

India Biological Crop Protection Market By Type (Bioherbicides, Bioinsecticides, Bio fungicides, Bionematicides, Others), By Mode of Application (Foliar Spray, Seed Treatment, Soil Treatment, Others), By Crop Type (Cereals & Grains, Oilseeds & Pulses, Fruits & Vegetables, Others), By Form (Liquid, Dry), By Source (Domestic, Import), By Region, Competition, Forecast & Opportunities, 2020-2030F

<https://marketpublishers.com/r/I244A1684599EN.html>

Date: December 2024

Pages: 80

Price: US\$ 3,500.00 (Single User License)

ID: I244A1684599EN

Abstracts

India Biological Crop Protection Market was valued at USD 80.48 Million in 2024 and is anticipated to project impressive growth with a CAGR of 6.38% during forecast period. Biological Crop Protection, also known as biocontrol, revolutionizes pest management by harnessing the power of nature's own defenses against agricultural threats. This eco-friendly approach utilizes organisms such as predators, parasites, and herbivores to control pests like insects, fungi, weeds, and plant diseases. Unlike traditional chemical pesticides, biological crop protection methods prioritize sustainability and environmental preservation, fostering a harmonious balance between agricultural productivity and ecosystem health.

In India, the Biological Crop Protection Market is experiencing rapid expansion, spurred by escalating awareness and governmental backing for eco-conscious farming practices. With mounting concerns over the adverse impacts of chemical pesticides on human health and the environment, an increasing number of farmers are embracing biocontrol methods as effective alternatives. This shift is not only driven by environmental considerations but also by the pressing need to enhance agricultural sustainability and reduce reliance on synthetic chemicals.

The market landscape is characterized by a diverse array of biocontrol products, including bio-pesticides, bio-herbicides, and bio-fungicides, all derived from naturally occurring organisms. These products not only offer effective pest management solutions but also contribute to soil fertility enhancement and overall crop health. By leveraging the innate mechanisms of biological control, farmers can mitigate pest damage while preserving beneficial organisms and fostering biodiversity in agroecosystems.

The burgeoning organic food market in India serves as a significant catalyst for the growth of the Biological Crop Protection sector. As consumer preferences shift towards healthier and environmentally sustainable food choices, the demand for organically grown produce continues to soar. Biocontrol methods align seamlessly with organic farming practices, offering a holistic approach to pest management without compromising on food quality or safety.

Government initiatives aimed at promoting sustainable agriculture further bolster the expansion of the Biological Crop Protection Market. Subsidies, incentives, and educational programs incentivize farmers to adopt biocontrol strategies, driving widespread adoption across the agricultural landscape. By fostering a conducive regulatory environment and providing support for research and development, authorities play a pivotal role in catalyzing innovation and market growth in the biocontrol sector. The burgeoning Biological Crop Protection Market in India represents a paradigm shift towards sustainable and eco-friendly agricultural practices. As stakeholders across the agricultural value chain increasingly recognize the importance of preserving natural ecosystems and ensuring food security, biocontrol methods emerge as indispensable tools for achieving these overarching goals. Through continued innovation, collaboration, and investment, the biocontrol sector is poised to play a pivotal role in shaping the future of agriculture in India and beyond.

Key Market Drivers

Rising Awareness of Environmental Sustainability in Agriculture

The growth of the biological crop protection market in India is propelled by a fundamental shift towards environmentally sustainable agriculture. Concerns surrounding the ecological impact of traditional chemical pesticides have catalyzed a collective effort towards embracing practices that prioritize environmental preservation and long-term soil health. This shift in mindset has spurred increased awareness among

farmers regarding the importance of adopting sustainable agricultural solutions.

