

Controlled-release Fertilizers Market Forecasts to 2034 – Global Analysis By Type (Coated and encapsulated, Slow Release, Nitrogen Stabilizers and Other Types), Mode of Application, End User, and By Geography

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Abstracts

According to Statistics MRC, the Global Controlled-release Fertilizers Market is accounted for \$3.46 billion in 2026 and is expected to reach \$6.67 billion by 2034 growing at a CAGR of 8.6% during the forecast period. Controlled-release fertilizers (CRF) are advanced agricultural products designed to provide a gradual and sustained release of essential nutrients to plants over an extended period of time. These fertilizers utilize specialized coatings, encapsulation technologies, or chemical formulations to regulate the release of nutrients such as nitrogen, phosphorus, and potassium. Unlike conventional fertilizers that release nutrients rapidly, CRF ensures a controlled and timed delivery, aligning with the specific nutritional needs of crops throughout their growth stages and addressing concerns related to nutrient loss and environmental pollution.

According to MDPI Research Report 2021, controlled-release fertilizers are employed in precision agriculture to optimize technology-enabled farming without environmental deterioration.

Market Dynamics:

Driver:

Government regulations

Regulatory bodies worldwide are increasingly imposing stringent guidelines on traditional fertilizer use to address environmental concerns related to soil and water quality. These regulatory measures not only support environmental conservation but also contribute to the overall efficiency and productivity of agricultural systems. Moreover, in some cases, subsidies or tax incentives are provided to farmers adopting CRF to encourage the transition from conventional fertilizers, which is driving this market expansion.

Restraint:

High initial costs

The high initial costs of controlled-release fertilizers have limited their widespread adoption in the agricultural sector. Farmers, especially those with limited financial resources, may find it challenging to invest in these fertilizers, considering the higher upfront expenses. Moreover, farmers may hesitate to invest in these fertilizers if they are unsure about their compatibility with their specific agricultural system, which further hinders this market size.

Opportunity:

Awareness and education

As agricultural practices evolve, there is an increasing emphasis on educating farmers about sustainable and efficient nutrient management. Farmers are educated about the controlled and gradual release mechanism of CRF, which aligns nutrient delivery with the specific needs of crops throughout their growth stages. Moreover, agricultural extension services provided by governmental and non-governmental organizations contribute to knowledge dissemination, which is gradually boosting this market size.

Threat:

Limited crop compatibility

The varying nutrient demands of different crops pose a challenge to the widespread adoption of controlled-release fertilizers. Factors such as soil pH, texture, and organic matter content can influence the release and availability of nutrients from these fertilizers. Additionally, controlled-release fertilizers may not be suitable for all soil types and conditions. This limited crop compatibility restricts the market's growth, as farmers

may be hesitant to invest in fertilizers that may not meet the specific needs of their crops.

Covid-19 Impact

The COVID-19 pandemic has presented several negative impacts on the controlled-release fertilizer (CRF) market. Disruptions in global supply chains, restrictions on movement, and labor shortages have affected the production and distribution of CRFs. Furthermore, the closure of agricultural input retail outlets during lockdowns has disrupted the accessibility of CRFs to farmers. Delays in research and development activities due to lockdowns also impeded this market growth.

The nitrogen stabilizers segment is expected to be the largest during the forecast period

The nitrogen stabilizers segment is estimated to hold the largest share due to its pivotal role in enhancing agricultural efficiency and sustainability. These stabilizers, often in the form of inhibitors or coatings, help mitigate nitrogen losses through leaching and volatilization. Additionally, by providing a controlled and sustained release of nitrogen to crops, they optimize nutrient uptake, reduce environmental impact, and improve overall fertilizer efficiency, which significantly propels this segment's expansion.

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

The fertigation segment is anticipated to have highest CAGR during the forecast period due to a cutting-edge and efficient method of nutrient application in agriculture. Fertigation combines fertilization with irrigation, allowing for the precise and controlled delivery of fertilizers directly to the plant's root zone through irrigation systems. Furthermore, it not only maximizes the efficiency of nutrient utilization but also conserves water resources by minimizing runoff and leaching, thereby boosting this segment's growth.

Region with largest share:

Asia Pacific commanded the largest market share during the extrapolated period owing to the unique agricultural landscape in the region, characterized by diverse crops, soil types, and climate conditions, which has fueled the need for tailored nutrient management solutions. Further, government initiatives and policies promoting sustainable agriculture, coupled with the need to address food security challenges, are

further propelling the growth of the CRF market in the Asia-Pacific region.

Region with highest CAGR:

North America is expected to witness highest CAGR over the projection period, owing to robust growth and evolving as a key component of modern agricultural practices. Farmers in North America are increasingly recognizing the benefits of controlled-release fertilizers for optimizing nutrient management. Moreover, these fertilizers provide a gradual and regulated release of nutrients, addressing concerns related to nutrient runoff, leaching, and greenhouse gas emissions, which are significantly driving this region's expansion.

Key players in the market

Some of the key players in the Controlled-release Fertilizers Market include ICL, Yara, Nufarm, Nutrien Ltd., SK Specialties, Kingenta, Pursell Agri-Tech, LLC, Helena Chemicals, ScottsMiracle-Gro, SQM, Haifa Negev Technologies Ltd, OCI Nitrogen, Koch Industries Inc., Van Iperen International and AgroLiquid

Key Developments:

In December 2023, OCI Global announced that it has reached an agreement for the sale of 100% of its indirect interest in its large-scale US greenfield nitrogen fertilizer facility Iowa Fertilizer Company LLC, to Koch Ag & Energy Solutions.

In August 2023, Sun Capital Partners, Inc. announced its affiliate has reached a definitive agreement with various subsidiaries of Koch Engineered Solutions, LLC, a subsidiary of Koch Industries, Inc., to acquire Koch Separation Solutions.

Types Covered:

Coated and Encapsulated

Slow Release

Nitrogen Stabilizers

Other Types

Applications Covered:

Fertigation

Soil

Foliar

Other Applications

End Users Covered:

Non-Agriculture

Agriculture

Other End Users

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 2023, 2024, 2025, 2026, 2027, 2028, 2030, 2032 and 2034
- 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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