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Biorational Pesticides Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Source (Botanical, Microbial, Non-Organic), By Crop Type (Fruits & Vegetables, Cereals & Grains, Oilseeds & Pulses, Others), By Region and Competition, 2020-2030F

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Abstracts

Global Biorational Pesticides Market was valued at USD 7.26 billion in 2024 and is expected to reach USD 9.45 billion by 2030 with a CAGR of 4.49% during the forecast period. Pesticides play a crucial role in agriculture, but their toxicity and ecological impact can vary significantly. That's where biorational pesticides come in - they are a class of pesticides that offer a safer and more environmentally friendly alternative. These organic or biopesticides are not only inexpensive but also promote the early detection and control of pests, making them highly sought after in the forestry, gardening, and agricultural sectors.

The biorational pesticides market is experiencing significant growth due to various factors. Firstly, the increasing demand for residue-free organic crops has fueled the adoption of biorational pesticides. Moreover, the agricultural sector's growth and the rising utilization of integrated pest management practices have further boosted the market. Governments worldwide have also taken initiatives to promote the use of biorational pesticides, recognizing their non-toxic nature and low environmental impact. Additionally, consumers' growing awareness of environmental issues and concerns about the toxicity of chemical pesticides have contributed to the market's expansion.

Furthermore, the biorational pesticides market is positively influenced by factors such as consumer preference for organic food, advancements in farming practices and

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technology, and the demand for high-quality produce. The significant crop losses caused by pest attacks have further emphasized the need for effective pest management solutions like biorational pesticides. Also, the surge in investment in agricultural activities and the untapped market potential in developing nations offer promising opportunities for players in the biorational pesticides market.

The growing awareness efforts by both government and non-government organizations are promoting the use of biopesticides in agriculture. In November 2023, Krishi Vigyan Kendra, Malyal, organized an awareness program on natural farming as part of the Janjatiya Gaurav Diwas celebration in Eshwaragudem, Kothaguda Mandal, Telangana. Furthermore, the continuous development of new biorational pesticides worldwide is anticipated to drive demand for these products in the years ahead.

Key Market Drivers

Growing Demand for Sustainable Agriculture

Sustainable agriculture is an approach that aims to meet society's present food needs while ensuring that future generations can do the same. This holistic approach emphasizes the use of farming techniques that are not only environmentally sound but also economically viable and socially responsible. With increasing awareness of environmental concerns and a growing demand for healthier food options, there has been a significant shift towards more sustainable farming practices. This transition has led to a higher demand for biorational pesticides, which are products that align with the principles of sustainability. Biorational pesticides, often referred to as 'soft' pesticides, are derived from natural materials such as animals, plants, bacteria, and minerals. Unlike conventional synthetic pesticides, these pesticides are typically target-specific and pose less harm to beneficial insects and the environment.

The rising demand for residue-free organic crops and the use of ecologically sustainable technology are key factors driving the growth of the biorational crop protection market. Moreover, the increasing demand for environmentally friendly and sustainable agricultural practices has further contributed to the substantial growth of this market. By adopting sustainable farming practices and utilizing biorational pesticides, farmers can contribute to a more sustainable and environmentally conscious agricultural industry. This not only ensures the long-term availability of food but also helps preserve our natural resources for future generations.

Key Market Challenges

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Limited Efficacy of Biorational Pesticides Against Certain Pests

Biorational pesticides, also known as biopesticides, are derived from naturally occurring substances such as plants, animals, bacteria, and minerals. They are celebrated for their target-specific action and their reduced impact on beneficial insects and the environment compared to synthetic pesticides. These biopesticides offer a promising alternative for pest control in agriculture and have gained attention for their potential to mitigate the negative effects of conventional pesticides. However, it is important to note that the effectiveness of biorational pesticides can vary significantly depending on the type of pest they are targeting. Several studies have indicated that certain pests may exhibit limited susceptibility to biorational pesticides. For example, Brinjal, a crop susceptible to approximately 140 species of insect pests, has shown varying levels of response to different biopesticides. Similarly, the efficacy of biorational insecticides against Bemisia tabaci, a globally significant agricultural pest, has been found to be inconsistent.

Furthermore, the efficacy of biorational pesticides can also be influenced by the life cycle of the target pest. While some biopesticides effectively disrupt the life cycle of certain pests, others may not have the same impact. This inconsistency in efficacy poses a challenge to the broader acceptance and usage of biorational pesticides in agriculture. The limited efficacy of biorational pesticides against certain pests could potentially pose a significant challenge to the global biorational pesticides market. If these products cannot consistently provide effective pest control, farmers and other potential users may be hesitant to adopt them, thereby limiting the growth of the market. In conclusion, while biorational pesticides offer promising benefits in terms of target-specific action and reduced environmental impact, their effectiveness can be influenced by various factors. Further research and development efforts are needed to address the challenges associated with their limited efficacy against certain pests and to enhance their overall performance in agricultural pest control.

Key Market Trends

Rising Advancements in Formulations and Delivery Systems

Biorational pesticides, derived from natural substances such as animals, plants, bacteria, and minerals, offer a sustainable and environmentally friendly alternative to conventional synthetic pesticides. These target-specific pesticides pose less harm to beneficial insects and the ecosystem as a whole. Their efficacy is not only influenced by

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their active ingredients but also by their formulation and delivery methods. The development of advanced formulations and delivery systems has revolutionized the effectiveness of biorational pesticides. Technological advancements have allowed the encapsulation of bioactive compounds within protective shells, enhancing their stability and extending their shelf life. This not only ensures the longevity of these pesticides but also improves their potency.

Moreover, innovative delivery systems, such as microencapsulation and nanoemulsion techniques, have emerged as game-changers in the field. These techniques enable precise and targeted delivery of biorational pesticides, maximizing their effectiveness while minimizing off-target impacts. By directly reaching the intended pests, these delivery systems reduce environmental contamination and minimize harm to non-target organisms. These remarkable advancements have had a profound impact on the global biorational pesticides market. The improved formulations not only enhance the stability and potency of these pesticides but also make them more versatile for use in various agricultural applications. Furthermore, the efficient delivery systems contribute to the rising popularity of biorational pesticides in sustainable farming practices, as they ensure precise and responsible application.

Key Market Players

BASF SE

Bayer AG

DuPont de Nemours Inc

Isagro S.p.A.

Koppert BV

Marrone Bio Innovations, Inc.

Monsanto Co

Russell Investment Management LLC

Syngenta AG

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Valent BioSciences LLC

Report Scope:

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

Biorational Pesticides Market, By Source:

Botanical

Microbial

Non-Organic

Biorational Pesticides Market, By Crop Type:

Fruits & Vegetables

Cereals & Grains

Oilseeds & Pulses

Others

Biorational Pesticides Market, By Region:

North America

United States

Canada

Mexico

Europe

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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

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Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Biorational Pesticides Market.

Available Customizations:

Global Biorational 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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