Biopesticides and beneficial organisms represent a promising alternative to chemical pesticides, derived from natural sources such as microorganisms, botanical extracts, and predatory insects. These biological crop protection products offer effective pest management while minimizing harm to non-target organisms and ecosystems. Farmers are increasingly acknowledging the significance of maintaining ecological balance within agricultural systems to ensure sustainable crop yields and environmental resilience. Crop rotation is the most widely adopted sustainable agricultural practice (SAPS) in India, encompassing approximately 30 million hectares (Mha) of land and involving around 15 million farmers. Agroforestry, predominantly practiced by large-scale cultivators, and rainwater harvesting, have relatively significant coverage, reaching 25 Mha and 20-27 Mha, respectively. While organic farming currently accounts for only 2.8 Mha — representing a modest 2% of India's total net sown area of 140 Mha — natural farming is emerging as the fastest-growing sustainable practice in the country, with around 800,000 farmers embracing this approach. Integrated Pest Management (IPM), which has seen sustained promotion over several decades, now covers 5 Mha of agricultural land. These evolving practices reflect the growing adoption of sustainable agriculture in India, with varying levels of market penetration and future potential.

The rising demand for biological crop protection solutions underscores a broader trend towards sustainable agriculture, driven by a growing recognition of the need to mitigate the environmental impact of conventional farming practices. Government initiatives and regulatory frameworks promoting the use of biopesticides further reinforce this trend, providing incentives and support for farmers transitioning towards eco-friendly pest management strategies.

Consumer preferences for sustainably produced food products contribute to the momentum behind the adoption of biological crop protection methods. As consumers become more conscientious about the environmental footprint of their food choices, the demand for crops grown using sustainable agricultural practices continues to rise.

Increasing Incidence of Pesticide Resistance

The escalating incidence of pesticide resistance is driving the adoption of biological crop protection methods in India. The prolonged and intensive use of chemical pesticides has inadvertently led to the development of resistance in pest populations, rendering many conventional pesticides ineffective over time. This phenomenon poses a significant challenge to farmers, jeopardizing crop yields and agricultural sustainability.

In response to the pressing issue of pesticide resistance, farmers are increasingly turning to biological crop protection as a viable alternative. Biopesticides and beneficial organisms, derived from natural sources, offer a distinct advantage in pest management by employing multiple modes of action. Unlike conventional pesticides, which often target specific biochemical pathways in pests, biological control methods disrupt various physiological and behavioral processes, making it more difficult for pests to develop resistance.

Integrated Pest Management (IPM) strategies, which incorporate biological control alongside cultural and mechanical methods, have emerged as a holistic approach to pest management. By diversifying pest control tactics, farmers can mitigate the development of resistance and maintain effective pest control while minimizing reliance on chemical pesticides.

As the issue of pesticide resistance continues to escalate in Indian agriculture, the demand for biological crop protection products is expected to soar. Farmers recognize the strategic and sustainable benefits of integrating biopesticides and beneficial organisms into their pest management practices, not only to address current resistance challenges but also to safeguard long-term agricultural productivity and environmental health. Consequently, the adoption of biological crop protection methods is poised to play a pivotal role in mitigating pesticide resistance and ensuring the sustainability of India's agricultural sector.

Consumer Demand for Residue-Free & Safe Food Products

Consumer awareness and demand for residue-free and safe food products are reshaping agricultural practices, driving farmers to adopt sustainable and environmentally friendly crop protection methods. With a growing emphasis on health and food safety, consumers are actively seeking products free from chemical residues, which can persist on conventionally treated crops.

Biological crop protection products have emerged as a promising solution. Derived from natural sources like beneficial organisms and plant extracts, these products offer a favorable residue profile, making them an attractive option for farmers aiming to meet stringent residue standards. By incorporating biological crop protection into their production practices, farmers not only cater to consumer preferences but also contribute to a more sustainable and eco-friendly agriculture.

The rising demand for biological crop protection is indicative of a broader shift in consumer expectations for healthier and safer food options. Consumers are increasingly prioritizing products that align with their values of health, sustainability, and environmental stewardship. This demand-driven approach underscores the importance of biological crop protection in aligning agriculture with evolving consumer needs.

The adoption of biological crop protection represents a strategic response to market dynamics and regulatory requirements. Farmers recognize the competitive advantage of producing crops with minimal chemical residues, particularly in markets with stringent regulatory standards or growing consumer awareness of food safety issues. By embracing biological crop protection, farmers not only safeguard their market access but also enhance the sustainability and resilience of their farming operations.

