

Plant-Based Biopesticides Market Forecasts to 2034 – Global Analysis By Product Type (Botanical Insecticides, Botanical Fungicides, Botanical Herbicides, Plant-Based Nematicides, Plant-Derived Repellents and Other Product Types), Plant Source, Mode of Action, Crop Type, Form, and Geography

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Abstracts

According to Statistics MRC, the Global Plant-Based Biopesticides Market is accounted for \$0.9 billion in 2026 and is expected to reach \$3.4 billion by 2034 growing at a CAGR of 18.1% during the forecast period. Plant-Based Biopesticides are crop-protection products derived from plants or plant compounds that control insects, pathogens, weeds, or other agricultural pests. They can contain botanical extracts, essential oils, naturally occurring compounds, and plant-derived active ingredients with pesticidal or pest-repellent properties. These products are used in integrated pest management across field crops, horticulture, protected cultivation, and specialty agriculture. Plant-based biopesticides can offer biodegradable alternatives to certain conventional chemical pesticides while supporting residue-management and sustainable farming objectives. Their effectiveness can be enhanced through formulation technologies and targeted delivery systems. Increasing demand for lower-residue agricultural products and environmentally compatible crop protection is supporting market development. Research into botanical compounds, extraction methods, stabilization, and formulation is expanding the range of commercially viable solutions.

Market Dynamics

Driver:

Growing demand for sustainable crop protection

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Increasing consumer and regulatory pressure for sustainable crop protection is driving adoption of plant-based biopesticides that reduce reliance on synthetic chemicals. Farmers seek effective alternatives to conventional pesticides that meet organic and sustainable production requirements. Growing awareness of environmental and health impacts of synthetic pesticides supports market expansion. Regulatory restrictions on chemical pesticides create opportunities for plant-based alternatives. Sustainable agriculture is becoming mainstream across global farming systems.

Restraint:

Variable efficacy and farmer acceptance

Variable efficacy of plant-based biopesticides across different environmental conditions presents challenges for consistent performance and farmer confidence. Limited awareness of plant-based biopesticide benefits among conventional farmers may constrain adoption. Storage and handling requirements for botanical products affect distribution and use. Regulatory frameworks for biopesticides vary significantly across regions. Farmer skepticism regarding plant-based efficacy may limit market growth.

Opportunity:

Innovation in formulation and application technology

Innovation in formulation and application technology for plant-based biopesticides presents significant growth opportunities. Development of combination products integrating multiple botanical actives is expanding product capabilities. Growing investment in botanical research accelerates product innovation. Partnerships between biopesticide companies and agricultural companies expand market reach. Technology advances continue improving product performance and stability.

Threat:

Competition from conventional and microbial pesticides

Competition from conventional pesticides and microbial biopesticides may limit plant-based biopesticide adoption. Economic pressures may lead farmers to prioritize lower-cost conventional approaches. Regulatory uncertainties regarding botanical product claims may affect marketing. Consumer skepticism regarding plant-based efficacy may affect adoption. Distribution challenges may limit market access.

Covid-19 Impact:

The COVID-19 pandemic highlighted the importance of resilient and sustainable food systems, accelerating interest in plant-based biopesticides. Supply chain disruptions affecting conventional pesticide availability increased interest in alternative products. The post-pandemic period has witnessed sustained investment in sustainable agriculture and plant-based biopesticides. Growing focus on food system sustainability continues driving market adoption. Plant-based biopesticides have gained importance in agricultural systems.

The botanical insecticides segment is expected to be the largest during the forecast period

The botanical insecticides segment is expected to account for the largest market share during the forecast period as botanical insecticides represent the most established and widely adopted category of plant-based biopesticides. Neem and pyrethrum-based insecticides are widely used in organic and sustainable agriculture. Growing demand for effective, eco-friendly insect control drives adoption. Established efficacy and application knowledge support segment leadership. Insect control is a primary concern for crop production.

The neem segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the neem segment is predicted to witness the highest growth rate driven by increasing adoption of neem-based products for insect and disease control. Neem offers multiple modes of action and broad-spectrum activity. Growing consumer acceptance of neem products supports market expansion. Neem is widely available and cost-effective. Technology advances continue improving neem formulation and efficacy.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share owing to advanced agricultural technology adoption, strong regulatory framework for biopesticides, and high farmer awareness of sustainable practices. The United States hosts major plant-based biopesticide companies with established product portfolios and distribution networks. Growing organic farming acreage and sustainability commitments drive market adoption. Significant investment in agricultural research supports market leadership.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR driven by large agricultural area, growing population, and increasing adoption of sustainable agricultural practices. China, India, and Southeast Asian countries are expanding plant-based biopesticide adoption as farmers seek sustainable productivity solutions. Growing food security concerns and environmental awareness accelerate market growth. Government support for sustainable agriculture creates favorable market environment.

Key players in the market

Some of the key players in the Plant-Based Biopesticides Market include E.I.D. Parry (India) Limited, Bioworks, Inc., Valent BioSciences LLC, Certis Belchim B.V., Agro-Kanesho Co., Ltd., Andermatt Biocontrol AG, IPL Biologicals Limited, Biocare Copenhagen ApS, Biobest Group, Koppert Biological Systems, Gowan Company, Seipasa S.A., Atlantica Agrícola S.A., Indo Biocontrols, and Novozymes A/S.

Key Developments:

In May 2025, E.I.D. Parry (India) Limited launched a new line of neem-based biopesticides with enhanced efficacy for fruits and vegetables. The products offer sustainable alternatives to conventional insecticides. The development responds to growing demand for plant-based biopesticides.

In April 2025, Bioworks, Inc. announced significant expansion of its plant-based biopesticide portfolio with new botanical fungicides and insecticides.

Product Types Covered:

Botanical Insecticides

Botanical Fungicides

Botanical Herbicides

Plant-Based Nematicides

Plant-Derived Repellents

Other Product Types

Plant Sources Covered:

Neem

Chrysanthemum

Pyrethrum

Essential Oil Plants

Leguminous Plants

Other Plant Sources

Modes of Action Covered:

Toxicity

Feeding Inhibition

Growth Regulation

Repellency

Ovicide Activity

Other Modes of Action

Crop Types Covered:

Cereals & Grains

Fruits & Vegetables

Oilseeds & Pulses

Cash Crops

Turf & Ornamentals

Other Crop Types

Forms Covered:

Liquid

Powder

Emulsions

Granules

Suspensions

Other Forms

Regions Covered:

North America

United States

Canada

Mexico

Europe

United Kingdom

Germany

France

Italy

Spain

Netherlands

Belgium

Sweden

Switzerland

Poland

Rest of Europe

Asia Pacific

China

Japan

India

South Korea

Australia

Indonesia

Thailand

Malaysia

Singapore

Vietnam

Rest of Asia Pacific

South America

Brazil

Argentina

Colombia

Chile

Peru

Rest of South America

Rest of the World (RoW)

Middle East

Saudi Arabia

United Arab Emirates

Qatar

Israel

Rest of Middle East

Africa

South Africa

Egypt

Morocco

Rest of Africa

What our report offers:

Market share assessments for the regional and country-level segments

Strategic recommendations for the new entrants

Covers Market data for the years 2023, 2024, 2025, 2026, 2027, 2028, 2030, 2032 and 2034

Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)

Strategic recommendations in key business segments based on the market estimations

Competitive landscaping mapping the key common trends

Company profiling with detailed strategies, financials, and recent developments

Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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