

Gene-Edited Varieties Market Forecasts to 2034 – Global Analysis By Crop Type (Cereals & Grains, Fruits & Vegetables, Oilseeds & Pulses and Specialty Crops), Trait Target, Technology Platform, Application, End User and By Geography

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Abstracts

According to Statistics MRC, the Global Gene-Edited Varieties Market is accounted for \$6.8 billion in 2026 and is expected to reach \$23.6 billion by 2034 growing at a CAGR of 16.8% during the forecast period. Gene-edited varieties are crops created through precise genome-editing tools like CRISPR, TALENs, and ZFNs, which modify specific genes without introducing external DNA. These crops exhibit beneficial traits such as increased productivity, resistance to pests and diseases, tolerance to harsh climates, and better nutritional content. Compared to conventional GMOs, gene-edited plants often resemble naturally occurring genetic variations, leading to broader regulatory acceptance. This approach shortens breeding time and lowers development costs, allowing quicker innovation in agriculture. Gene editing is emerging as an effective and sustainable method to tackle food security issues and adapt crops to changing environmental conditions.

According to Springer's "Global Status of Transgenic and Genome-Edited Crops", the global population is projected to reach 9 billion by 2050, and genome-edited crops are positioned as a key solution to meet food demand sustainably. The paper emphasizes their role in enhancing food security and health security.

Market Dynamics:

Driver:

Rising demand for food security

Increasing population levels are placing significant strain on food production systems, driving the need for advanced agricultural solutions. Gene-edited crops play a vital role in boosting productivity, strengthening resistance against pests and diseases, and improving adaptability to climate changes. These innovations allow farmers to maximize output without requiring additional land. Furthermore, enhanced nutritional traits in crops help combat global malnutrition. Support from governments and institutions is accelerating adoption. As the demand for food grows steadily, gene-edited varieties are emerging as a reliable and sustainable approach to securing global food availability and improving agricultural efficiency.

Restraint:

Public perception and ethical concerns

Consumer skepticism and ethical debates significantly restrict the growth of gene-edited crops. Despite scientific advancements, many people are concerned about potential health and environmental effects. Limited awareness and misinformation increase resistance to these technologies. Ethical issues related to modifying natural genetic makeup also create hesitation among the public. Such concerns often lead to stricter government policies and labeling norms. Since consumer trust is vital for market success, negative perception reduces demand and delays adoption. This lack of widespread acceptance continues to hinder the expansion of gene-edited varieties in global agricultural markets.

Opportunity:

Expansion in nutritional enhancement of crops

The ability to improve crop nutrition using gene-editing techniques presents a significant growth opportunity. By modifying plant genes, researchers can enhance levels of essential nutrients like vitamins and minerals in key food crops. This is especially valuable in regions suffering from malnutrition. Gene editing allows quicker and more targeted development of nutrient-rich crops compared to traditional breeding. Increasing awareness about balanced diets is further boosting demand for such innovations. This trend supports both agricultural advancement and global health improvement, making nutritional enhancement a key opportunity in the gene-edited varieties market.

Threat:

Stringent and changing regulatory policies

The gene-edited varieties market faces risks from strict and frequently changing regulatory frameworks worldwide. Governments may alter policies due to public concerns or environmental considerations, creating uncertainty for stakeholders. These changes can result in delays, higher compliance costs, and disrupted product launches. In certain countries, gene-edited crops are regulated similarly to GMOs, making approval processes complex and time-consuming. Such unpredictability discourages investments and affects innovation. Businesses must constantly adjust to shifting regulations, which complicates long-term planning and restricts the global development and commercialization of gene-edited crop technologies.

Covid-19 Impact:

The gene-edited varieties market experienced both challenges and opportunities during the COVID-19 pandemic. Early disruptions affected research operations, supply chains, and crop trials due to restrictions and workforce limitations. Funding shifts toward healthcare also slowed some biotechnology initiatives. Despite these setbacks, the pandemic emphasized the need for strong and reliable food production systems, driving greater attention to advanced agricultural solutions. Increased government support and investment in food security initiatives encouraged the adoption of gene-editing technologies. As conditions improved, the market rebounded, with a stronger focus on sustainable agriculture and innovation in crop improvement technologies.

The cereals & grains segment is expected to be the largest during the forecast period

The cereals & grains segment is expected to account for the largest market share during the forecast period, mainly because they are essential staple crops consumed worldwide and cultivated on a large scale. Key crops like rice, wheat, and maize are widely used for gene-editing improvements to enhance productivity, resistance to pests, and tolerance to environmental stress. Their significant role in global food systems encourages continuous innovation and investment. Due to their high demand and scalability, cereals and grains remain the leading segment, supported by ongoing advancements in agricultural biotechnology and crop improvement techniques.

