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# Plant Breeding and CRISPR Plants Market by Type (Conventional Breeding and Biotechnological Method), Trait (Herbicide Tolerance, Disease Resistance, Yield & Grain Size Improvement, Temperature Tolerance), Technology, Application, and Region - Global Forecast to 2030

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## Abstracts

The global plant breeding and CRISPR plants market is estimated at USD 8.91 billion in 2025 and is anticipated to reach USD 13.86 billion by 2030, at a CAGR of 9.2% from 2025 to 2030. This industry is significantly shaped by government laws and regulations. Many countries are developing supportive policies to encourage genome editing innovations, as seen in Japan, where genome-edited high-GABA tomatoes entered commercial sales in 2021, as per an article published by International Service for the Acquisition of Agri-biotech Applications (ISAAA) in September 2021. The market is aided by streamlined approval procedures and clear regulations, especially in regions promoting biotechnology for food security and sustainability. However, the adoption of CRISPR is slowed down by stringent regulations in places like the European Union. Additionally, public concerns and ethical debates about gene-edited crops create hurdles, as regulatory approval alone does not ensure widespread acceptance.

Disruptions Impacting the Market for plant breeding and CRISPR plants: The market for plant breeding and CRISPR plants is being disrupted by changing regulations, supply chain issues, and technology breakthroughs. Regulatory uncertainties, especially in the European Union, have led to delays in the adoption of genome-edited crops, impacting market momentum. Meanwhile, improvements in genome editing, like CRISPR-Cas9, have shortened breeding times by speeding up trait development. However, smaller companies and research institutions face challenges due to intellectual property

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disputes surrounding gene-editing technologies. Furthermore, the availability of breeding materials and international technological collaborations are impacted by geopolitical tensions and trade restrictions. Additionally, the growing consolidation of major agribusiness firms is making it harder for smaller breeders to compete. Despite these hurdles, continuous investments in research and strong government support are pushing the adoption of advanced breeding techniques.

“The herbicide tolerance segment held the largest share in the plant breeding and CRISPR plants market in 2024.”

The herbicide tolerance segment holds the largest share in the plant breeding and CRISPR plants market due to the rising demand for effective weed management in agriculture. Farmers are increasingly using herbicide-tolerant crops to reduce labor costs and improve yields. Advancements in genome editing and genetic engineering have made it easier to create herbicide-resistant traits in important crops like canola, corn and soybeans. These crops also support sustainable farming by reducing the need for tillage, which helps prevent soil erosion. The commercial expansion of these crops is further supported by regulatory approvals in several countries such as US, which solidifies the herbicide tolerance segment's market dominance.

“Molecular breeding held the largest share within the biotechnological method segment in the plant breeding and CRISPR plants market in 2024”

Molecular breeding is the most widely used biotechnological method in plant breeding. It accelerates genetic improvements by allowing precise trait selection. Compared to conventional breeding, this method shortens the time needed for crop development by enabling precise selection of desired traits. Techniques like marker-assisted selection (MAS) and genomic selection help breeders develop high-yielding and disease-resistant varieties. The increasing affordability of sequencing technologies has further strengthened molecular breeding adoption, making it accessible to a broader range of breeding programs. Furthermore, molecular breeding is frequently employed in staple crops like wheat, maize, and rice, where enhancing genetic traits is crucial for ensuring food security. With continued investments in genomics research, this segment is expected to maintain its leading position.

India is expected to witness fastest growth in the Asia Pacific plant breeding and CRISPR plants market during the forecast period.

The market for plant breeding and CRISPR plants is anticipated to grow significantly in

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India due to government initiatives and rising research funding. As per an article published by International Service for the Acquisition of Agri-biotech Applications (ISAAA) in February 2023, India’s Department of Biotechnology (DBT) has launched research grants to enhance genome editing capacity among scientists. This program encourages innovation in crop improvement and is in line with the nation's National Mission for Sustainable Agriculture. India's growing population and agricultural challenges are driving up demand for climate-resilient and high-yield crops. Furthermore, the government's push for self-reliance in seed production and biotechnology advancements strengthens market prospects. The growing presence of research institutions and collaborations between academia and industry further contribute to India's rapid market expansion in this sector.

