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Agricultural Pheromones Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Type (Sex Pheromones, Aggregation Pheromones, Others), By Function (Mating Disruption, Detection & Monitoring, Mass Trapping), By Crop Type (Fruits & Nuts, Field Crops, Vegetable Crops, Others), By Mode of Application (Dispensers, Traps, Sprays), By Region and Competition, 2019-2029F

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Abstracts

Global Agricultural Pheromones Market was valued at USD 3.14 Billion in 2023 and is anticipated t%ll%project steady growth in the forecast period with a CAGR of 14.36% through 2029. Pheromones are chemical compounds utilized by insects and other animals for communication purposes. Additionally, these chemicals are employed in agricultural fields for monitoring, trapping, or disrupting toxic pests. Synthetic pheromones are artificial versions of natural pheromones, aiding in insect attraction. Nowadays, farmers and key market participants are increasingly adopting pheromones as an integrated pest management technique, driven by rapid advancements in agricultural methods and technology worldwide.

Agricultural pheromones offer numerous health benefits and are environmentally friendly. As a result, their usage is projected t%ll%grow significantly in the coming years. The utilization of agricultural pheromone traps enables early detection of pests and insects, thereby reducing damage t%ll%crops and other plants. The introduction of innovative pheromone formulations stands as a key driver for the growth of the agricultural pheromones market.

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Key Market Drivers

Growing Influence of Climate Change on Agricultural Practices

The escalating influence of climate change on agricultural practices worldwide is poised t%ll%accelerate the demand for agricultural pheromones. As global temperatures rise and weather patterns become increasingly unpredictable, traditional farming methodologies are facing unprecedented challenges. Crop loss due t%ll%extreme weather events and the heightened prevalence of pests are tw%ll%major issues. With their ability t%ll%regulate pest behavior naturally and effectively, agricultural pheromones represent a viable, environmentally-friendly solution. As these substances can lure pests away or disrupt their mating cycles, they help mitigate crop damage without resorting t%ll%harmful chemical pesticides. Furthermore, pheromones are species-specific, reducing the risk of harming beneficial insects. These attributes align with the global shift towards sustainable farming practices, further amplifying the demand for agricultural pheromones. However, it's crucial that the application of these pheromones is carefully managed t%ll%prevent the potential development of resistance among pest populations. As such, the increased uptake of agricultural pheromones is not just a trend, but a necessity in the face of a changing climate.

Advances in Pheromone Synthesis Technologies

Advances in pheromone synthesis technologies are projected t%ll%significantly drive up the demand for agricultural pheromones worldwide. With increasing threats t%ll%crop yield and quality from various pests, there has been a growing need for environmentally friendly and effective pest management solutions. This is where agricultural pheromones, acting as biocontrol agents, come int%ll%play. Advanced synthesis technologies have made the production of these pheromones more efficient, cost-effective, and reproducible, thus increasing their accessibility and affordability for farmers globally. Furthermore, these technologies have enabled the creation of more potent and specific pheromones, enhancing their effectiveness in pest control and reducing the need for harmful chemical pesticides. With the global push towards sustainable agriculture and food security, the demand for these advanced pheromones is expected t%ll%rise substantially. The situation is further catalyzed by supportive government policies promoting eco-friendly farming practices and a growing consumer preference for organically grown produce. As such, the future appears promising for the global agricultural pheromones market, largely propelled by advancements in pheromone synthesis technologies.

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Rising Interest in Organic Farming & Natural Pest Control Methods

The global agricultural sector is witnessing a significant shift towards organic farming and natural pest control methods, which is expected t%ll%escalate the demand for agricultural pheromones. Pheromones, which are naturally occurring chemical substances, have emerged as an effective and environmentally friendly alternative t%ll%traditional pesticides. They have the unique advantage of being highly species-specific, ensuring that only targeted pests are affected while beneficial organisms are left unharmed. This specificity is a boon in organic farming, where maintaining biodiversity is a key concern. Additionally, the use of pheromones aligns with the growing consumer demand for organic produce free from harmful chemical residues. This trend is not just confined t%ll%a single region but is seen globally, driven by increasing awareness and government policies favoring sustainable agricultural practices. Furthermore, pheromones are seen as a viable solution t%ll%pest resistance issues commonly encountered with conventional pesticides, providing another reason for their expected market growth. Taking these factors int%ll%account, the global adoption of organic farming and natural pest control methods is likely t%ll%create a sizeable demand for agricultural pheromones in the forthcoming years.

