

Slow and Controlled Release Pesticides Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Pesticides-type (Herbicides, Fungicides, Insecticides, Others),

<https://marketpublishers.com/r/S2D4B43C1C54EN.html>

Date: March 2025

Pages: 184

Price: US\$ 4,500.00 (Single User License)

ID: S2D4B43C1C54EN

Abstracts

Global Slow and Controlled Release Pesticides Market was valued at USD 2.91 Billion in 2024 and is expected to reach USD 4.08 Billion by 2030 with a CAGR of 8.76% during the forecast period. The Global Slow and Controlled Release Pesticides Market has witnessed significant growth and innovation in recent years, reshaping the landscape of modern agriculture. These specialized pesticides represent a crucial advancement in crop protection and sustainable farming practices, addressing the challenges of pest management while minimizing environmental impact. Slow and controlled release pesticides, also known as encapsulated pesticides or smart pesticides, are designed to release their active ingredients gradually over an extended period, ensuring long-lasting efficacy and reducing the need for frequent reapplications. According to The World of Organic Agriculture: Statistics and Emerging Trends 2023 report, the total area of organic agricultural land, including land in transition, exceeded 76.4 million hectares in 2021. Oceania accounted for the largest share, with 36.0 million hectares—representing 47% of the global total—followed by Europe with 17.8 million hectares (23%). Latin America reported 9.9 million hectares (13%), while Asia accounted for 6.5 million hectares (8.5%). North America and Africa recorded 3.5 million hectares (4.6%) and 2.7 million hectares (3.5%), respectively. Overall, organic farmland constituted 1.6% of the world's total agricultural land.

Key Market Drivers

Enhanced Crop Protection

Enhanced crop protection stands as a pivotal factor propelling the rapid growth of the global slow and controlled release pesticides market. These innovative formulations offer a fundamental shift in the way farmers safeguard their crops. Unlike traditional pesticides that provide short-lived protection, slow and controlled release pesticides release their active ingredients gradually over an extended period. This extended protection ensures a continuous shield against pests and diseases, significantly reducing the need for frequent reapplications. The 2022 Agricultural Chemical Use Survey, conducted by NASS, collected data on fertilizer application, pesticide usage, and pest management practices across 22 vegetable crops. The survey focused on producers in 17 states, particularly those with significant production of the surveyed crops. Among snap bean growers, herbicides were applied to 78% of planted acres, exceeding the use of insecticides and fungicides, which were applied to 52% and 41% of acres, respectively. For squash, fungicides and insecticides were used on 69% and 63% of planted acres, respectively. Sweet corn producers applied herbicides to 82% of planted acres, while the use of insecticides and fungicides was comparatively lower.

Key Market Challenges

Cost Constraints

The global slow and controlled release pesticides market holds immense promise for sustainable agriculture, yet it faces significant hurdles, with cost constraints being a primary hindrance. While these innovative formulations offer numerous benefits, including enhanced crop protection and reduced environmental impact, their higher initial cost poses challenges to widespread adoption.

One of the key factors contributing to the elevated cost of slow and controlled release pesticides is the advanced technology and materials used in their production. These formulations are designed to release active ingredients gradually over an extended period, requiring specialized encapsulation and delivery mechanisms. Such technology comes at a premium, and the cost of research, development, and production is passed on to the end-users.

For farmers, especially those operating on limited budgets or in regions with lower income levels, the initial cost of slow and controlled release pesticides can be a significant barrier. Traditional chemical pesticides often appear more financially accessible upfront, making it challenging for growers to justify the investment in these advanced alternatives. This cost disparity can lead to resistance or reluctance to

transition to slow-release formulations, even though the long-term benefits, such as reduced pesticide usage and improved crop yields, may outweigh the initial expense.

Key Market Trends

Precision Agriculture Adoption

Precision agriculture adoption is a key driver behind the rapid growth of the global slow and controlled release pesticides market. Precision agriculture, also known as smart farming, is a transformative approach that leverages data-driven technologies to optimize farming practices and resource utilization. Slow and controlled release pesticides play a pivotal role in this paradigm shift by offering precise and efficient pest control solutions. In July 2023, the U.S. Environmental Protection Agency (EPA) awarded approximately USD 1.3 million in funding to a research team at the University of Wisconsin-Madison. The funding supports the development of nanosensor technology designed to monitor, detect, and degrade commonly used pesticides in water that pose risks to human health.

In precision agriculture, every aspect of farming, from planting and irrigation to pest management, is optimized for maximum efficiency. Slow and controlled release pesticides align seamlessly with this approach, as they ensure that pesticides are delivered precisely when and where they are needed most. These formulations release their active ingredients gradually, offering an extended protection period that is tailored to the specific needs of the crop. This targeted approach minimizes pesticide wastage, reduces the environmental footprint, and enhances overall efficiency in crop protection.

Key Market Players

ADAMA Agricultural Solutions Ltd.

Arysta LifeScience Corporation

BASF SE

Bayer AG

The Dow Chemical Company

DuPont de Nemours, Inc.

Monsanto Company

Sumitomo Chemical Co. Ltd.

Syngenta Crop Protection AG

The Mosaic Company

Report Scope:

In this report, the Global Slow and Controlled Release Pesticides Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Slow and Controlled Release Pesticides Market, By Pesticides-type:

Herbicides

Fungicides

Insecticides

Others

Slow and Controlled Release Pesticides Market, By Application:

Agriculture

Chemical

Others

Slow and Controlled Release Pesticides 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 Slow and Controlled Release Pesticides Market.

Available Customizations:

Global Slow and Controlled Release Pesticides 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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