The nutritional improvement segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the nutritional improvement segment is predicted to witness the highest growth rate, driven by increasing attention toward healthier diets and improved food quality. Gene-editing techniques are being utilized to boost essential nutrients such as vitamins, minerals, and proteins in crops. Growing concerns about malnutrition and nutrient deficiencies are encouraging the development of enriched food varieties. Support from governments and a health agency is further promoting the use of nutrient-enhanced crops. Additionally, rising demand for functional and health-oriented foods is fueling this growth, positioning nutritional improvement as the fastest-growing segment in the market.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share, supported by its well-developed biotechnology sector and robust research ecosystem. The region experiences high levels of investment in agricultural advancements and is home to major biotech firms and innovation centres. Regulatory frameworks that are relatively favourable toward gene-editing technologies also encourage faster product development and commercialization. Growing demand for improved crop traits such as higher productivity, resilience, and enhanced nutrition further supports growth, making North America the leading region in the global gene-edited crop market.

Region with highest CAGR:

Over the forecast period, the Asia-Pacific region is anticipated to exhibit the highest CAGR, driven by strong demand for food and ongoing agricultural advancements. The region faces increasing population challenges, pushing the need for higher crop productivity and efficient farming practices. Governments and institutions are actively promoting modern technologies, including gene editing, to strengthen food security. Rising awareness about sustainable farming and improved crop traits is boosting adoption. Continuous research and development efforts further support market expansion. Due to its varied environmental conditions and growing agricultural investments, Asia-Pacific is emerging as the fastest-growing region in this market.

Key players in the market

Some of the key players in Gene-Edited Varieties Market include Bayer AG, Syngenta Group, Corteva Agriscience, BASF SE, KWS SAAT SE & Co. KGaA, Limagrain,

Pairwise, Cibus Inc., Benson Hill Inc., J.R. Simplot Company, Maharashtra Hybrid Seed Company (Mahyco), JK Agri Genetics Ltd., Inari Agriculture Inc., Evogene Ltd., KeyGene, Rijk Zwaan Zaadteelt en Zaadhandel B.V., Sakata Seed Corporation and Bioceres Crop Solutions.

Key Developments:

In April 2026, BASF and Nutrien Ltd.® announced today a strategic collaboration designed to help farmers gain more value from sustainable farming practices already in use. Under this collaboration, Nutrien agronomists will work directly with growers to optimize yield potential using practical, on-farm sustainability practices. BASF digital tools – xarvio® FIELD MANAGER and xarvio BIOENERGY – will help connect growers with biorefineries and document the carbon intensity (CI) of their crops.

In October 2025, Syngenta Crop Protection, LLC and Taranis announced they are formalizing their successful collaboration into a strategic partnership across the Midwest. The partnership will equip agricultural retailers with AI-powered crop management solutions, delivering innovative digital technologies that create significant value for both retailers and their grower customers.

In July 2025, Bayer signed a development and distribution agreement with French pheromones expert company M2i Group for the exclusive distribution of pheromone gels for the Asia-Pacific as well as the Latin America region and the United States building on its successful collaboration and related product launches in Europe and Africa.

Crop Types Covered:

Cereals & Grains

Fruits & Vegetables

Oilseeds & Pulses

Specialty Crops

Trait Targets Covered:

Yield Enhancement

Disease Resistance

Pest Resistance

Abiotic Stress Tolerance

Nutritional Improvement

Technology Platforms Covered:

CRISPR & Cas Systems

TALENs

Zinc Finger Nucleases (ZFNs)

Other Technology Platforms

Applications Covered:

Food & Feed Production

Biofuel Crops

Industrial Raw Materials

Pharmaceutical & Nutraceutical Crops

End Users Covered:

Seed Companies

Agricultural Producers & Farmers

Research Institutions

Food & Beverage Manufacturers

Regions Covered:

North America

United States

Canada

Mexico

Europe

United Kingdom

Germany

France

Italy

Spain

Netherlands

Belgium

Sweden

Switzerland

Poland

Rest of Europe

Asia Pacific

China

Japan

India

South Korea

Australia

Indonesia

Thailand

Malaysia

Singapore

Vietnam

Rest of Asia Pacific

South America

Brazil

Argentina

Colombia

Chile

Peru

Rest of South America

Rest of the World (RoW)

Middle East

Saudi Arabia

United Arab Emirates

Qatar

Israel

Rest of Middle East

Africa

South Africa

Egypt

Morocco

Rest of 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 2023, 2024, 2025, 2026, 2027, 2028, 2030, 2032 and 2034

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)

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