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AI-Powered Yield Forecasting Market Forecasts to 2032 – Global Analysis By FilmType (Metallized Barrier Films, Transparent Barrier Films, Co-Extruded Multilayer Films, Laminated Films and Other Film Types), Material, Thickness, Packaging Format, Technology, End User and By Geography

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Abstracts

According to Stratistics MRC, the Global AI-Powered Yield Forecasting Market is accounted for $1.6 billion in 2025 and is expected to reach $4.9 billion by 2032 growing at a CAGR of 17% during the forecast period. AI-powered yield forecasting refers to the use of advanced artificial intelligence techniques—such as machine learning, deep learning, and predictive analytics—to estimate future crop yields with high accuracy. It analyzes vast datasets including weather patterns, soil conditions, satellite imagery, historical yield records, and real-time farm inputs to identify patterns and predict productivity. By continuously learning from new data, AI systems deliver dynamic, location-specific, and timely forecasts. This helps farmers optimize resource allocation, plan harvesting, manage risks, and improve profitability. Overall, AI-powered yield forecasting enhances decision-making by transforming complex agricultural data into actionable insights for sustainable farming.

Market Dynamics:

Driver:

Growing demand for accurate crop predictions

Farmers and agribusinesses increasingly rely on predictive analytics to anticipate yields,

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optimize resource allocation, and reduce risks. AI models integrate satellite imagery, weather data, and soil conditions to deliver precise forecasts, improving decision-making. Accurate predictions help mitigate the impact of climate variability and ensure food supply stability. Governments and cooperatives are also adopting AI forecasting to strengthen food security planning. Rising global population and pressure on agricultural systems further amplify the need for reliable yield estimates.

Restraint:

High implementation and maintenance costs

Deploying AI-powered forecasting systems requires investment in sensors, data infrastructure, and advanced software platforms. Small and medium-sized farmers often struggle to afford these technologies, limiting adoption. Maintenance costs, including regular updates and technical support, add to the financial burden. Integration with existing farm management systems can also be complex and resource-intensive. These challenges slow penetration in cost-sensitive regions and among fragmented landholdings. Consequently, high costs remain a significant restraint to widespread adoption of AI-powered yield forecasting solutions.

Opportunity:

Rising need for optimized farm productivity

AI-powered forecasting enables farmers to plan planting schedules, irrigation, and harvesting with greater precision. This optimization reduces waste, enhances resource efficiency, and maximizes yields. As global food demand continues to rise, productivity improvements are critical to meeting supply requirements. AI solutions also support sustainable farming practices by minimizing environmental impact through data-driven decisions. Governments and agritech firms are increasingly promoting AI adoption to achieve food security and sustainability goals. As a result, the need for optimized productivity is expected to unlock substantial growth opportunities for the market.

Threat:

Dependence on quality and availability of data

Inaccurate or incomplete datasets can lead to unreliable predictions, undermining farmer confidence. Many regions lack robust data infrastructure, limiting the scope of AI

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applications. Seasonal variability and inconsistent weather records further challenge model accuracy. Data privacy concerns also restrict access to farm-level information, slowing adoption. Without high-quality inputs, AI systems cannot deliver the precision required for effective forecasting. Consequently, dependence on data availability remains a critical threat to market credibility and growth.

Covid-19 Impact:

The COVID-19 pandemic had a mixed impact on the AI-powered yield forecasting market. Supply chain disruptions delayed deployment of sensors and data infrastructure, slowing adoption in several regions. Farmers faced financial uncertainty, reducing investment in advanced technologies during the crisis. However, the pandemic highlighted the importance of resilience and efficiency in agriculture, driving renewed interest in predictive solutions. Remote monitoring and digital platforms gained traction as physical access to farms was restricted. Governments also emphasized food security, accelerating adoption of AI forecasting tools.

The polyethylene (PE) segment is expected to be the largest during the forecast period

The polyethylene (PE) segment is expected to account for the largest market share during the forecast period, driven by its widespread use in agricultural applications. PE films and coverings are integral to data collection systems, enabling controlled environments for accurate yield forecasting. Their durability, cost-effectiveness, and versatility make them the preferred material for protective and monitoring solutions. Farmers rely on PE-based infrastructure to support AI-driven sensors and imaging devices. The segment benefits from strong demand across both developed and emerging markets. Rising adoption of AI forecasting tools further reinforces the importance of PE materials in agricultural setups.