Technological Advancements & Research Investments

Technological advancements and substantial investments in research and development are propelling innovation in India's biological crop protection market. Ongoing research endeavors are focused on enhancing the efficacy, stability, and scalability of biopesticides. Leveraging advancements in biotechnology, genomics, and microbiology, researchers are identifying new biopesticide formulations and novel microbial strains with potent pest-control properties. Advancements in genetic technologies, particularly CRISPR-based gene editing, present significant opportunities to develop crops with built-in resistance to pests and diseases. This innovation has the potential to minimize or even eliminate the need for external pest control measures, offering a more sustainable and cost-effective approach to crop protection.

These investments in research not only lead to the discovery of new active ingredients but also deepen the understanding of the mechanisms underlying biological control methods. This knowledge fuels the optimization of application techniques, development of effective delivery systems, and integration of biological crop protection into sustainable farming systems.

The convergence of technological progress and research investments positions the biological crop protection market as a dynamic and innovative sector within India's agricultural landscape. Factors driving the growth of this market include rising awareness of environmental sustainability, government support, increasing pesticide resistance, consumer demand for safe food products, and ongoing advancements in technology and research. Together, these drivers underscore the transformative role of biological crop protection in fostering sustainable and eco-friendly agricultural practices.

across the country.

Key Market Challenges

Limited Product Portfolio & Accessibility

The biological crop protection market in India confronts challenges stemming from a limited product portfolio and accessibility issues. In contrast to the extensive range of chemical pesticides available, the assortment of commercially viable biopesticides and beneficial organisms remains relatively narrow. This constraint on diversity may hinder farmers' options for effectively managing specific pests across various crops and environmental conditions.

Expanding the product portfolio of biopesticides and beneficial organisms necessitates substantial investments in research and development, alongside fostering collaborations between research institutions and industry stakeholders. Concerted efforts should be directed towards enhancing the accessibility of these products, particularly for farmers in remote or resource-constrained regions. Government support, including subsidies, incentives, and promotional initiatives, holds significant potential in encouraging the production, distribution, and adoption of biological crop protection products. By addressing these accessibility challenges, the biological crop protection market can achieve greater inclusivity and broader adoption throughout diverse agricultural landscapes.

Difficulty of Integration into Conventional Farming Practices

The integration of biological crop protection methods into conventional farming practices poses a notable challenge, particularly for farmers accustomed to the routine use of chemical pesticides. Adjusting to new and unfamiliar biological control methods requires a significant shift in mindset, changes in application timing, and adaptations to overall pest management strategies. To overcome this challenge, extensive farmer education and training programs are imperative. These programs should offer practical demonstrations of biological crop protection's application in real farming scenarios. Platforms such as extension services, farmer field schools, and knowledge-sharing forums play a crucial role in facilitating the exchange of experiences and best practices among farmers who have successfully integrated biological control methods. Providing economic incentives like subsidies or price differentials for farmers adopting biological crop protection can serve as a motivating factor for transition. Collaboration among agricultural experts, industry stakeholders, and policymakers is essential for developing

and promoting integration strategies tailored to the specific needs and practices of Indian farmers.

Key Market Trends

Growing Emphasis on Sustainable Agriculture Practices

A prominent trend shaping the India biological crop protection market is the increasing focus on sustainable agriculture practices. With mounting environmental concerns surrounding the use of chemical pesticides, farmers are pivoting towards eco-friendly and sustainable alternatives. Biological crop protection methods, which encompass biopesticides, beneficial insects, and microbial agents, align closely with the principles of sustainable agriculture. Farmers are becoming more cognizant of the necessity to maintain a balanced ecosystem within their fields, fostering biodiversity, and minimizing the ecological footprint of conventional farming practices. This shift towards sustainable agriculture is further reinforced by evolving consumer preferences for food produced with minimal environmental impact.

The adoption of biological crop protection methods is gaining traction as a means to promote sustainability and resilience in Indian agriculture. Beyond addressing environmental concerns, this trend offers economic benefits such as reduced reliance on chemical inputs, improved soil health, and enhanced crop resilience in the long term.

