

Crop Disease Forecasting Market Forecasts to 2034 – Global Analysis By Disease (Fungal Diseases, Bacterial Diseases, Viral Diseases, Nematode Diseases and Other Diseases), Forecasting Method, Data Input, Forecast Output, End User, and Geography

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Abstracts

According to Statistics MRC, the Global Crop Disease Forecasting Market is accounted for \$0.6 billion in 2026 and is expected to reach \$2.0 billion by 2034 growing at a CAGR of 16.3% during the forecast period. Crop disease forecasting comprises digital tools and analytical systems that predict the likelihood, timing, and potential severity of crop diseases using agricultural and environmental data. These solutions integrate weather conditions, humidity, temperature, soil information, crop growth stages, historical disease patterns, remote sensing, and artificial intelligence to generate early warnings and risk assessments. Crop disease forecasting enables farmers to implement timely crop protection measures, reduce unnecessary chemical applications, limit yield losses, and improve farm management decisions. Increasing adoption of precision agriculture and climate variability are driving demand for predictive crop disease management technologies.

Market Dynamics

Driver:

Growing climate variability and disease pressure

Increasing climate variability and changing weather patterns are creating more favorable conditions for crop diseases, driving demand for forecasting solutions that

enable proactive disease management. Farmers are seeking early warning systems to optimize fungicide applications and reduce crop losses. Climate change is expanding disease ranges and creating new disease challenges. Growing crop value and input costs are increasing economic incentives for disease prevention. Yield protection is becoming increasingly important for farm profitability.

Restraint:

Limited model accuracy and data availability

Limited model accuracy and data availability for disease forecasting constrain adoption and effectiveness of forecasting solutions across diverse cropping systems. Forecasting models require extensive localized data for calibration and validation that may not be available in all regions. Complex interactions between weather, crop, and pathogen factors create modeling challenges. Data gaps in developing regions limit forecast availability and accuracy. Model validation and uncertainty quantification remain technical challenges.

Opportunity:

Integration of AI and remote sensing technologies

Integration of artificial intelligence and remote sensing technologies for enhanced disease detection and forecasting presents significant growth opportunities for solution providers. AI models can analyze satellite and sensor data for early disease detection before visible symptoms appear. Development of smartphone-based disease identification and forecasting applications is expanding access to smallholder farmers. Integration with farm management platforms is creating comprehensive decision support solutions. AI capabilities continue improving disease forecasting accuracy.

Threat:

Competition from alternative disease management approaches

Competition from alternative disease management approaches including resistant varieties and chemical treatments may limit forecasting solution adoption. Limited farmer awareness of forecasting benefits may constrain adoption. Economic pressures may lead farmers to prioritize lower-cost disease management approaches. Connectivity limitations in rural areas may affect real-time forecast delivery. Technology adoption barriers may limit market penetration.

Covid-19 Impact:

The COVID-19 pandemic highlighted the importance of food system resilience and the need for effective crop disease management. Digital forecasting solutions gained importance for remote decision support during movement restrictions. The post-pandemic period has witnessed sustained interest in precision agriculture and digital advisory services. Growing focus on food security and climate adaptation supports market growth. Digital agriculture adoption has accelerated across farming sectors.

The fungal diseases segment is expected to be the largest during the forecast period

The fungal diseases segment is expected to account for the largest market share during the forecast period as fungal diseases represent the most significant disease threat to crop production globally with established forecasting models and historical disease data for major crop-pathogen systems. Fungal diseases cause substantial yield losses and require timely fungicide applications based on disease risk assessment. Extensive research and modeling experience support fungal disease forecasting leadership. Fungal disease forecasting has the most established scientific foundation. Yield losses from fungal diseases drive significant farmer interest in forecasting.

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

Over the forecast period, the machine learning segment is predicted to witness the highest growth rate driven by increasing availability of large datasets and computing power enabling more accurate disease forecasting models. Machine learning algorithms can identify complex patterns in environmental and disease data for improved prediction accuracy. Growing adoption of digital agriculture platforms is generating data for machine learning model training. Machine learning is outperforming traditional models for disease prediction. Data availability is expanding machine learning applications across cropping systems.

