

China Biopesticide Active Ingredients Market Assessment, By Ingredient Type [Trichoderma Viride, Beauveria Bassiana, Pseudomonas Fluorescence, Verticilium Lecanii, Bacillus Thuringiensis, Others], By Source [Plants, Insects, Microorganisms], By Pest Type [Insecticide, Fungicide, Nematicide, Others], By Application [Soil Treatment, Foliar Treatment, Seed Treatment, Others], By Crop Type [Cash Crop (Cereals & Grains, Oilseeds & Pulses, Fruits & Vegetables, Turf and Ornamentals], By Region, Opportunities and Forecast, 2016-2030F

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Abstracts

China Biopesticide Active Ingredients Market was valued at USD 210.6 million in 2022, expected to reach USD 458 million in 2030 with a CAGR of 10.2% for the forecast period between 2023 and 2030. China is one of the leading consumers of chemical pesticides, which has severely hampered the environment, including water, soil, and air, accompanied by human health. China's reliance on chemical pesticides led to extensive use of harmful chemicals to maintain high crop yields. Agricultural practices using biological pesticides have become a new paradigm for China to reduce its dependency on chemical pesticides. With the massive consumption of chemical pesticides, over 150 million miles of farmland in China have become contaminated, creating unfavorable crop growth conditions.

The environmental degradation has raised concerns for China to find alternative solutions to ensure food security and nature preservation. The objective to implement

green pest management in China substantially covered nearly 67 million hectares in 2020 which is applied to 41.5% of major crops to restrict insect pests and pathogens. Around 3,969 biopesticide products were granted registrations, accounting for around 8% of the total pesticides. For products, around 121 active biopesticide ingredients were given registration in China, accounting for 16.8% of the total pesticide ingredients. The most common five biochemical pesticide products in China are oligosaccharides, gibberellic, brassinolide, triacontanol, and 14-hydroxylated brassinosteroid, accounting for about 70% of the total.

Advance Biopesticide Ingredients for Pest Control

China is the largest populated country with a major challenge to meet its national food security and maintain its ecosystem. Institute for the Control of Agrochemicals, Ministry of Agriculture in China has issued a list of 101 active ingredients, including biochemical pesticides, microbial pesticides, etc. The ingredients are further classified under the microbial pesticides category into bacteria, fungi, viruses, protozoa, and genetically modified microorganisms. Likely Biochemical pesticides are subcategorized into semiochemicals, plant growth regulators, insect growth regulators, plant activator proteins.

Beauveria bassiana, is a fungus microbial pesticide that is a registered active ingredient under 2020 edition. It directly attacks insect pests by associating with the insect cuticle. Discoloration of the larvae or pupae is a visible indication as the entire body cavity fills with fungal mass. Another naturally occurring fungus *Paecilomyces lilacinus* which is generally a parasite of nematodes, can substantially infect all life stages of the pests. *P.lilacinus* spores, along with sprayed water, reaches into the rhizosphere and subsequently come into contact with root knot, cyst, and other parasitic nematodes. The active fungus penetrates after the spore germination and begins to multiply within the nematode cell, eventually killing it. The active pesticide ingredients have huge potential to dominate the market in China and the urgency to replace synthetic chemical from all agricultural practices by 2050.

Biopesticide Applicators Demand

Biopesticides ingredients are particular about their mode of action that can be delivered to the target through several means according to the kind of infection of the pathogen. The formulated microbial products with active ingredients should be flexible to adhere to different plant parts such as seeds, tubers, and transplants and deliver their application to the specified targets.

Seed treatment derives the potential to distribute active ingredients according to the specified amount and targeted area in the prevailing conducive environments. The biopesticide ingredients can be formulated either in powdered form or liquid state along with an inert carrier to facilitate proper seed adherence. The presence of additional compounds such as arabic and xanthan gum provides prolonged resistance to the microbial agents on the seeds. An industrial film coating process is a seed treatment process extensively used for applying *Trichoderma* spp. on radish and cucumber seeds to provide biological crop protection.

