

# **Plant Breeding And CRISPR Plants Market Size, Share, Trends, Analysis, and Forecast 2025-2034 | Global Industry Growth, Competitive Landscape, Opportunities, and Challenges**

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## **Abstracts**

Global Plant Breeding And CRISPR Plants Market is valued at USD 12.9 billion in 2025. Further, the market is expected to grow at a CAGR of 14% to reach USD 41.7 billion by 2034.

### **Plant Breeding and CRISPR Plants Market Overview**

The plant breeding and CRISPR plants market is expanding rapidly, driven by the increasing need for high-yield, climate-resilient, and disease-resistant crops to support global food security. Traditional plant breeding methods have long played a crucial role in agricultural advancements, but the advent of gene-editing technologies like CRISPR-Cas9 is revolutionizing the field. CRISPR-based plant breeding allows for precise genetic modifications, enabling the development of crops with enhanced nutritional profiles, improved resistance to pests and diseases, and higher adaptability to environmental stressors. Governments, research institutions, and agribusinesses are investing heavily in CRISPR plant technology to meet the rising demand for sustainable agricultural practices and reduced reliance on chemical pesticides. However, regulatory uncertainties, ethical concerns, and public acceptance challenges remain key factors influencing the pace of commercialization and global adoption.

In 2024, the plant breeding and CRISPR plants market is experiencing significant advancements in crop genome editing, regulatory progress, and commercial partnerships. Researchers are leveraging CRISPR technology to develop drought-tolerant and salt-resistant crops, addressing the increasing impact of climate change on

agricultural productivity. Several regulatory agencies, including those in North America and Europe, are refining guidelines to distinguish gene-edited crops from genetically modified organisms (GMOs), potentially accelerating approvals for CRISPR-based products. Additionally, major agribusinesses and biotech firms are forming strategic alliances to scale CRISPR applications in staple crops such as wheat, rice, and soybeans, improving their disease resistance and shelf life. The rise of indoor and vertical farming is also creating opportunities for CRISPR-edited plants that are optimized for controlled environments. Meanwhile, public and scientific debates over gene-edited food labeling, safety, and ethical concerns continue to shape regulatory frameworks and consumer perceptions.

Looking ahead to 2025 and beyond, the plant breeding and CRISPR plants market is expected to witness accelerated commercialization, further technological refinements, and expanded global adoption. AI-driven genomic analysis will enhance CRISPR precision, enabling faster and more targeted modifications to improve crop traits. As regulatory frameworks become more defined, CRISPR-edited crops will gain wider acceptance in mainstream agriculture, particularly in regions facing food security challenges. The growing demand for plant-based proteins and bioengineered functional foods will drive the development of CRISPR-edited crops with enhanced protein content, better flavor profiles, and improved digestibility. Additionally, sustainability-driven initiatives will encourage the use of CRISPR technology in reducing agricultural waste and improving soil health through optimized root structures. With increasing investments in gene-editing startups and expanded research collaborations, the market will continue to evolve, balancing innovation, regulatory compliance, and consumer confidence in the future of gene-edited crops.

### Key Trends in the Plant Breeding and CRISPR Plants Market

**\*\*Expansion of Climate-Resilient and Drought-Tolerant Crops\*\*:** Researchers are using CRISPR technology to enhance crop resilience against extreme weather conditions, improving agricultural productivity in drought-prone regions.

**\*\*Regulatory Advancements for Gene-Edited Crops\*\*:** Governments are developing clearer guidelines to distinguish CRISPR-edited crops from traditional GMOs, potentially accelerating approvals and commercialization.

**\*\*Growth of Indoor and Vertical Farming with CRISPR-Optimized Crops\*\*:** The increasing adoption of controlled-environment agriculture is driving demand for gene-edited crops designed for high-yield, space-efficient farming systems.

**\*\*Integration of AI and Machine Learning in Plant Genomics\*\*:** AI-driven analysis is improving CRISPR accuracy, enabling faster identification of genetic targets for precision breeding and enhanced crop traits.

**\*\*Rising Public Awareness and Ethical Considerations\*\*:** Consumer education and regulatory transparency are shaping the acceptance of CRISPR-edited crops, influencing their market penetration and adoption.

## Market Drivers

**\*\*Growing Global Food Demand and Agricultural Productivity Needs\*\*:** The rising global population and increasing food security concerns are fueling demand for high-yield, nutrient-dense, and pest-resistant crops.

**\*\*Advancements in Gene-Editing Technologies and Research Funding\*\*:** Continuous improvements in CRISPR technology and increased investment in plant genomics research are accelerating market growth.

**\*\*Reduced Dependence on Chemical Pesticides and Fertilizers\*\*:** Gene-edited crops with built-in resistance to pests and diseases are lowering the need for chemical inputs, promoting sustainable farming practices.

**\*\*Support from Agribusiness Giants and Startups\*\*:** Leading agricultural companies and biotech startups are driving innovation through partnerships, funding, and commercialization of CRISPR-edited plant varieties.