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, extensive crop disease research infrastructure, and high farmer awareness of precision agriculture

solutions. The United States hosts major agricultural technology companies and disease forecasting service providers with established farmer networks and data platforms. Strong agricultural research and extension infrastructure reinforce regional market leadership. Large-scale commercial farming drives disease forecasting adoption across the region.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR driven by rapid agricultural technology adoption, growing food security concerns, and climate change impacts on crop diseases across major economies. China, India, and Southeast Asian countries are expanding disease forecasting capabilities to support smallholder farmers. Growing crop intensification and climate variability are accelerating market growth across the region. Government support for agricultural digitalization is increasing adoption across Asian markets.

Key players in the market

Some of the key players in the Crop Disease Forecasting Market include Climate FieldView, Plantix, AgroStar, Prospera Technologies Ltd., Arable Labs, Inc., Taranis Visual Ltd., PEAT GmbH, PlantVillage, Trace Genomics, Inc., OneSoil, IBM Corporation, John Deere, Trimble Inc., AgriTask, and CropX Technologies Ltd.

Key Developments:

In May 2025, Climate FieldView launched an enhanced disease forecasting platform integrating AI-powered risk prediction and real-time disease alerts for major cropping systems. The platform provides actionable recommendations for fungicide timing and disease management.

In April 2025, Taranis Visual Ltd. announced significant enhancements to its disease forecasting capabilities with new remote sensing and AI detection features enabling earlier disease identification and intervention.

Diseases Covered:

Fungal Diseases

Bacterial Diseases

Viral Diseases

Nematode Diseases

Other Diseases

Forecasting Methods Covered:

Weather Models

Statistical Models

Machine Learning

Deep Learning

Hybrid Models

Other Forecasting Methods

Data Inputs Covered:

Weather Data

Satellite Data

Crop Data

Soil Data

Field Sensor Data

Other Data Inputs

Forecast Outputs Covered:

Risk Scores

Disease Alerts

Outbreak Maps

Severity Forecasts

Treatment Timing

Other Forecast Outputs

End Users Covered:

Farmers

Agronomists

Crop Consultants

Agrochemical Companies

Government Agencies

Other End Users

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

Contents

1 EXECUTIVE SUMMARY

- 1.1 Market Snapshot and Key Highlights
- 1.2 Growth Drivers, Challenges, and Opportunities
- 1.3 Competitive Landscape Overview
- 1.4 Strategic Insights and Recommendations

2 RESEARCH FRAMEWORK

- 2.1 Study Objectives and Scope
- 2.2 Stakeholder Analysis
- 2.3 Research Assumptions and Limitations
- 2.4 Research Methodology
 - 2.4.1 Data Collection (Primary and Secondary)
 - 2.4.2 Data Modeling and Estimation Techniques
 - 2.4.3 Data Validation and Triangulation
 - 2.4.4 Analytical and Forecasting Approach

3 MARKET DYNAMICS AND TREND ANALYSIS

- 3.1 Market Definition and Structure
- 3.2 Key Market Drivers
- 3.3 Market Restraints and Challenges
- 3.4 Growth Opportunities and Investment Hotspots
- 3.5 Industry Threats and Risk Assessment
- 3.6 Technology and Innovation Landscape
- 3.7 Emerging and High-Growth Markets
- 3.8 Regulatory and Policy Environment
- 3.9 Impact of COVID-19 and Recovery Outlook

4 COMPETITIVE AND STRATEGIC ASSESSMENT

- 4.1 Porter's Five Forces Analysis
 - 4.1.1 Supplier Bargaining Power
 - 4.1.2 Buyer Bargaining Power
 - 4.1.3 Threat of Substitutes
 - 4.1.4 Threat of New Entrants

- 4.1.5 Competitive Rivalry
- 4.2 Market Share Analysis of Key Players
- 4.3 Product Benchmarking and Performance Comparison