Foliar spray treatment is extensively used for liquid formulations specifically applied to the foliar parts of plants to destroy foliar pathogens. The crop canopy has varied concentrations of different nutrients like amino acids, organic acids, etc., which subsequently governs the efficacy of the foliar application. *Pseudomonas fluorescent*, an active biopesticide ingredient applied with foliar treatment, can reduce the severity of bean rust and leaf spot under field conditions.

Impact of COVID-19

The outbreak of the COVID-19 pandemic has exacerbated everyday operations and led to the closure of various agrochemical sectors. At an early stage of the pandemic, China was severely hit, which affected the production of plant protection products (PPPs) which declined sharply. The disturbance created by COVID-19 for the movement of PPPs from significant suppliers to the base ground level has significantly reduced. China policymakers have already declared a policy of zero increase in pesticide use by 2020, under which new regulations were implemented. The effect of a pandemic on biopesticides lasted for a short time to achieve the goal and assure food security in the country; continuous efforts led to compensate for the impact within a very short time. The requirement for chemical-free crops to feed the country's population led farmers to increase the consumption of biological pesticides in various crop productions. The COVID-19 outbreak doesn't affect the biopesticides market as the market has enormous potential for active ingredients specific to the crops.

Impact of Russia-Ukraine War

For many years, China is always an active ally of Russia and Ukraine in trading biopesticides. The annexation of Russia over Ukraine has severely affected international trade and agricultural practices aggravated. The crop yield in Ukraine has been hit hard, which ultimately reduces the demand for providing a significant number of

pesticides. The war led to unprecedented outcomes, such as the prevailing economic sanctions on multiple countries, a rise in commodity prices, and many factors that caused inflation across biopesticides and their derivatives. China's focus on producing indigenous biological pesticides under government policies has encouraged companies to reduce import dependency and build structures to manufacture effective biopesticides. The potential of the biopesticides market can be explored, creating more opportunities for China to lead the country globally.

