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Plant Genomics Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Type (Molecular Engineering, Genetic Engineering, Others), By Trait (Yield Improvement, Disease Resistance, Herbicide Tolerance, Others), By Objective (DNA Extraction & Purification, DNA/RNA Sequencing, Genotyping, GENE Expression Profiling, Marker-Assisted Selection, Others), By Application (Cereals & Grains, Oilseeds & Pulses, Fruits & Vegetables, Others), By Region & Competition, 2021-2031F

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Abstracts

The Global Plant Genomics Market is projected to expand significantly, rising from USD 8.39 Billion in 2025 to USD 13.86 Billion by 2031, demonstrating a robust compound annual growth rate (CAGR) of 8.73%. Plant genomics encompasses the sequencing, characterization, and analysis of plant genetic structures, primarily aiming to boost agricultural productivity and fortify crop resilience. This market growth is fundamentally driven by the escalating worldwide demand for food security and the increasing imperative for sustainable farming practices capable of withstanding climatic instability. As global populations continue to grow, the agricultural sector increasingly relies on genomic technologies to cultivate high-yield crop varieties that necessitate fewer chemical inputs. This commitment to innovation is underlined by considerable industry investment; for instance, CropLife India reported in 2025 that its member companies collectively invested over INR 50,000 crores annually in global research and development to advance these vital agricultural technologies. However, the expansion

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of the Global Plant Genomics Market faces significant hurdles due to the presence of stringent and fragmented regulatory frameworks. Disparate policies governing genetically modified and gene-edited crops across various regions establish intricate compliance barriers, which in turn impede the commercialization of new products. This absence of regulatory consistency complicates international trade and extends the approval timelines for novel genomic solutions, posing a substantial obstacle to the widespread and seamless adoption of these technologies globally.

Market Driver

Increased government funding and corporate investment in genomics research are significantly propelling the plant genomics sector, as industry leaders prioritize the development of high-yield and climate-resilient crops to address global food security concerns. This financial commitment is evident through the substantial resources major agricultural entities allocate to research and development, which ensures a continuous stream of technological advancements. For example, KWS SAAT SE & Co. KGaA's 'Annual Report 2024/2025' in September 2025 highlighted an investment of €349.0 million in R&D to accelerate the creation of superior seed varieties. Furthermore, Bayer's '2025 Crop Science Investor Update' in May 2025 showcased its innovation engine by announcing an R&D pipeline with a potential for over €32 billion in peak sales, emphasizing the immense commercial value and future growth anticipated from next-generation plant genomics. Simultaneously, the rapid adoption of genome editing tools, particularly CRISPR/Cas9, is revolutionizing agriculture by enabling precise genetic modifications that were previously unattainable through conventional breeding methods. These advanced technologies facilitate the swift development of desirable traits, such as disease resistance and drought tolerance, significantly shortening the time required to introduce new varieties to the market. The accelerated commercialization of these solutions is strongly supported by an evolving regulatory environment that increasingly favors advanced breeding techniques. According to Euroseeds, in an article from January 2025 titled 'Top 5 advancements for new plant breeding methods in 2024,' nearly 300 regulatory decisions confirming the conventional status of New Genomic Technique (NGT) plants were made globally by the close of 2024, thereby streamlining international trade and accelerating the adoption of gene-edited crops.

Market Challenge

A significant restraint on the growth of the Global Plant Genomics Market is the stringent and fragmented regulatory landscape, which creates substantial barriers to the

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commercialization of new crop varieties. Varied policies concerning genetically modified and gene-edited organisms across different jurisdictions compel companies to navigate complex, time-consuming compliance procedures. This lack of global harmonization inflates the operational costs associated with bringing new genomic traits to market and generates uncertainty, thereby discouraging essential investment in research and development. When regions maintain conflicting approval standards, seed companies face difficulties deploying their technologies internationally, which consequently limits potential revenue streams and slows the overall pace of market expansion. This regulatory inconsistency is widely acknowledged by industry leaders as a critical impediment to progress. According to a 2024 global survey of seed sector experts conducted by the International Seed Federation, approximately one-third of respondents explicitly identified the need for predictable and science-based regulations as the most decisive factor required to unlock further development and growth within the breeding industry. Consequently, these compliance hurdles delay the introduction of resilient crop varieties, directly constraining the market's capacity to respond promptly to evolving global agricultural needs.

Market Trends

The integration of Artificial Intelligence (AI) for predictive plant breeding is actively transforming the market by enabling the analysis of vast genomic datasets to optimize trait selection and accelerate crop development. AI algorithms empower researchers to model intricate genotype-environment interactions with high precision, allowing them to predict plant performance even before field trials commence. This computational capability significantly enhances operational efficiency within seed production strategies. For example, as reported by Bayer in July 2025, in their article 'What Could Agriculture Accomplish with AI on its Side?', the deployment of advanced AI models in seed production fields resulted in a productivity increase of over 30% for the company, clearly demonstrating the tangible operational value that digital tools bring to modern breeding programs. Concurrently, the transition to Third-Generation Long-Read Sequencing Platforms is gaining substantial traction as researchers aim to effectively resolve the highly repetitive and polyploid nature of plant genomes, which short-read technologies often struggle to address. These advanced platforms provide comprehensive views of genetic structures, greatly facilitating the identification of structural variants and key agronomic traits that were previously inaccessible. The adoption of these platforms is further propelled by significant improvements in both cost-efficiency and scalability. According to a PacBio press release from October 2025, 'PacBio Announces Major Advances for Revio and Vega,' the company introduced new sequencing chemistry designed to reduce costs by up to 40%, enabling customers to

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generate high-accuracy whole genomes for less than $300, thereby democratizing access to high-quality genomic data.

Key Market Players

Eurofins Scientific SE

Agilent Technologies, Inc.

Illumina, Inc.

NRGene Ltd.

Qiagen NV

Traitgenetics GmbH

Novogene Corporation

Oxford Nanopore Technologies Ltd.

Genewiz, Inc.

Genotypic Technology Pvt Ltd.

Report Scope

In this report, the Global Plant Genomics Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

Plant Genomics Market, By Type

Molecular Engineering

Genetic Engineering

Others

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- Canada
- Mexico

Europe

- France
- United Kingdom
- Italy
- Germany
- Spain

Asia Pacific

- China
- India
- Japan
- Australia
- South Korea

South America

- Brazil
- Argentina
- Colombia

Middle East & Africa

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South Africa

Saudi Arabia

UAE

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the Global Plant Genomics Market.

Available Customizations:

Global Plant Genomics 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).

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