-Pacific

China

India

Japan

Australia

South Korea

South America

Brazil

Argentina

Colombia

Middle East & Africa

South Africa

Saudi Arabia

UAE

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Agriculture Enzymes Market.

Available Customizations:

Global Agriculture Enzymes market report with the given market data, TechSci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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