Contents

1. RESEARCH METHODOLOGY

2. PROJECT SCOPE & DEFINITIONS

3. IMPACT OF COVID-19 ON THE CHINA BIOPESTICIDE ACTIVE INGREDIENTS MARKET

4. IMPACT OF RUSSIA-UKRAINE WAR

5. EXECUTIVE SUMMARY

6. VOICE OF CUSTOMER

6.1. Market Awareness and Product Information

6.2. Brand Awareness and Loyalty

6.3. Factors Considered in Purchase Decision

6.3.1. Brand Name

6.3.2. Quality

6.3.3. Quantity

6.3.4. Price

6.3.5. Product Specification

6.3.6. Application Specification

6.3.7. Shelf-life

6.3.8. Availability of Product

6.4. Frequency of Purchase

6.5. Medium of Purchase

7. CHINA BIOPESTICIDE ACTIVE INGREDIENTS MARKET OUTLOOK, 2016-2030F

7.1. Market Size & Forecast

7.1.1. By Value

7.1.2. By Volume

7.2. By Ingredient Type

7.2.1. Trichoderma Viride

7.2.2. Beauveria Bassiana

7.2.3. Pseudomonas Flourescenes

7.2.4. Verticilium Lecanii

- 7.2.5. Bacillus Thuringiensis
- 7.2.6. Others
- 7.3. By Source
 - 7.3.1. Plants
 - 7.3.2. Insects
 - 7.3.3. Microorganisms
- 7.4. By Pest Type
 - 7.4.1. Insecticide
 - 7.4.2. Fungicide
 - 7.4.3. Nematicide
 - 7.4.4. Others
- 7.5. By Application
 - 6.5.1. Soil Treatment
 - 6.5.2. Foliar Treatment
 - 6.5.3. Seed Treatment
 - 6.5.4. Others
- 7.6. By Crop Type
 - 7.6.1. Cash Crop
 - 7.6.1.1. Cereals & Grains
 - 7.6.1.1.1. Wheat
 - 7.6.1.1.2. Rice
 - 7.6.1.1.3. Corn
 - 7.6.1.1.4. Others
 - 7.6.2. Oilseeds & Pulses
 - 7.6.2.1.1. Cotton Seed
 - 7.6.2.1.2. Soya Bean
 - 7.6.2.1.3. Sunflower
 - 7.6.2.1.4. Others
 - 7.6.3. Fruits and Vegetables
 - 7.6.4. Turf and Ornamentals
- 7.7. By Region
 - 7.7.1. Beijing
 - 7.7.2. Guangzhou
 - 7.7.3. Shanghai
 - 7.7.4. Shenyang
 - 7.7.5. Wuhan
- 7.8. By Company Market Share (%), 2022

8. SUPPLY SIDE ANALYSIS

- 8.1. Capacity, By Company
- 8.2. Production, By Company
- 8.3. Operating Efficiency, By Company
- 8.4. Key Plant Locations (Up to 25)

9. MARKET MAPPING, 2022

- 9.1. By Ingredient Type
- 9.2. By Source
- 9.3. By Pest Type
- 9.4. By Application
- 9.5. By Crop Type
- 9.6. By Region

10. MACRO ENVIRONMENT AND INDUSTRY STRUCTURE

- 10.1. Supply Demand Analysis
- 10.2. Import Export Analysis – Volume and Value
- 10.3. Supply/Value Chain Analysis
- 10.4. PESTEL Analysis
 - 10.4.1. Political Factors
 - 10.4.2. Economic System
 - 10.4.3. Social Implications
 - 10.4.4. Technological Advancements
 - 10.4.5. Environmental Impacts
 - 10.4.6. Legal Compliances and Regulatory Policies (Statutory Bodies Included)
- 10.5. Porter's Five Forces Analysis
 - 10.5.1. Supplier Power
 - 10.5.2. Buyer Power
 - 10.5.3. Substitution Threat
 - 10.5.4. Threat from New Entrant
 - 10.5.5. Competitive Rivalry

11. MARKET DYNAMICS

- 11.1. Growth Drivers
- 11.2. Growth Inhibitors (Challenges, Restraints)

12. KEY PLAYERS LANDSCAPE

- 12.1. Competition Matrix of Top Five Market Leaders
- 12.2. Market Revenue Analysis of Top Five Market Leaders (in %, 2022)
- 12.3. Mergers and Acquisitions/Joint Ventures (If Applicable)
- 12.4. SWOT Analysis (For Five Market Players)
- 12.5. Patent Analysis (If Applicable)

13. PRICING ANALYSIS

14. CASE STUDIES

15. KEY PLAYERS OUTLOOK

- 15.1. ADAMA Ltd.
 - 15.1.1. Company Details
 - 15.1.2. Key Management Personnel
 - 15.1.3. Products & Services
 - 15.1.4. Financials (As reported)
 - 15.1.5. Key Market Focus & Geographical Presence
 - 15.1.6. Recent Developments
- 15.2. Jiangsu Yangnong Chemical Co., Ltd.
- 15.3. Nutrichem Company Ltd.
- 15.4. Zhengzhou Delong Chemical Co., Ltd.
- 15.5. Beijing Bioseen Crop Sciences Co., Ltd.
- 15.6. Shandong Binnong Technology Co., Ltd.
- 15.7. Nanjing Cribon Agrochemical Co., Ltd.
- 15.8. Guangzhou Konnor Daily Necessities Co., Ltd.
- 15.9. Beijing Coway Bioworks Biotech Co., Ltd.
- 15.10. Nantong CAC Chemical Co., Ltd.

*Companies mentioned above DO NOT hold any order as per market share and can be changed as per information available during research work

16. STRATEGIC RECOMMENDATIONS

17. ABOUT US & DISCLAIMER

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