

Plant Genomics Market Forecasts to 2032 – Global Analysis By Type (Molecular Engineering, Genetic Engineering, Genome Editing, DNA Sequencing, Marker-Assisted Selection, Bioinformatics), Objective, Trait, Application, End User and By Geography

<https://marketpublishers.com/r/P0C225B0040DEN.html>

Date: September 2025

Pages: 200

Price: US\$ 4,150.00 (Single User License)

ID: P0C225B0040DEN

Abstracts

According to Statistics MRC, the Global Plant Genomics Market is accounted for \$11.5 billion in 2025 and is expected to reach \$19.7 billion by 2032 growing at a CAGR of 8.01% during the forecast period. Plant genomics is the comprehensive study of the structure, function, evolution, mapping, and editing of plant genomes to understand genetic makeup and improve agricultural productivity. It involves sequencing, analyzing, and comparing plant DNA to identify genes responsible for traits such as yield, disease resistance, stress tolerance, and nutritional value. By integrating molecular biology, bioinformatics, and biotechnology, plant genomics enables the development of genetically improved crops through marker-assisted breeding, transgenic approaches, and genome editing tools like CRISPR. This field supports sustainable agriculture, enhances food security, and addresses global challenges such as climate change, resource scarcity, and increasing population demands.

According to surveys, severe protein-calorie malnutrition affected about 2–10% of children from one to nine years in developing countries.

Market Dynamics:

Driver:

Skyrocketing Food Demand & Population Growth

Surging global food demand and rapid population growth are catalyzing innovation in the plant genomics market. These pressures are driving investments in high-yield, climate-resilient crops and accelerating adoption of genomic tools for precision breeding. Governments and agritech firms are prioritizing sustainable agriculture, boosting R&D in gene editing and trait mapping. As food systems strain under demographic shifts, plant genomics emerges as a transformative solution—enhancing productivity, nutritional value, and ecological resilience across diverse geographies, thus driving market expansion.

Restraint:

High Costs & Financial Barriers

High costs and financial barriers significantly hinder the growth of the plant genomics market by limiting access to advanced sequencing technologies and bioinformatics tools. Small and mid-sized enterprises, especially in emerging economies, struggle to invest in R&D, slowing innovation and commercialization. These constraints also deter academic collaborations and public-private partnerships, stalling progress in crop improvement, sustainability, and food security—ultimately widening the gap between potential and practical application.

Opportunity:

Sustainable & Precision Agriculture Surge

The surge in sustainable and precision agriculture is catalyzing explosive growth in the plant genomics market. By enabling targeted breeding of climate-resilient, nutrient-rich, and pest-resistant crops, genomics aligns perfectly with eco-conscious farming goals. Precision tools like CRISPR and genomic selection accelerate trait discovery, reduce input dependency, and enhance yield predictability. This synergy is unlocking new investment avenues, especially in APAC and Africa, while driving food security and environmental sustainability—making plant genomics a cornerstone of next-gen agriculture.

Threat:

Regulatory Hurdles & Global Fragmentation

Regulatory hurdles and global fragmentation exert a negative and hindering impact on

the plant genomics market. Stringent and inconsistent regulations across different regions create delays in product approvals, discourage innovation, and increase compliance costs for companies. The lack of harmonized international policies further complicates collaboration, data sharing, and cross-border research. These challenges slow the adoption of advanced genomic technologies, limiting market expansion and impeding the sector's potential to drive agricultural innovation.

Covid-19 Impact

Covid-19 had a mixed impact on the Plant Genomics Market. Initially, disruptions in supply chains, restricted research activities, and delays in agricultural projects hindered market growth. However, the pandemic underscored the importance of resilient food systems, accelerating investments in crop research and advanced genomics to ensure food security. Growing demand for sustainable agriculture, disease-resistant crops, and enhanced productivity ultimately pushed the market toward recovery and renewed focus on innovation.