As sustainability continues to be a driving force in agricultural decision-making, biological crop protection is poised to play a central role in shaping the future of Indian agriculture. By embracing sustainable practices and integrating bio-based solutions, farmers can not only mitigate environmental risks but also ensure the long-term viability and productivity of their farms.

Rising Expansion of Product Portfolio & Innovation

The biological crop protection market in India is experiencing a notable trend of continuous expansion in product portfolios and increased innovation. As the demand for biological solutions continues to grow, there is a heightened focus on research and development efforts to introduce new and highly effective biopesticides, beneficial organisms, and microbial agents. These innovative solutions aim to provide farmers with sustainable and eco-friendly alternatives to conventional chemical-based crop protection methods.

In addition to the advancements in biological solutions, there have been significant innovations in formulation technologies. These innovations, such as encapsulation and improved delivery systems, have played a vital role in enhancing the stability and efficacy of biological crop protection products. By ensuring the controlled release of active ingredients, these formulation technologies help maximize the effectiveness of the solutions and minimize any potential negative impacts on the environment. The field of biotechnology and genetic engineering has contributed to the development of genetically modified crops with inherent resistance to pests. Through the incorporation of specific genetic traits, these crops possess the ability to ward off pests naturally, reducing the need for external interventions. This not only reduces the reliance on chemical pesticides but also offers farmers a more sustainable and environmentally friendly approach to pest management.

The expansion of the product portfolio in the biological crop protection market provides farmers with a broader range of options for managing pests and diseases. With a diverse array of solutions available, farmers can tailor their pest management strategies to the specific needs of their crops and local agro-climatic conditions. This level of customization not only improves the effectiveness of pest control but also promotes sustainable agricultural practices. Overall, the continuous expansion and innovation in the biological crop protection market in India are driving positive changes in the agricultural sector. By embracing these advancements, farmers can adopt more sustainable and eco-friendly practices that promote long-term crop health and productivity while minimizing the impact on the environment.

Segmental Insights

Type Insights

Based on the type, the bioinsecticides emerge as the frontrunners, surpassing other categories like bioherbicides, biofungicides, and bionematicides. This dominance stems from several key factors shaping the agricultural landscape. There is a notable surge in awareness among farmers and consumers regarding the adverse impacts of chemical pesticides on both the environment and human health. This heightened consciousness has spurred a heightened demand for safer and more sustainable alternatives in crop protection.

The escalating adoption of organic farming practices has contributed significantly to the prominence of bioinsecticides. Organic farming emphasizes eco-friendly approaches, aligning seamlessly with the natural origins and minimal environmental impacts of

bioinsecticides. As a result, farmers increasingly favor bioinsecticides as a reliable solution for pest control while adhering to organic farming principles.

Bioinsecticides have proven their efficacy in pest management while minimizing the risk of resistance development, further cementing their appeal among farmers. With their demonstrated effectiveness and environmentally friendly profile, bioinsecticides offer a compelling alternative to chemical pesticides. The growing momentum towards bioinsecticides underscores a broader shift towards sustainable and eco-conscious agricultural practices in India. As farmers continue to prioritize environmental stewardship and seek safer pest management solutions, the prominence of bioinsecticides in the Indian market is expected to persist and evolve, driving further innovation and adoption in biological crop protection.

Mode of Application Insights

Based on Mode of Application, the India Biological Crop Protection Market is currently dominated by the Foliar Spray method, a widely adopted technique that has gained significant traction in the agricultural industry. This method, known for its efficiency, offers precise and targeted application of biological crop protection products, resulting in minimized waste and maximized yield. By effectively delivering the necessary protection to crops, the Foliar Spray method has become the preferred choice for farmers and growers across India, playing a vital role in the success and productivity of the agricultural sector. Not only does the Foliar Spray method ensure the precise application of biological crop protection products, but it also offers additional benefits. The technique allows for easy absorption of the protective substances by the leaves, ensuring effective defense against pests and diseases. The Foliar Spray method provides flexibility in application timing, making it suitable for various crop stages and environmental conditions. Farmers can adjust the spray schedule based on crop requirements, weather conditions, and pest outbreaks, ensuring optimal protection and maximizing crop health.