5 GLOBAL CROP DISEASE FORECASTING MARKET, BY DISEASE

- 5.1 Fungal Diseases
- 5.2 Bacterial Diseases
- 5.3 Viral Diseases
- 5.4 Nematode Diseases
- 5.5 Other Diseases

6 GLOBAL CROP DISEASE FORECASTING MARKET, BY FORECASTING METHOD

- 6.1 Weather Models
- 6.2 Statistical Models
- 6.3 Machine Learning
- 6.4 Deep Learning
- 6.5 Hybrid Models
- 6.6 Other Forecasting Methods

7 GLOBAL CROP DISEASE FORECASTING MARKET, BY DATA INPUT

- 7.1 Weather Data
- 7.2 Satellite Data
- 7.3 Crop Data
- 7.4 Soil Data
- 7.5 Field Sensor Data
- 7.6 Other Data Inputs

8 GLOBAL CROP DISEASE FORECASTING MARKET, BY FORECAST OUTPUT

- 8.1 Risk Scores
- 8.2 Disease Alerts
- 8.3 Outbreak Maps
- 8.4 Severity Forecasts
- 8.5 Treatment Timing
- 8.6 Other Forecast Outputs

9 GLOBAL CROP DISEASE FORECASTING MARKET, BY END USER

- 9.1 Farmers
- 9.2 Agronomists
- 9.3 Crop Consultants
- 9.4 Agrochemical Companies
- 9.5 Government Agencies
- 9.6 Other End Users

10 GLOBAL CROP DISEASE FORECASTING MARKET, BY GEOGRAPHY

- 10.1 North America
 - 10.1.1 United States
 - 10.1.2 Canada
 - 10.1.3 Mexico
- 10.2 Europe
 - 10.2.1 United Kingdom
 - 10.2.2 Germany
 - 10.2.3 France
 - 10.2.4 Italy
 - 10.2.5 Spain
 - 10.2.6 Netherlands
 - 10.2.7 Belgium
 - 10.2.8 Sweden
 - 10.2.9 Switzerland
 - 10.2.10 Poland
 - 10.2.11 Rest of Europe
- 10.3 Asia Pacific
 - 10.3.1 China
 - 10.3.2 Japan
 - 10.3.3 India
 - 10.3.4 South Korea
 - 10.3.5 Australia
 - 10.3.6 Indonesia
 - 10.3.7 Thailand
 - 10.3.8 Malaysia
 - 10.3.9 Singapore
 - 10.3.10 Vietnam

10.3.11 Rest of Asia Pacific

10.4 South America

10.4.1 Brazil

10.4.2 Argentina

10.4.3 Colombia

10.4.4 Chile

10.4.5 Peru

10.4.6 Rest of South America

10.5 Rest of the World (RoW)

10.5.1 Middle East

10.5.1.1 Saudi Arabia

10.5.1.2 United Arab Emirates

10.5.1.3 Qatar

10.5.1.4 Israel

10.5.1.5 Rest of Middle East

10.5.2 Africa

10.5.2.1 South Africa

10.5.2.2 Egypt

10.5.2.3 Morocco

10.5.2.4 Rest of Africa

11 STRATEGIC MARKET INTELLIGENCE

11.1 Industry Value Network and Supply Chain Assessment

11.2 White-Space and Opportunity Mapping

11.3 Product Evolution and Market Life Cycle Analysis

11.4 Channel, Distributor, and Go-to-Market Assessment

12 INDUSTRY DEVELOPMENTS AND STRATEGIC INITIATIVES

12.1 Mergers and Acquisitions

12.2 Partnerships, Alliances, and Joint Ventures

12.3 New Product Launches and Certifications

12.4 Capacity Expansion and Investments

12.5 Other Strategic Initiatives

13 COMPANY PROFILES

13.1 Climate FieldView

- 13.2 Plantix
- 13.3 AgroStar
- 13.4 Prospera Technologies Ltd.
- 13.5 Arable Labs, Inc.
- 13.6 Taranis Visual Ltd.
- 13.7 PEAT GmbH
- 13.8 PlantVillage
- 13.9 Trace Genomics, Inc.
- 13.10 OneSoil
- 13.11 IBM Corporation
- 13.12 John Deere
- 13.13 Trimble Inc.
- 13.14 AgriTask
- 13.15 CropX Technologies Ltd.

