

# **AI Pest Detection Market Forecasts to 2034 – Global Analysis By Crop Type (Cereals, Fruits, Vegetables, and Cash Crops), Component, Deployment, Technology, Application, End User, and By Geography**

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## **Abstracts**

According to Statistics MRC, the Global AI Pest Detection Market is accounted for \$2.4 billion in 2026 and is expected to reach \$6.8 billion by 2034 growing at a CAGR of 13.9 % during the forecast period. AI pest detection refers to artificial intelligence-powered precision agriculture systems that use drone-mounted multispectral cameras, field-deployed IoT sensor networks, satellite remote sensing, and smartphone-based image recognition applications combined with deep learning computer vision models to identify, classify, quantify, and map pest and disease infestation patterns across crop fields, enabling farmers to implement targeted site-specific crop protection interventions that reduce total pesticide applications, lower input costs, and minimize environmental impact while maintaining effective crop protection outcomes.

Market Dynamics:

Driver:

Pesticide Use Reduction Regulation

European Union Farm to Fork Strategy mandating 50 percent pesticide use reduction by 2030, combined with pesticide restriction regulations across multiple global jurisdictions creating compliance urgency for agricultural producers, is driving investment in AI pest detection systems that enable precision targeted pesticide application replacing conventional calendar-based blanket spraying programs that apply

pesticides regardless of actual pest pressure levels present in specific field zones at treatment timing.

Restraint:

#### Connectivity Infrastructure Gaps

Rural broadband and cellular connectivity infrastructure gaps in major agricultural regions across developing economy markets create significant barriers to cloud-connected AI pest detection system deployment that depends on reliable data transmission from field sensors, drone systems, and smartphone capture devices to AI analysis platforms, limiting addressable market penetration in geographically large agricultural regions where connectivity coverage is insufficient for real-time AI pest monitoring system functionality.

Opportunity:

#### Drone-Based Scouting Integration

Integration of AI pest detection algorithms with autonomous agricultural drone scouting platforms capable of covering hundreds of hectares per flight is creating a transformative market opportunity enabling comprehensive field-wide pest pressure mapping at a frequency and spatial resolution impossible through manual scouting labor, providing farmers with actionable site-specific crop protection prescriptions generated automatically from drone imagery AI analysis without requiring agronomist interpretation expertise.

Threat:

#### AI Model Accuracy Limitations

AI pest detection model accuracy limitations in identifying early-stage pest infestations, distinguishing look-alike pest species requiring different management responses, and maintaining reliable performance across diverse crop developmental stages, lighting conditions, and geographic environments create false positive and false negative detection rates that generate farmer trust deficits limiting operational adoption beyond trial evaluation programs when AI system recommendations conflict with experienced agronomist field observations.

### Covid-19 Impact:

COVID-19 reduced access of crop protection advisors and agricultural extension workers to farm fields during lockdown periods, creating urgent interest in autonomous remote pest monitoring technologies enabling crop health assessment without on-site scouting visits. Pandemic-era supply chain disruptions affecting pesticide availability amplified precision application efficiency motivation. Post-pandemic digital agriculture investment acceleration and precision farming technology adoption across commercial agricultural operations sustain strong AI pest detection market growth.

The cash crops segment is expected to be the largest during the forecast period

The cash crops segment is expected to account for the largest market share during the forecast period, due to high per-hectare economic value of cotton, sugarcane, coffee, and specialty crop production creating compelling economic justification for AI pest detection investment where early pest identification and precision intervention can prevent yield losses representing thousands of dollars per hectare in crops where pest management timing precision directly determines harvest quality and volume outcomes that determine farm profitability.

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

Over the forecast period, the Hardware segment is predicted to witness the highest growth rate, driven by rapid deployment of AI-enabled drone scouting systems, field IoT sensor networks, and smart camera traps creating substantial hardware procurement demand as precision agriculture technology adoption accelerates across commercial farming operations that are replacing manual pest scouting labor with automated sensor and drone surveillance infrastructure providing higher frequency and broader spatial coverage for crop health monitoring.

### Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share, due to the United States hosting large-scale commercial farming operations investing in precision agriculture technologies, strong venture capital investment in agtech AI companies, leading AI pest detection platform developers including Taranis, Sentera, and Prospera Technologies generating substantial domestic revenue, and regulatory pesticide reduction pressure creating strong commercial

motivation for precision pest management adoption.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR, due to China and India representing the world's largest agricultural land areas with high pest pressure creating substantial AI detection market opportunity, government precision agriculture investment programs across Asia Pacific, rapidly growing drone agriculture adoption in China driven by XAG and DJI ecosystem development, and smallholder farmer digital extension platform adoption enabling AI pest detection at previously inaccessible smallholder farm scale.