The adoption of the Foliar Spray method has not only improved the overall efficacy of crop protection in India but has also positively impacted sustainability efforts. With reduced product wastage and targeted application, the method minimizes the environmental impact of crop protection practices. This aligns with the global push for sustainable agriculture, promoting responsible and efficient use of biological crop protection products. As the agricultural sector continues to evolve, the Foliar Spray method remains a go-to choice for farmers and growers in India. Its proven track record of efficiency, precision, and sustainability makes it an indispensable tool for ensuring

crop health and maximizing yields. With ongoing advancements in technology and research, the Foliar Spray method is expected to further enhance its effectiveness, contributing to the continued success of the India Biological Crop Protection Market.

Regional Insights

Based on the region, the Western region of India, particularly Maharashtra and Gujarat, commands a leading position in the Indian Biological Crop Protection Market. Renowned for their fertile lands and favorable climatic conditions, these states have long been hubs of extensive agricultural activity. In recent years, farmers in these regions have demonstrated a notable shift towards eco-friendly farming practices, embracing organic fertilizers, integrated pest management, and precision agriculture techniques. This transition aligns with a growing awareness of the significance of sustainable agriculture and the advantages offered by biological crop protection products. As a result, the Western region has emerged as a key driver of growth in the Indian Biological Crop Protection Market, leveraging its agricultural prowess and proactive adoption of sustainable farming methods.

Key Market Players

T. Stanes & Company Ltd.

Agri Life Ltd.

UPL Ltd.

IPL Biologicals Ltd.

Kan Biosys Pvt. Ltd.

Manidharma Biotech Pvt. Ltd.

Aumgene Biosciences

Criyagen Agri & Biotech Pvt. Ltd.

Varsha Bioscience and Technology India Pvt. Ltd.

PI Industries Ltd.

Report Scope:

In this report, the India Biological Crop Protection Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

India Biological Crop Protection Market, By Type:

Bioherbicides

Bioinsecticides

Bio fungicides

Bionematicides

Others

India Biological Crop Protection Market, By Mode of Application:

Foliar Spray

Seed Treatment

Soil Treatment

Others

India Biological Crop Protection Market, By Crop Type:

Cereals & Grains

Oilseeds & Pulses

Fruits & Vegetables

Others

India Biological Crop Protection Market, By Form:

Liquid

Dry

India Biological Crop Protection Market, By Source:

Domestic

Import

India Biological Crop Protection Market, By Region:

North

South

West

East

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the India Biological Crop Protection Market.

Available Customizations:

India Biological Crop Protection 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).

Contents

1. PRODUCT OVERVIEW

- 1.1. Market Definition
- 1.2. Scope of the Market
 - 1.2.1. Markets Covered
 - 1.2.2. Years Considered for Study
 - 1.2.3. Key Market Segmentations

2. RESEARCH METHODOLOGY

- 2.1. Objective of the Study
- 2.2. Baseline Methodology
- 2.3. Key Industry Partners
- 2.4. Major Association and Secondary Sources
- 2.5. Forecasting Methodology
- 2.6. Data Triangulation & Validations
- 2.7. Assumptions and Limitations

3. EXECUTIVE SUMMARY

- 3.1. Overview of the Market
- 3.2. Overview of Key Market Segmentations
- 3.3. Overview of Key Market Players
- 3.4. Overview of Key Regions/Countries
- 3.5. Overview of Market Drivers, Challenges, Trends

4. VOICE OF CUSTOMER

5. INDIA BIOLOGICAL CROP PROTECTION MARKET OUTLOOK

- 5.1. Market Size & Forecast
 - 5.1.1. By Value
- 5.2. Market Share & Forecast
 - 5.2.1. By Type (Bioherbicides, Bioinsecticides, Bio fungicides, Bionematicides, Others)
 - 5.2.2. By Mode of Application (Foliar Spray, Seed Treatment, Soil Treatment, Others)
 - 5.2.3. By Crop Type (Cereals & Grains, Oilseeds & Pulses, Fruits & Vegetables, Others)