The bioinformatics segment is expected to be the largest during the forecast period

The bioinformatics segment is expected to account for the largest market share during the forecast period because its integration accelerates genome sequencing, enhances crop resilience modeling, and streamlines gene-editing workflows. By decoding complex plant genomes with speed and accuracy, bioinformatics empowers researchers to develop climate-adaptive, high-yield varieties. This data-driven approach is unlocking new commercial applications across agriculture, biotechnology, and food security—positioning bioinformatics as a pivotal enabler of innovation and sustainable impact in plant genomics.

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

Over the forecast period, the insect resistance segment is predicted to witness the highest growth rate, due to innovation in genetic engineering and CRISPR-based crop protection. By reducing pesticide dependency and enhancing yield stability, insect-resistant traits are accelerating adoption of transgenic and genome-edited crops. This segment fuels demand for advanced omics platforms and precision breeding tools, especially in regions facing climate-driven pest pressures. Its impact is transformative—boosting sustainability, farmer profitability, and global food security through resilient, high-performance crop varieties.

Region with largest share:

During the forecast period, the Asia Pacific region is expected to hold the largest market share due to rising demand for food security and climate-adaptive farming, genomics enables precision breeding and disease resistance across diverse crops. Regional governments and research institutions are accelerating innovation through strategic investments and collaborations. This momentum is fostering eco-friendly practices, reducing chemical dependency, and empowering farmers with data-driven solutions—positioning Asia Pacific as a dynamic hub for agricultural biotechnology advancement.

Region with highest CAGR:

Over the forecast period, the North America region is anticipated to exhibit the highest CAGR, owing to advancements in biotechnology, supportive government initiatives, and a well-established agricultural sector. Increasing adoption of genomic tools by farmers and researchers enhances crop yield, quality, and resistance to diseases and environmental stresses. Collaboration between research institutions and agri-tech companies further accelerates innovation, positioning the region as a leader in precision agriculture. These factors collectively strengthen food security and sustainable farming practices in North America.

Key players in the market

Some of the key players profiled in the Plant Genomics Market include Illumina, Inc., Agilent Technologies, Inc., Eurofins Scientific SE, Thermo Fisher Scientific, Inc., Qiagen N.V., BGI Genomics Co., Ltd., KeyGene N.V., Neogen Corporation, Novogene Co., Ltd., LC Sciences, LLC, NRGene Ltd., Oxford Nanopore Technologies plc, Pacific Biosciences of California, Inc., TraitGenetics GmbH, Floragenex, Inc., DNA LandMarks Inc, Illumina Cambridge Ltd., Genewiz, Inc, AgBiome, Inc. and Genotypic Technology Pvt. Ltd.

Key Developments:

In July 2025, Thermo Fisher expanded its strategic bond with Sanofi by acquiring the Ridgefield, New Jersey sterile fill-finish and packaging facility. This strengthens U.S. drug-manufacturing capacity, retains over 200 skilled employees, and deepens collaboration to meet rising pharma and biotech demand.

In June 2025, Cellular Origins has joined hands with Thermo Fisher to fuse proven cell-culture processing tools with the Constellation CGT robotic platform, forging around-the-clock industrial-scale production that boosts output per square metre, slashes labour sixteen-fold, and cuts CGT costs by over 51 %.

Types Covered:

Molecular Engineering

Genetic Engineering

Genome Editing

DNA Sequencing

Marker-Assisted Selection

Bioinformatics

Objectives Covered:

DNA Extraction & Purification

DNA/RNA Sequencing

Genotyping

Gene Expression Analysis

Marker Discovery

Functional Genomics

Traits Covered:

Herbicide Tolerance

Disease Resistance

Insect Resistance

Abiotic Stress Tolerance

Yield Improvement

Quality Traits

Applications Covered:

Cereals & Grains

Oilseeds & Pulses

Fruits & Vegetables

Flowers & Ornamentals

Other Applications

End Users Covered:

Research Laboratories & Academic Institutes

Biotechnology & Pharmaceutical Companies

Government & Regulatory Bodies

Agriculture Companies

Other End Users

Regions Covered:

North America

US

Canada

Mexico

Europe

Germany

UK

Italy

France

Spain

Rest of Europe

Asia Pacific

Japan

China

India

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
- 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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