Adoption & integration of IoT and AI in Pest Monitoring

The global demand for Agricultural Pheromones is projected t%ll%surge in the coming years, driven largely by the adoption and integration of Internet of Things (IoT) and Artificial Intelligence (AI) in pest monitoring. These technologies provide accurate, real-time data that allows for more effective pest management, reducing the reliance on harmful chemical pesticides. Pheromones, as eco-friendly solutions, fit perfectly int%ll%this technologically-enabled approach.

IoT devices can detect pest presence and intensity, sending this information t%ll%cloud-based AI systems for analysis. The AI can then predict the potential spread of pests and recommend the appropriate use of pheromones. This means that agricultural pheromones can be deployed precisely where and when they are needed, maximizing their effectiveness and reducing waste.

Moreover, the use of AI and IoT helps in the early detection of pest infestations, allowing for timely intervention with pheromones before the populations become unmanageable. This, in turn, improves crop health and yields, making the use of pheromones even more attractive t%ll%growers. As the benefits of this tech-enabled approach become more evident and the technology itself becomes more affordable, it's

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expected that more and more agricultural operations around the globe will adopt this method, driving the demand for agricultural pheromones.

Key Market Challenges

Competition from Chemical Pesticides

The global demand for agricultural pheromones is anticipated t%ll%experience a decline due t%ll%growing competition from chemical pesticides. Despite the recognized advantages of pheromones in terms of environmental safety and targeted action, the wide use and aggressive marketing of chemical pesticides are expected t%ll%affect the pheromones market negatively. Chemical pesticides, often cheaper and more readily available, offer immediate results, which are highly prized by farmers under pressure t%ll%maximize crop yields. Furthermore, many farmers are not sufficiently informed about the long-term benefits of pheromones, such as their role in sustainable and organic farming. This lack of awareness, combined with the higher initial cost of pheromone products, could deter potential users. Additionally, the regulatory environment in many countries still heavily favors chemical pesticides, providing them with a competitive advantage. Regulatory bodies need t%ll%address these disparities t%ll%create a level playing field for safer and more sustainable pest control alternatives like agricultural pheromones.

High Maintenance & Production Costs of Agricultural Pheromones

The global demand for agricultural pheromones is expected t%ll%be adversely affected by the high maintenance and production costs associated with these products. Pheromones, although highly effective in pest control, require substantial financial investment in terms of production, preservation, and application. The production process is complex and requires specialized facilities, leading t%ll%increased costs. In addition, these products need t%ll%be stored in controlled conditions t%ll%maintain their efficacy, further adding t%ll%the overall costs. The application process often demands the use of specialized equipment and skilled personnel, making it less economically viable for farmers operating on a small scale or in regions with limited resources. The high expenses associated with the use of agricultural pheromones may deter potential users, especially in developing countries where farmers are price-sensitive and have limited access t%ll%advanced farming technologies. Consequently, the affordability factor plays a significant role in determining the demand, and the high costs involved in the production and maintenance of agricultural pheromones could potentially decrease their global demand.

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Key Market Trends

Increase in the Number of Resistant Pests

The escalating global challenge of pesticide resistance among pests is anticipated t%ll%substantially propel the demand for agricultural pheromones. These organic compounds, often used in an integrated pest management strategy, are a more sustainable and environmentally friendly approach t%ll%pest control. Unlike conventional pesticides, agricultural pheromones d%ll%not kill pests but disrupt their mating process, thereby reducing pest populations without promoting resistance. With pests developing resistance t%ll%a wide array of chemical pesticides, the Agri-industry is gradually leaning towards the adoption of innovative and eco-friendly pest management methods. Agricultural pheromones, due t%ll%their specific action and negligible toxicity, seem t%ll%be a promising solution. Experts predict a surge in demand for these organic compounds, particularly in regions battling with resistant pests, as they offer an effective tool for managing these pests without contributing t%ll%the escalating resistance issue. Their adoption is expected t%ll%increase not just in developed nations, where stringent regulations advocate for a reduction in chemical pesticide use, but als%ll%in developing countries, aiming for sustainable farming practices. Hence, the rise in resistant pests worldwide is likely t%ll%significantly influence the agricultural pheromones market's growth trajectory.

