

North America Plant Genomics Market Size, Share, Trends & Analysis by Type (Genetic Engineering, Molecular Engineering, Others), by Trait (Yield Improvement, Herbicide Tolerance, Disease Resistance, Others), by Application (Cereals and Grains, Fruits and Vegetables, Oilseeds and Pulses, Others) and Region, with Forecasts from 2025 to 2034.

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Abstracts

The North America Plant Genomics Market is projected to witness substantial growth from 2025 to 2034, driven by technological advancements in genetic and molecular engineering, increasing demand for high-yield crops, and rising investments in agricultural biotechnology. Plant genomics supports crop productivity, disease resistance, and sustainable agriculture across the United States, Canada, and Mexico. Growing emphasis on food security, climate resilience, and precision breeding continues to position the region at the forefront of agricultural genomic innovation. Valued at USD XX.XX billion in 2025, the market is expected to grow at a CAGR of XX.XX%, reaching USD XX.XX billion by 2034.

Definition and Scope of Plant Genomics

Plant genomics involves studying and applying genetic information to improve plant traits and agricultural performance. It includes genome sequencing, molecular marker analysis, and gene editing techniques used to develop crop varieties with enhanced yield, stress tolerance, and quality. In North America, these technologies are used across cereals, grains, fruits, vegetables, and oilseeds to address pest resistance, herbicide tolerance, and climate adaptation challenges.

Market Drivers

Advancements in Genetic Engineering and Molecular Tools: Innovations in genome sequencing, CRISPR-Cas9 gene editing, and molecular marker-assisted breeding are accelerating genomics adoption across North American agriculture.

Rising Demand for Sustainable and High-Yield Crops: Increasing population and food consumption are driving demand for genetically enhanced crops that deliver higher yields with fewer resources.

Strong Research and Development Infrastructure: Leading biotechnology firms, research universities, and government-backed initiatives support continuous crop genomics innovation.

Climate Change and Environmental Challenges: Increasing droughts, pests, and diseases are prompting adoption of genomically improved crops with greater adaptability and resilience.

Market Restraints

High Research and Implementation Costs: Advanced genomic tools, including sequencing and data analysis, require substantial investment and may challenge small-scale agricultural players.

Regulatory and Ethical Concerns: Stringent U.S. and Canadian regulations for genetically modified crops, along with consumer resistance toward GMOs, may hinder large-scale adoption.

Data Complexity and Bioinformatics Challenges: Managing and interpreting large genomic datasets requires sophisticated infrastructure and expertise, which can slow implementation.

Opportunities

Precision Agriculture Integration: Combining plant genomics with precision farming technologies creates opportunities for data-driven crop improvement

and real-time agricultural decision-making.

Emergence of Genome Editing for Non-GMO Crops: Increasing acceptance of CRISPR-based gene editing provides potential to develop non-GMO crops with desirable traits.

Public-Private Partnerships in Agricultural Biotechnology: Collaboration among government agencies, universities, and private companies can accelerate research funding and technology commercialization.

Focus on Climate-Resilient and Nutrient-Rich Crops: Initiatives to develop drought-tolerant, pest-resistant, and nutrient-enhanced crops will drive further genomic applications across the region.

Market Segmentation Analysis

By Type

Genetic Engineering

Molecular Engineering

Others

By Trait

Yield Improvement

Herbicide Tolerance

Disease Resistance

Others

By Application

Cereals and Grains

Fruits and Vegetables

Oilseeds and Pulses

Others

Regional Analysis

United States: Leads the North American market with advanced R&D facilities, strong agricultural biotechnology investment, and widespread use of genomic tools for crops such as corn, soybeans, and wheat.

Canada: Experiences steady growth through government-supported genomic initiatives and precision agriculture adoption, particularly across cereals, oilseeds, and specialty crops.

Mexico: Emerges as a promising market through agricultural modernization, government policies supporting biotech research, and partnerships with U.S. research institutions.

Competitive Landscape

The North America Plant Genomics Market is highly competitive, with major players focusing on innovation, research collaborations, and strategic investments to strengthen their market presence. Key players in the market include:

Illumina Inc.

Corteva Agriscience

Bayer AG

Thermo Fisher Scientific Inc.

Syngenta AG

Agilent Technologies Inc.