- 5.2.4. By Form (Liquid, Dry)
- 5.2.5. By Source (Domestic, Import)
- 5.2.6. By Region
- 5.2.7. By Company (2024)
- 5.3. Market Map

6. NORTH INDIA BIOLOGICAL CROP PROTECTION MARKET OUTLOOK

- 6.1. Market Size & Forecast
 - 6.1.1. By Value
- 6.2. Market Share & Forecast
 - 6.2.1. By Type
 - 6.2.2. By Mode of Application
 - 6.2.3. By Crop Type
 - 6.2.4. By Form
 - 6.2.5. By Source

7. WEST INDIA BIOLOGICAL CROP PROTECTION MARKET OUTLOOK

- 7.1. Market Size & Forecast
 - 7.1.1. By Value
- 7.2. Market Share & Forecast
 - 7.2.1. By Type
 - 7.2.2. By Mode of Application
 - 7.2.3. By Crop Type
 - 7.2.4. By Form
 - 7.2.5. By Source

8. SOUTH INDIA BIOLOGICAL CROP PROTECTION MARKET OUTLOOK

- 8.1. Market Size & Forecast
 - 8.1.1. By Value
- 8.2. Market Share & Forecast
 - 8.2.1. By Type
 - 8.2.2. By Mode of Application
 - 8.2.3. By Crop Type
 - 8.2.4. By Form
 - 8.2.5. By Source

9. EAST INDIA BIOLOGICAL CROP PROTECTION MARKET OUTLOOK

9.1. Market Size & Forecast

9.1.1. By Value

9.2. Market Share & Forecast

9.2.1. By Type

9.2.2. By Mode of Application

9.2.3. By Crop Type

9.2.4. By Form

9.2.5. By Source

10. MARKET DYNAMICS

10.1. Drivers

10.2. Challenges

11. MARKET TRENDS & DEVELOPMENTS

11.1. Merger & Acquisition (If Any)

11.2. Product Launches (If Any)

11.3. Recent Developments

12. INDIA BIOLOGICAL CROP PROTECTION MARKET: SWOT ANALYSIS

13. PORTER'S FIVE FORCES ANALYSIS

13.1. Competition in the Industry

13.2. Potential of New Entrants

13.3. Power of Suppliers

13.4. Power of Customers

13.5. Threat of Substitute Products

14. COMPETITIVE LANDSCAPE

14.1. T. Stanes & Company Ltd.

14.1.1. Business Overview

14.1.2. Company Snapshot

14.1.3. Products & Services

14.1.4. Financials (As Reported)

- 14.1.5. Recent Developments
- 14.1.6. Key Personnel Details
- 14.1.7. SWOT Analysis
- 14.2. Agri Life Ltd.
- 14.3. UPL Ltd.
- 14.4. IPL Biologicals Ltd.
- 14.5. Kan Biosys Pvt. Ltd.
- 14.6. Manidharma Biotech Private Limited
- 14.7. Aumgene Biosciences
- 14.8. Criyagen Agri & Biotech Pvt.
- 14.9. Varsha Bioscience and Technology India Pvt. Ltd
- 14.10. PI Industries Limited

15. STRATEGIC RECOMMENDATIONS

16. ABOUT US & DISCLAIMER

I would like to order

Product name: India Biological Crop Protection Market By Type (Bioherbicides, Bioinsecticides, Bio fungicides, Bionematicides, Others), By Mode of Application (Foliar Spray, Seed Treatment, Soil Treatment, Others), By Crop Type (Cereals & Grains, Oilseeds & Pulses, Fruits & Vegetables, Others), By Form (Liquid, Dry), By Source (Domestic, Import), By Region, Competition, Forecast & Opportunities, 2020-2030F

Product link: <https://marketpublishers.com/r/l244A1684599EN.html>

Price: US\$ 3,500.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:

info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page <https://marketpublishers.com/r/l244A1684599EN.html>