In-depth interviews have been conducted with chief executive officers (CEOs), Directors, and other executives from various key organizations operating in the plant breeding and CRISPR plants market:

By Value Chain: Supply Side – 65% and Demand Side – 35%

By Designation: CXOs– 25%, Managers – 40%, Executives- 35%

By Region: North America – 25%, Europe – 30%, Asia Pacific – 25%, South America – 15% and Rest of the World –5%

Prominent companies in the market include Bayer AG (Germany), Syngenta Group (Switzerland), KWS SAAT SE & Co. KGaA (Germany), Corteva (US), BASF (Germany), Limagrain (France), UPL (India), Beijing Dabeinong Biotechnology Co., Ltd. (China), SAKATA SEED CORPORATION (Japan), Rijk Zwaan Zaadteelt en Zaadhandel B.V. (Netherlands), Eurofins Scientific (Luxembourg), SGS Soci?t? G?n?rale de Surveillance SA. (Switzerland), PacBio (US), Evogene Ltd. (Israel), BGI Group (China), Sanatech Seed Co.,Ltd. (Japan), Pairwise (US), Cibus Inc. (US), Benson Hill Inc. (US), and KeyGene (Netherlands).

Other players include Phytoform (UK), Hudson River Biotechnology (Netherlands), Inari Agriculture, Inc. (US), TROPIC (UK), and Plantae by Huminn (Israel).

Research Coverage:

This research report categorizes the plant breeding and CRISPR plants market by type

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(conventional breeding and biotechnological method), by trait (herbicide tolerance, disease resistance, yield & grain size improvement, temperature & stress tolerance, drought resistance, and other traits), by application (cereals & grains, oilseeds & pulses , fruits & vegetables, and other applications) by technology (conventional breeding (cross breeding and selection methods, hybridization methods, and back-cross breeding) and and biotechnological method (genetic transformation, marker-assisted breeding, gene editing technologies, and tissue culture methods)), and region (North America, Europe, Asia Pacific, South America, and Rest of the World). The scope of the report covers detailed information regarding the major factors, such as drivers, restraints, challenges, and opportunities, influencing the growth of plant breeding and CRISPR plants market. A detailed analysis of the key industry players has been done to provide insights into their business overview, services, key strategies, contracts, partnerships, agreements, new service launches, mergers and acquisitions, and recent developments associated with the plant breeding and CRISPR plants market. Competitive analysis of upcoming startups in the plant breeding and CRISPR plants market ecosystem is covered in this report. Furthermore, industry-specific trends such as technology analysis, ecosystem and market mapping, patent, regulatory landscape, among others, are also covered in the study.

Reasons to buy this report:

The report will help the market leaders/new entrants in this market with information on the closest approximations of the revenue numbers for the overall plant breeding and CRISPR plants and the subsegments. This report will help stakeholders understand the competitive landscape and gain more insights to position their businesses better and plan suitable go-to-market strategies. The report also helps stakeholders understand the pulse of the market and provides them with information on key market drivers, restraints, challenges, and opportunities.

The report provides insights on the following pointers:

Analysis of key drivers (government initiatives and regulatory support), restraints (stringent and lack of harmonized global regulatory frameworks for gene-edited crop), opportunities (development of crops with enhanced nutritional profiles), and challenges (limited public awareness and consumer skepticism about gene-edited foods) influencing the growth of the plant breeding and CRISPR plants market.

New product launch/Innovation: Detailed insights on research & development

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activities and new product/service launches in the plant breeding and CRISPR plants market.

Market Development: Comprehensive information about lucrative markets – the report analyzes the plant breeding and CRISPR plants market across varied regions.

Market Diversification: Exhaustive information about new products/services, untapped geographies, recent developments, and investments in the plant breeding and CRISPR plants market.

Competitive Assessment: In-depth assessment of market shares, growth strategies, product offerings, brand/product comparison, and product foot prints of leading players such as Bayer AG (Germany), Syngenta Group (Switzerland), KWS SAAT SE & Co. KGaA (Germany), Corteva (US), BASF (Germany), Limagrain (France), Beijing Dabeinong Biotechnology Co., Ltd. (China), SAKATA SEED CORPORATION (Japan), Eurofins Scientific (Luxembourg), SGS Soci?t? G?n?rale de Surveillance SA. (Switzerland), and other players in the plant breeding and CRISPR plants market.

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