Eurofins Scientific SE

QIAGEN N.V.

Novogene Co. Ltd.

KeyGene N.V.

Contents

1. INTRODUCTION

- 1.1. Definition and Scope of Plant Genomics
- 1.2. Objectives of the Report
- 1.3. Research Methodology
- 1.4. Assumptions and Limitations

2. EXECUTIVE SUMMARY

- 2.1. Key Market Highlights
- 2.2. Market Snapshot
- 2.3. Overview of Types, Traits, and Applications
- 2.4. Analyst Recommendations

3. MARKET DYNAMICS

- 3.1. Market Drivers
 - 3.1.1. Rising Adoption of Advanced Genomic Technologies in North America
 - 3.1.2. Growing Demand for Genetically Modified and High-Yield Crops
 - 3.1.3. Increased Funding for Agricultural Biotechnology Research
 - 3.1.4. Other Drivers
- 3.2. Market Restraints
 - 3.2.1. High Cost of Genomic Tools and Equipment
 - 3.2.2. Ethical and Regulatory Concerns Regarding Genetic Modification
 - 3.2.3. Limited Awareness Among Small and Medium Farmers
 - 3.2.4. Other Restraints
- 3.3. Market Opportunities
 - 3.3.1. Expansion of Genomic Databases and Bioinformatics Platforms
 - 3.3.2. Integration of AI and Machine Learning in Crop Genomics
 - 3.3.3. Increasing Focus on Climate-Resilient and Sustainable Crops
 - 3.3.4. Other Opportunities
- 3.4. Market Challenges
 - 3.4.1. Data Management and Storage Complexities
 - 3.4.2. Regulatory Uncertainty Across Different States
 - 3.4.3. Supply Chain and Infrastructure Limitations

4. NORTH AMERICA PLANT GENOMICS MARKET ANALYSIS

- 4.1. Market Size and Forecast (2025–2034)
- 4.2. Market Share Analysis by:
 - 4.2.1. Type
 - 4.2.1.1. Genetic Engineering
 - 4.2.1.2. Molecular Engineering
 - 4.2.1.3. Others
 - 4.2.2. Trait
 - 4.2.2.1. Yield Improvement
 - 4.2.2.2. Herbicide Tolerance
 - 4.2.2.3. Disease Resistance
 - 4.2.2.4. Others
 - 4.2.3. Application
 - 4.2.3.1. Cereals and Grains
 - 4.2.3.2. Fruits and Vegetables
 - 4.2.3.3. Oilseeds and Pulses
 - 4.2.3.4. Others
- 4.3. Technological Advancements and Innovations in Plant Genomics
- 4.4. Value Chain and Cost Structure Analysis
- 4.5. Regulatory and Policy Landscape in North America
- 4.6. SWOT Analysis
- 4.7. Porter's Five Forces Analysis

5. COUNTRY-LEVEL MARKET ANALYSIS

- 5.1. United States
 - 5.1.1. Market Overview
 - 5.1.2. Market Size and Forecast
 - 5.1.3. Key Trends and Developments
 - 5.1.4. Competitive Landscape
- 5.2. Canada
 - 5.2.1. Market Overview
 - 5.2.2. Market Size and Forecast
 - 5.2.3. Key Trends and Developments
 - 5.2.4. Competitive Landscape
- 5.3. Mexico
 - 5.3.1. Market Overview
 - 5.3.2. Market Size and Forecast
 - 5.3.3. Key Trends and Developments

5.3.4. Competitive Landscape

6. COMPETITIVE LANDSCAPE

6.1. Market Share Analysis of Key Players

6.2. Company Profiles

6.2.1. Illumina, Inc.

6.2.2. Thermo Fisher Scientific, Inc.

6.2.3. Agilent Technologies, Inc.

6.2.4. Bayer AG

6.2.5. Eurofins Scientific SE

6.2.6. QIAGEN N.V.

6.2.7. KeyGene N.V.

6.2.8. Corteva Agriscience

6.2.9. Benson Hill, Inc.

6.2.10. NRGene Ltd.

6.3. Strategic Developments: Mergers, Acquisitions, and Collaborations

6.4. Focus on R&D and Technological Advancements

7. FUTURE OUTLOOK AND MARKET FORECAST

7.1. Emerging Growth Opportunities in North America (2025–2034)

7.2. Advancements in Gene Editing and Trait Mapping

7.3. Integration of AI, Machine Learning, and Genomic Analytics

7.4. Strategic Recommendations for Stakeholders

8. KEY INSIGHTS AND SUMMARY OF FINDINGS

9. FUTURE PROSPECTS FOR THE NORTH AMERICA PLANT GENOMICS MARKET

List Of Tables

LIST OF TABLES

Table 1: North America Plant Genomics Market, By Type, 2025–2034 (USD Million)