Key players in the market

Some of the key players in AI Pest Detection Market include Bayer AG, Syngenta Group, Corteva Agriscience, BASF SE, Trimble Inc., Deere & Company, IBM Corporation, Microsoft Corporation, Google LLC, Taranis, CropX, Prospera Technologies, Plantix (PEAT), AgEagle Aerial Systems, XAG Co., Ltd., Sentera, and Raven Industries.

Key Developments:

In March 2026, Taranis launched an AI-powered autonomous crop scouting platform integrating high-resolution aerial imaging with real-time pest detection models identifying over 200 pest and disease conditions across major row crops.

In February 2026, XAG Co., Ltd. introduced a new agricultural AI drone system with integrated multispectral cameras and on-board pest detection AI providing real-time crop health mapping and variable rate pesticide application prescriptions.

In January 2026, Plantix (PEAT) expanded its smartphone-based AI crop disease detection platform to 15 new languages, enabling smallholder farmer pest identification access across Sub-Saharan African and Southeast Asian agricultural communities.

Crop Types Covered:

Cereals

Fruits

Vegetables

Cash Crops

Components Covered:

Hardware

Software

Services

Deployments Covered:

Cloud-Based

Edge-Based

Technologies Covered:

Computer Vision

Machine Learning Models

Image Recognition Systems

Drone-Based Detection

Sensor-Based Detection

Applications Covered:

Crop Monitoring

Pest Identification

Disease Detection

Yield Optimization

End Users Covered:

Farmers

Agritech Firms

Government Agencies

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 AI PEST DETECTION MARKET, BY CROP TYPE**

- 5.1 Cereals
- 5.2 Fruits
- 5.3 Vegetables
- 5.4 Cash Crops

## **6 GLOBAL AI PEST DETECTION MARKET, BY COMPONENT**

- 6.1 Hardware
- 6.2 Software
- 6.3 Services

## **7 GLOBAL AI PEST DETECTION MARKET, BY DEPLOYMENT**

- 7.1 Cloud-Based
- 7.2 Edge-Based

## **8 GLOBAL AI PEST DETECTION MARKET, BY TECHNOLOGY**

- 8.1 Computer Vision
- 8.2 Machine Learning Models
- 8.3 Image Recognition Systems
- 8.4 Drone-Based Detection
- 8.5 Sensor-Based Detection

## **9 GLOBAL AI PEST DETECTION MARKET, BY APPLICATION**

- 9.1 Crop Monitoring
- 9.2 Pest Identification
- 9.3 Disease Detection
- 9.4 Yield Optimization

## **10 GLOBAL AI PEST DETECTION MARKET, BY END USER**

- 10.1 Farmers
- 10.2 Agritech Firms
- 10.3 Government Agencies

## **11 GLOBAL AI PEST DETECTION MARKET, BY GEOGRAPHY**

- 11.1 North America
  - 11.1.1 United States
  - 11.1.2 Canada
  - 11.1.3 Mexico
- 11.2 Europe
  - 11.2.1 United Kingdom
  - 11.2.2 Germany
  - 11.2.3 France
  - 11.2.4 Italy
  - 11.2.5 Spain
  - 11.2.6 Netherlands
  - 11.2.7 Belgium
  - 11.2.8 Sweden
  - 11.2.9 Switzerland
  - 11.2.10 Poland
  - 11.2.11 Rest of Europe
- 11.3 Asia Pacific
  - 11.3.1 China
  - 11.3.2 Japan
  - 11.3.3 India
  - 11.3.4 South Korea
  - 11.3.5 Australia
  - 11.3.6 Indonesia
  - 11.3.7 Thailand
  - 11.3.8 Malaysia
  - 11.3.9 Singapore
  - 11.3.10 Vietnam
  - 11.3.11 Rest of Asia Pacific
- 11.4 South America
  - 11.4.1 Brazil
  - 11.4.2 Argentina
  - 11.4.3 Colombia
  - 11.4.4 Chile

- 11.4.5 Peru
- 11.4.6 Rest of South America
- 11.5 Rest of the World (RoW)
  - 11.5.1 Middle East
    - 11.5.1.1 Saudi Arabia
    - 11.5.1.2 United Arab Emirates
    - 11.5.1.3 Qatar
    - 11.5.1.4 Israel
    - 11.5.1.5 Rest of Middle East
  - 11.5.2 Africa
    - 11.5.2.1 South Africa
    - 11.5.2.2 Egypt
    - 11.5.2.3 Morocco
    - 11.5.2.4 Rest of Africa