The transparent barrier films segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the transparent barrier films segment is predicted to witness the highest growth rate due to its role in enhancing data accuracy. These films allow optimal visibility for sensors and imaging devices, improving the precision of AI-powered forecasts. Their lightweight and flexible properties make them suitable for diverse agricultural applications. Rising demand for advanced monitoring solutions is accelerating adoption of transparent barrier films. Manufacturers are innovating with sustainable and high-performance materials to meet evolving needs. Integration with

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smart farming infrastructure further strengthens the segment’s growth trajectory.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share driven by advanced agricultural infrastructure. Farmers in the United States and Canada are leveraging predictive analytics to optimize yields and resource use. Strong government support and investment in agritech innovation reinforce regional leadership. The presence of leading AI firms and agricultural cooperatives accelerates commercialization of forecasting solutions. High awareness of sustainability and efficiency further strengthens demand. Retail and cooperative networks also facilitate widespread adoption of AI-powered tools.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR by rising food demand. Countries such as China, India, and Australia are increasingly adopting AI-powered forecasting to improve productivity. Expanding middle-class populations and government initiatives promoting smart farming support adoption. Farmers in the region are becoming more aware of the benefits of predictive analytics in managing risks. E-commerce and digital platforms are making AI solutions more accessible across diverse markets. Rising investment in agritech startups further accelerates regional growth.

Key players in the market

Some of the key players in AI-Powered Yield Forecasting Market include IBM, Microsoft, Google, Amazon Web Services, SAP SE, Oracle Corporation, Siemens AG, Deere & Company (John Deere), AG Leader Technology, Trimble Inc., Climate LLC, Granular (Corteva Agriscience), Prospera Technologies, Taranis and CropX Technologies.

Key Developments:

In May 2024, Microsoft announced major new AI and cloud capabilities within its Azure AI Services, including updates to Azure OpenAI Service. These enhancements empower developers and agri-tech companies to build more sophisticated predictive analytics tools on the Azure platform, directly improving the power and accessibility of AI-driven yield forecasting solutions for farmers.

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In February 2023, IBM partnered with NASA to deploy its foundational AI model for geospatial data, aiming to vastly improve climate and agricultural analytics. This collaboration enhances the ability to predict crop yields by analyzing environmental factors like soil moisture and land use from satellite imagery with unprecedented accuracy, providing a powerful tool for the agricultural sector.

Film Types Covered:

- Metallized Barrier Films
- Transparent Barrier Films
- Co-Extruded Multilayer Films
- Laminated Films
- Other Film Types

Materials Covered:

- Polyethylene (PE)
- Polypropylene (PP)
- Polyethylene Terephthalate (PET)
- Ethylene Vinyl Alcohol (EVOH)
- Polyvinylidene Chloride (PVDC)
- Other Materials

Thicknesses Covered:

- Below 50 microns

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50–100 microns

100–150 microns

Above 150 microns

Packaging Formats Covered:

Pouches

Bags

Lidding Films

Wraps & Sheets

Blisters

Other Packaging Formats

Technologies Covered:

Extrusion Coating

Solvent-Based Coating

Solvent-Free Coating

Water-Based Coating

Other Technologies

End Users Covered:

Personal Care & Cosmetics

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- Household Products
- Industrial Products
- Other End Users

Regions Covered:

- North America
  - US
  - Canada
  - Mexico
- Europe
  - Germany
  - UK
  - Italy
  - France
  - Spain
  - Rest of Europe
- Asia Pacific
  - Japan
  - China
  - India

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- Australia
- New Zealand
- South Korea
- Rest of Asia Pacific

South America

- Argentina
- Brazil
- Chile
- Rest of South America

Middle East & Africa

- Saudi Arabia
- UAE
- Qatar
- South Africa
- Rest of Middle East & 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 2024, 2025, 2026, 2028, and 2032
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations

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- 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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Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

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