Table 2: North America Plant Genomics Market, By Trait, 2025–2034 (USD Million)

Table 3: North America Plant Genomics Market, By Application, 2025–2034 (USD Million)

Table 4: United States Plant Genomics Market, By Type, 2025–2034 (USD Million)

Table 5: United States Plant Genomics Market, By Trait, 2025–2034 (USD Million)

Table 6: United States Plant Genomics Market, By Application, 2025–2034 (USD Million)

Table 7: Canada Plant Genomics Market, By Type, 2025–2034 (USD Million)

Table 8: Canada Plant Genomics Market, By Trait, 2025–2034 (USD Million)

Table 9: Canada Plant Genomics Market, By Application, 2025–2034 (USD Million)

Table 10: Mexico Plant Genomics Market, By Type, 2025–2034 (USD Million)

Table 11: Mexico Plant Genomics Market, By Trait, 2025–2034 (USD Million)

Table 12: Mexico Plant Genomics Market, By Application, 2025–2034 (USD Million)

Table 13: North America Plant Genomics Market, Strategic Developments, 2025–2034

Table 14: North America Plant Genomics Market, Mergers & Acquisitions, 2025–2034

Table 15: North America Plant Genomics Market, New Product Launches, 2025–2034

Table 16: North America Plant Genomics Market, Collaborations & Partnerships, 2025–2034

Table 17: North America Plant Genomics Market, Investment Trends, 2025–2034

Table 18: North America Plant Genomics Market, Technological Advancements, 2025–2034

Table 19: North America Plant Genomics Market, Regulatory Landscape, 2025–2034

Table 20: North America Plant Genomics Market, Future Trends & Opportunities, 2025–2034

Table 21: North America Plant Genomics Market, Competitive Landscape, 2025–2034

List Of Figures

LIST OF FIGURES

Figure 1: North America Plant Genomics Market: Market Segmentation

Figure 2: North America Plant Genomics Market: Research Methodology

Figure 3: Top-Down Approach

Figure 4: Bottom-Up Approach

Figure 5: Data Triangulation and Validation

Figure 6: North America Plant Genomics Market: Drivers, Restraints, Opportunities, and Challenges

Figure 7: North America Plant Genomics Market: Porter's Five Forces Analysis

Figure 8: North America Plant Genomics Market: Value Chain Analysis

Figure 9: North America Plant Genomics Market Share Analysis, By Type, 2025–2034

Figure 10: North America Plant Genomics Market Share Analysis, By Trait, 2025–2034

Figure 11: North America Plant Genomics Market Share Analysis, By Application, 2025–2034

Figure 12: North America Plant Genomics Market Share Analysis, By Country, 2025–2034

Figure 13: United States Plant Genomics Market Share Analysis, By Type, 2025–2034

Figure 14: United States Plant Genomics Market Share Analysis, By Trait, 2025–2034

Figure 15: United States Plant Genomics Market Share Analysis, By Application, 2025–2034

Figure 16: Canada Plant Genomics Market Share Analysis, By Type, 2025–2034

Figure 17: Canada Plant Genomics Market Share Analysis, By Trait, 2025–2034

Figure 18: Canada Plant Genomics Market Share Analysis, By Application, 2025–2034

Figure 19: North America Plant Genomics Market: Competitive Benchmarking

Figure 20: North America Plant Genomics Market: Vendor Share Analysis, 2025–2034

Figure 21: North America Plant Genomics Market: Key Player Strategies

Figure 22: North America Plant Genomics Market: Recent Developments and Innovations

Figure 23: North America Plant Genomics Market: Partnerships, Collaborations, and Expansions

Figure 24: North America Plant Genomics Market: Mergers and Acquisitions

Figure 25: North America Plant Genomics Market: SWOT Analysis of Key Players

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