## Market Challenge

**\*\*Regulatory Uncertainty and Public Perception Issues\*\*:** Differing regulations across regions and ongoing debates about the safety, ethics, and labeling of gene-edited crops pose challenges to widespread market adoption.

## Market Segmentation

### By Type

Conventional breeding

Other Types

By Process

Selection

Hybridization and mutation breeding

Other Processes

By Application

Cereals and Grains

Oilseeds and Pulses

Fruits and Vegetables

Other Crops

By Geography

North America (USA, Canada, Mexico)

Europe (Germany, UK, France, Spain, Italy, Rest of Europe)

Asia-Pacific (China, India, Japan, Australia, Vietnam, Rest of APAC)

The Middle East and Africa (Middle East, Africa)

South and Central America (Brazil, Argentina, Rest of SCA)

What You Receive

Global Plant Breeding And CRISPR Plants market size and growth projections (CAGR), 2024- 2034

Impact of recent changes in geopolitical, economic, and trade policies on the demand and supply chain of Plant Breeding And CRISPR Plants.

Plant Breeding And CRISPR Plants market size, share, and outlook across 5 regions and 27 countries, 2025- 2034.

Plant Breeding And CRISPR Plants market size, CAGR, and Market Share of key products, applications, and end-user verticals, 2025- 2034.

Short and long-term Plant Breeding And CRISPR Plants market trends, drivers, restraints, and opportunities.

Porter's Five Forces analysis, Technological developments in the Plant Breeding And CRISPR Plants market, Plant Breeding And CRISPR Plants supply chain analysis.

Plant Breeding And CRISPR Plants trade analysis, Plant Breeding And CRISPR Plants market price analysis, Plant Breeding And CRISPR Plants Value Chain Analysis.

Profiles of 5 leading companies in the industry- overview, key strategies, financials, and products.

Latest Plant Breeding And CRISPR Plants market news and developments.

The Plant Breeding And CRISPR Plants Market international scenario is well established in the report with separate chapters on North America Plant Breeding And CRISPR Plants Market, Europe Plant Breeding And CRISPR Plants Market, Asia-Pacific Plant Breeding And CRISPR Plants Market, Middle East and Africa Plant Breeding And CRISPR Plants Market, and South and Central America Plant Breeding And CRISPR Plants Markets. These sections further fragment the regional Plant Breeding And CRISPR Plants market by type, application, end-user, and country.

Who can benefit from this research

The research would help top management/strategy formulators/business/product development/sales managers and investors in this market in the following ways

1. The report provides 2024 Plant Breeding And CRISPR Plants market sales data at the global, regional, and key country levels with a detailed outlook to 2034, allowing

companies to calculate their market share and analyze prospects, uncover new markets, and plan market entry strategy.

2. The research includes the Plant Breeding And CRISPR Plants market split into different types and applications. This segmentation helps managers plan their products and budgets based on the future growth rates of each segment
3. The Plant Breeding And CRISPR Plants market study helps stakeholders understand the breadth and stance of the market giving them information on key drivers, restraints, challenges, and growth opportunities of the market and mitigating risks
4. This report would help top management understand competition better with a detailed SWOT analysis and key strategies of their competitors, and plan their position in the business
5. The study assists investors in analyzing Plant Breeding And CRISPR Plants business prospects by region, key countries, and top companies' information to channel their investments.

#### Available Customizations

The standard syndicate report is designed to serve the common interests of Plant Breeding And CRISPR Plants Market players across the value chain and include selective data and analysis from entire research findings as per the scope and price of the publication.

However, to precisely match the specific research requirements of individual clients, we offer several customization options to include the data and analysis of interest in the final deliverable.

Some of the customization requests are as mentioned below –

Segmentation of choice – Our clients can seek customization to modify/add a market division for types/applications/end-uses/processes of their choice.

Plant Breeding And CRISPR Plants Pricing and Margins Across the Supply Chain, Plant Breeding And CRISPR Plants Price Analysis / International Trade Data / Import-Export Analysis

Supply Chain Analysis, Supply–Demand Gap Analysis, PESTLE Analysis, Macro-Economic Analysis, and other Plant Breeding And CRISPR Plants market analytics

Processing and manufacturing requirements, Patent Analysis, Technology Trends, and Product Innovations

Further, the client can seek customization to break down geographies as per their requirements for specific countries/country groups such as South East Asia, Central Asia, Emerging and Developing Asia, Western Europe, Eastern Europe, Benelux, Emerging and Developing Europe, Nordic countries, North Africa, Sub-Saharan Africa, Caribbean, The Middle East and North Africa (MENA), Gulf Cooperation Council (GCC) or any other.

Capital Requirements, Income Projections, Profit Forecasts, and other parameters to prepare a detailed project report to present to Banks/Investment Agencies.

Customization of up to 10% of the content can be done without any additional charges.

Note: Latest developments will be updated in the report and delivered within 2 to 3 working days.

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