

**Minichromosomal Technology in Agriculture Market - Global Industry Size, Share, Trends, Opportunity, and Forecast, Segmented By Trait Incorporated (Drought Tolerance, Improved Nitrogen Use, Herbicide Tolerance, Pest Resistance, Others), By Crop Type (Arabidopsis, Maize, Others), By End User (Agriculture & Biotechnology Companies, Academic & Research Institutes, Others), By Region and Competition, 2020-2030F**

Market Report | 2025-11-24 | 190 pages | TechSci Research

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**Report description:**

**Market Overview**

The Global Minichromosomal Technology in Agriculture Market, valued at USD 324.61 Million in 2024, is projected to experience a CAGR of 6.47% to reach USD 472.85 Million by 2030. Minichromosomal technology in agriculture involves the utilization of engineered miniature chromosomes to introduce and express new genes in plants without altering the host's native genetic material, thereby enabling the stable transmission of multiple desirable traits across generations. The market's growth is primarily driven by the escalating global demand for enhanced crop yields and food security, necessitating innovative solutions to feed a growing population. Further impetus stems from continuous technological advancements in genetic engineering, which provide precise tools for developing crops with improved characteristics such as pest resistance, drought tolerance, and increased nutritional value.

**Key Market Drivers**

The increasing global population coupled with persistent food security demands represents a fundamental driver for the Global Minichromosomal Technology in Agriculture Market. As the world population continues to grow, the need for higher yielding, more resilient crops intensifies, necessitating advanced agricultural solutions that can address food scarcity and nutritional deficiencies

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effectively. Minichromosomal technology offers a pathway to rapidly develop such crops by enabling the stable insertion of beneficial genes without disrupting the native plant genome. According to the UN's State of Food Security and Nutrition in the World report, in 2023, approximately 2.33 billion people globally faced moderate or severe food insecurity, underscoring the urgent requirement for agricultural productivity enhancements.

#### Key Market Challenges

The complex regulatory environment represents a significant challenge for the Global Minichromosomal Technology in Agriculture Market. Varied regional regulations and stringent approval processes create substantial uncertainty, directly impeding market growth. These extensive regulatory pathways and the absence of harmonized global frameworks for gene-edited crops lead to prolonged development timelines and increased operational costs for companies. Such delays disproportionately affect smaller and medium-sized developers, who possess fewer resources to navigate multiple, often diverging, compliance requirements across different jurisdictions. According to a 2024 Agricultural Biotechnology Annual report, a specific herbicide-tolerant bentgrass product submitted for environmental risk assessment in Korea in December 2014 remained under review until June 2023, when the application was ultimately denied after nearly nine years, citing insufficient supporting data. This extended review period and eventual denial exemplify the direct commercialization hurdles and investment deterrence faced by innovative agricultural biotechnology products.

#### Key Market Trends

Precision Agriculture Integration for Genetic Enhancement represents a critical trend, leveraging data-driven farming practices to maximize the benefits of advanced genetic modifications. This synergy allows for optimal resource allocation, high-resolution crop health monitoring, and precise input application, creating ideal conditions for genetically enhanced crops. Minichromosomal technology benefits from this integration by enabling accurate evaluation of newly introduced traits in diverse environments, fine-tuning management for maximum yield and resilience. This combined approach ensures genetic advancements translate into tangible agricultural improvements, boosting efficiency and reducing waste. According to the USDA Economic Research Service, in 2023, guidance autosteering systems, a key component of precision agriculture, were utilized by 70 percent of large-scale crop-producing farms in the United States.

#### Key Market Players

- [ ] Chromatin, Inc. (Syngenta)
- [ ] Icon Genetics AG (Bayer AG)
- [ ] Evogene Ltd.
- [ ] Lonza Group Ltd.
- [ ] Precision Biosciences, Inc.

#### Report Scope:

In this report, the Global Minichromosomal Technology in Agriculture Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

#### - [ ] Minichromosomal Technology in Agriculture Market, By Trait Incorporated:

- o Drought Tolerance
- o Improved Nitrogen Use
- o Herbicide Tolerance
- o Pest Resistance
- o Others

#### - [ ] Minichromosomal Technology in Agriculture Market, By Crop Type:

- o Arabidopsis
- o Maize
- o Others

#### - [ ] Minichromosomal Technology in Agriculture Market, By End User:

- o Agriculture & Biotechnology Companies
- o Academic & Research Institutes
- o Others

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-□Minichromosomal Technology in Agriculture Market, By Region:

- o North America
  - United States
  - Canada
  - Mexico
- o Europe
  - France
  - United Kingdom
  - Italy
  - Germany
  - Spain
- o Asia Pacific
  - China
  - India
  - Japan
  - Australia
  - South Korea
- o South America
  - Brazil
  - Argentina
  - Colombia
- o Middle East & Africa
  - South Africa
  - Saudi Arabia
  - UAE

Competitive Landscape

Company Profiles: Detailed analysis of the major companies presents in the Global Minichromosomal Technology in Agriculture Market.

Available Customizations:

Global Minichromosomal Technology in Agriculture Market report with the given market data, TechSci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

-□Detailed analysis and profiling of additional market players (up to five).

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