## **12 STRATEGIC MARKET INTELLIGENCE**

- 12.1 Industry Value Network and Supply Chain Assessment
- 12.2 White-Space and Opportunity Mapping
- 12.3 Product Evolution and Market Life Cycle Analysis
- 12.4 Channel, Distributor, and Go-to-Market Assessment

## **13 INDUSTRY DEVELOPMENTS AND STRATEGIC INITIATIVES**

- 13.1 Mergers and Acquisitions
- 13.2 Partnerships, Alliances, and Joint Ventures
- 13.3 New Product Launches and Certifications
- 13.4 Capacity Expansion and Investments
- 13.5 Other Strategic Initiatives

## **14 COMPANY PROFILES**

- 14.1 Bayer AG
- 14.2 Syngenta Group
- 14.3 Corteva Agriscience
- 14.4 BASF SE
- 14.5 Trimble Inc.
- 14.6 Deere & Company
- 14.7 IBM Corporation

- 14.8 Microsoft Corporation
- 14.9 Google LLC
- 14.10 Taranis
- 14.11 CropX
- 14.12 Prospera Technologies
- 14.13 Plantix (PEAT)
- 14.14 AgEagle Aerial Systems
- 14.15 XAG Co., Ltd.
- 14.16 Sentera
- 14.17 Raven Industries

## List Of Tables

### LIST OF TABLES

- Table 1 Global AI Pest Detection Market Outlook, By Region (2023-2034) (\$MN)
- Table 2 Global AI Pest Detection Market Outlook, By Crop Type (2023-2034) (\$MN)
- Table 3 Global AI Pest Detection Market Outlook, By Cereals (2023-2034) (\$MN)
- Table 4 Global AI Pest Detection Market Outlook, By Fruits (2023-2034) (\$MN)
- Table 5 Global AI Pest Detection Market Outlook, By Vegetables (2023-2034) (\$MN)
- Table 6 Global AI Pest Detection Market Outlook, By Cash Crops (2023-2034) (\$MN)
- Table 7 Global AI Pest Detection Market Outlook, By Component (2023-2034) (\$MN)
- Table 8 Global AI Pest Detection Market Outlook, By Hardware (2023-2034) (\$MN)
- Table 9 Global AI Pest Detection Market Outlook, By Software (2023-2034) (\$MN)
- Table 10 Global AI Pest Detection Market Outlook, By Services (2023-2034) (\$MN)
- Table 11 Global AI Pest Detection Market Outlook, By Deployment (2023-2034) (\$MN)
- Table 12 Global AI Pest Detection Market Outlook, By Cloud-Based (2023-2034) (\$MN)
- Table 13 Global AI Pest Detection Market Outlook, By Edge-Based (2023-2034) (\$MN)
- Table 14 Global AI Pest Detection Market Outlook, By Technology (2023-2034) (\$MN)
- Table 15 Global AI Pest Detection Market Outlook, By Computer Vision (2023-2034) (\$MN)
- Table 16 Global AI Pest Detection Market Outlook, By Machine Learning Models (2023-2034) (\$MN)
- Table 17 Global AI Pest Detection Market Outlook, By Image Recognition Systems (2023-2034) (\$MN)
- Table 18 Global AI Pest Detection Market Outlook, By Drone-Based Detection (2023-2034) (\$MN)
- Table 19 Global AI Pest Detection Market Outlook, By Sensor-Based Detection (2023-2034) (\$MN)
- Table 20 Global AI Pest Detection Market Outlook, By Application (2023-2034) (\$MN)
- Table 21 Global AI Pest Detection Market Outlook, By Crop Monitoring (2023-2034) (\$MN)
- Table 22 Global AI Pest Detection Market Outlook, By Pest Identification (2023-2034) (\$MN)
- Table 23 Global AI Pest Detection Market Outlook, By Disease Detection (2023-2034) (\$MN)
- Table 24 Global AI Pest Detection Market Outlook, By Yield Optimization (2023-2034) (\$MN)
- Table 25 Global AI Pest Detection Market Outlook, By End User (2023-2034) (\$MN)
- Table 26 Global AI Pest Detection Market Outlook, By Farmers (2023-2034) (\$MN)

Table 27 Global AI Pest Detection Market Outlook, By Agritech Firms (2023-2034)  
(\$MN)

Table 28 Global AI Pest Detection Market Outlook, By Government Agencies  
(2023-2034) (\$MN)

Note: Tables for North America, Europe, APAC, South America, and Rest of the World (RoW) Regions are also represented in the same manner as above.

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