Expansion of Agricultural Sectors in Developing Countries

The global agricultural pheromones market is witnessing a surge in demand, largely driven by the expansion of agricultural sectors in developing countries. This trend can be attributed t%ll%several factors. These nations are experiencing rapid population growth, which translates int%ll%escalating food demand and, consequently, increased agricultural production. Moreover, many developing countries are progressively shifting from traditional farming methods t%ll%more advanced and sustainable techniques. The use of pheromones as an eco-friendly, non-toxic alternative t%ll%conventional pesticides aligns perfectly with these sustainable farming practices. Pheromones, with their ability t%ll%effectively manage pests without harming beneficial organisms or the environment, are becoming a popular choice among farmers in these regions. Furthermore, the push for self-sufficiency in food production in many developing countries, coupled with governmental support in the form of subsidies and training on modern farming practices, fuels this demand. Hence, as agricultural sectors continue t%ll%expand and modernize in developing countries, the global demand for agricultural

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pheromones is expected t%ll%rise correspondingly.

Segmental Insights

Type Insights

Based on Type, Sex Pheromones have emerged as the dominating segment in the Global Agricultural Pheromones Market in 2023. This is due t%ll%their widespread usage in integrated pest management systems. These pheromones have proven t%ll%be highly effective in disrupting the mating cycles of various pest species, thereby controlling pest populations and minimizing crop damage. By interfering with their ability t%ll%reproduce, sex pheromones play a crucial role in revolutionizing pest control practices worldwide. With their continued success and growing adoption in agriculture, the use of sex pheromones is expected t%ll%expand even further, offering sustainable and innovative solutions for pest management in the future.

Function Insights

Based on Function, Mating Disruption have emerged as the fastest growing segment in the Global Agricultural Pheromones Market in 2023. Mating disruption involves the use of sex pheromones, either female or male, t%ll%prevent insects from locating and mating with each other. This method has proven highly effective in suppressing pest populations, contributing t%ll%its widespread adoption in fruit, vegetable, and forest fields worldwide.

Regional Insights

Based on Region, North America have emerged as the dominating region in the Global Agricultural Pheromones Market in 2023. The increasing market penetration, not only in agriculture but als%ll%in forestry and various industries such as pharmaceuticals and food, is expected t%ll%drive the demand for agricultural pheromones. Significant agricultural crop production in the region includes grapes, cotton, corn, tomatoes, and stone fruits, which are susceptible t%ll%insect species like codling moths, leaf miners, pink bollworm, and berry moths. Agricultural pheromones are used for mating disruption purposes t%ll%address these challenges. Consequently, these factors are anticipated t%ll%fuel the market demand in North America in the coming years.

Key Market Players

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%ll%Biobest Group NV

%ll%BASF SE

%ll%Shin-Etsu Chemical Co., Ltd.

%ll%ATGC Biotech Pvt Ltd.

%ll%Bioline AgroSciences Ltd.

%ll%Bi%ll%Controle

%ll%Isagr%ll%S.p.A.

%ll%Koppert B.V.

%ll%Hercon Environmental, Inc.

Report Scope:

In this report, the Global Agricultural Pheromones Market has been segmented int%ll%the following categories, in addition t%ll%the industry trends which have als%ll%been detailed below:

%ll%Agricultural Pheromones Market, By Type:

%ll%Sex Pheromones

%ll%Aggregation Pheromones

%ll%Others

%ll%Agricultural Pheromones Market, By Function:

%ll%Mating Disruption

%ll%Detection & Monitoring

%ll%Mass Trapping

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%ll%Agricultural Pheromones Market, By Crop Type:

%ll%Fruits & Nuts

%ll%Field Crops

%ll%Vegetable Crops

%ll%Others

%ll%Agricultural Pheromones Market, By Mode of Application:

%ll%Dispensers

%ll%Traps

%ll%Sprays

%ll%Agricultural Pheromones Market, By Region:

%ll%North America

%ll%United States

%ll%Canada

%ll%Mexico

%ll%Europe

%ll%France

%ll%United Kingdom

%ll%Italy

%ll%Germany

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%ll%Spain

%ll%Asia Pacific

%ll%China

%ll%India

%ll%Japan

%ll%Australia

%ll%South Korea

%ll%South America

%ll%Brazil

%ll%Argentina

%ll%Colombia

%ll%Middle East & Africa

%ll%South Africa

%ll%Saudi Arabia

%ll%UAE

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Agricultural Pheromones Market.

Available Customizations:

Global Agricultural Pheromones Market report with the given market data, TechSci Research offers customizations according t%ll%a company's specific needs. The

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following customization options are available for the report:

Company Information

%II%Detailed analysis and profiling of additional market players (up t%II%five).

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