List of Tables

Table 1 Global Crop Disease Forecasting Market Outlook, By Region (2023–2034) (\$MN)

Table 2 Global Crop Disease Forecasting Market, By Disease (2023–2034) (\$MN)

Table 3 Global Crop Disease Forecasting Market, By Fungal Diseases (2023–2034) (\$MN)

Table 4 Global Crop Disease Forecasting Market, By Bacterial Diseases (2023–2034) (\$MN)

Table 5 Global Crop Disease Forecasting Market, By Viral Diseases (2023–2034) (\$MN)

Table 6 Global Crop Disease Forecasting Market, By Nematode Diseases (2023–2034) (\$MN)

Table 7 Global Crop Disease Forecasting Market, By Other Diseases (2023–2034) (\$MN)

Table 8 Global Crop Disease Forecasting Market, By Forecasting Method (2023–2034) (\$MN)

Table 9 Global Crop Disease Forecasting Market, By Weather Models (2023–2034) (\$MN)

Table 10 Global Crop Disease Forecasting Market, By Statistical Models (2023–2034) (\$MN)

Table 11 Global Crop Disease Forecasting Market, By Machine Learning (2023–2034) (\$MN)

Table 12 Global Crop Disease Forecasting Market, By Deep Learning (2023–2034) (\$MN)

Table 13 Global Crop Disease Forecasting Market, By Hybrid Models (2023–2034)

(\$MN)

Table 14 Global Crop Disease Forecasting Market, By Other Forecasting Methods (2023–2034) (\$MN)

Table 15 Global Crop Disease Forecasting Market, By Data Input (2023–2034) (\$MN)

Table 16 Global Crop Disease Forecasting Market, By Weather Data (2023–2034) (\$MN)

Table 17 Global Crop Disease Forecasting Market, By Satellite Data (2023–2034) (\$MN)

Table 18 Global Crop Disease Forecasting Market, By Crop Data (2023–2034) (\$MN)

Table 19 Global Crop Disease Forecasting Market, By Soil Data (2023–2034) (\$MN)

Table 20 Global Crop Disease Forecasting Market, By Field Sensor Data (2023–2034) (\$MN)

Table 21 Global Crop Disease Forecasting Market, By Other Data Inputs (2023–2034) (\$MN)

Table 22 Global Crop Disease Forecasting Market, By Forecast Output (2023–2034) (\$MN)

Table 23 Global Crop Disease Forecasting Market, By Risk Scores (2023–2034) (\$MN)

Table 24 Global Crop Disease Forecasting Market, By Disease Alerts (2023–2034) (\$MN)

Table 25 Global Crop Disease Forecasting Market, By Outbreak Maps (2023–2034) (\$MN)

Table 26 Global Crop Disease Forecasting Market, By Severity Forecasts (2023–2034) (\$MN)

Table 27 Global Crop Disease Forecasting Market, By Treatment Timing (2023–2034) (\$MN)

Table 28 Global Crop Disease Forecasting Market, By Other Forecast Outputs (2023–2034) (\$MN)

Table 29 Global Crop Disease Forecasting Market, By End User (2023–2034) (\$MN)

Table 30 Global Crop Disease Forecasting Market, By Farmers (2023–2034) (\$MN)

Table 31 Global Crop Disease Forecasting Market, By Agronomists (2023–2034) (\$MN)

Table 32 Global Crop Disease Forecasting Market, By Crop Consultants (2023–2034) (\$MN)

Table 33 Global Crop Disease Forecasting Market, By Agrochemical Companies (2023–2034) (\$MN)

Table 34 Global Crop Disease Forecasting Market, By Government Agencies (2023–2034) (\$MN)

Table 35 Global Crop Disease Forecasting Market, By Other End Users (2023–2034) (\$MN)

Note: Tables for North America, Europe, APAC, South America, and Rest of the World

(RoW) are also represented in the same manner as above.

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