

Agrigenomics Market Assessment, By Application [Crops, Livestock], By Sequencer Type [Sanger Sequencing, Illumina Hi Seq Family, PacBio Sequencing, Solid Sequencers, Others], By Services [DNA Extraction and Purification, Genotyping, DNA/RNA Sequencing, Marker-assisted Selection, GMO/Trait Purity Testing, Gene Expression Profiling, Others], By Region, Opportunities and Forecast, 2017-2031F

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Report description:

Global agrigenomics market is projected to witness a CAGR of 9.41% during the forecast period 2024-2031, growing from USD 3.70 billion in 2023 to USD 7.60 billion in 2031. The market's growth is supported by the rising investments in different agrigenomic startups, increasing efforts to enhance research activities, propelling the deployment of genomics in agriculture, rising partnerships, and collaborations between key market players to ensure the development and introduction of innovative solutions.

The global agriculture sector is facing a wide range of challenges due to the rapid expansion of the global population and the increasing effects of climate change. Advancements in genomics hold the potential to improve animal and plant breeding systems for sustainable agriculture. Over the past decade, genome sequencing has allowed genetic improvement of cattle, and genomic techniques have been adopted to improve dairy cattle selection strategies. The combination of genome reference assemblies and germplasm sequencing has emerged as a significant tool for securing food supply.

Various agrigenomic companies around the world are actively investing in launching different varieties of fruits, vegetables, and crops to combat the threat of climate change and ensure food accessibility. In February 2023, Singrow Pte Ltd announced the launch of the first climate-resilient strawberry variety. The agrigenomics company, known for developing a proprietary genomics technology platform, working on developing other crop segments for addressing food security challenges across the globe, especially in Africa and Asia, where the impact of climate change has been significant. Meanwhile, the production of Singrow Strawberries can be scaled up in tropical countries, breaking temperature and seasonal barriers and reducing costs for consumers

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while unlocking the potential for growers. The increasing utilization of advanced genomic technologies leverage the knowledge of plant genomes for producing varieties with improved yield and crop nutrition which are expected to aid in meeting the growth of the nutritional requirements of the global population.

Increasing Efforts Towards Strengthening Research Sector Provides Growth Opportunities

Various key institutions worldwide are working towards establishing agrigenomic facilities to support the sector's growth and national competitiveness. In March 2024, the University of the Philippines Los Banos Agricultural Genomics Research Center (UPLB AGRC) Project Steering Committee was established in the Philippines to advance research activities in agrigenomics. The committee is going to guide the setup and construction of the new AGRC under a six-year, USD 14.97 million project funded through the Korea International Cooperation Agency (KOICA). The project's technical partner, the International Rice Research Institute (IRRI), is going to provide guidance on the application of genomic technology in plant breeding and has established ten internship programs for advanced agricultural sciences. Such efforts are expected to enhance the understanding of the various advantages of applying genomic tools in agriculture, providing lucrative growth opportunities to the market. Investments in agricultural research are essential to combat the growing threat of food shortage, develop innovative solutions to meet the rising food demand, and identify the potential applications of genomics in agriculture. The efforts of different research organizations are supported by various countries in the form of grants, approvals, investments, and others.

Startups to Pioneer Innovation and Drive Market Growth

A wide range of agricultural startups are pioneering innovation and augmenting technological advancements, empowering farmers and researchers, and aiding them in producing novel crop varieties, increasing market expansion. In April 2023, Singrow Pte Ltd opened a new indoor farm as their main research and development hub in Singapore to develop novel crops with the help of their proprietary genomic technology. The company is expanding across Thailand and Malaysia via franchise farm partnerships. Such expansions are expected to aid the companies in tackling different challenges associated with food production during natural disasters and limited resources.

Additionally, various startups are working on the development of sustainable seeds with the help of agrigenomic technologies and receiving funding from various venture capital firms to continue their efforts. For instance, in July 2022, Piatrika Biosystems raised USD 1.2 million to enhance their product development team and accelerate their product commercialization efforts. Such investments are expected to support the development of novel technologies and aid in addressing the food supply shortage and imbalance in supply chains. Startups have been instrumental in groundbreaking research activities in agrigenomics and the development of affordable solutions that optimize different processes involved in the development of sustainable agricultural solutions.

Crops Segment to Dominate Market Share

The increasing emphasis on crop-based applications can be attributed to the rising requirement for enhancing crop productivity, growing food requirements, and increasing emphasis on food security. Genomic tools allow the identification of genes associated with desired traits, including improved nutritional content, resistance to diseases, tolerance to harsh climatic conditions, increased yield, and others.

Additionally, various government organizations are investing and focusing on growing genetically modified crops safely. In August 2024, the U.S. Department of Agriculture released a statement confirming that the genetically modified wheat developed by Bioceres Crop Solutions Corp. may be safely bred and grown in the United States. Additional steps are required prior to the commercialization of HB4 wheat in the United States. Wheat is modified to tolerate drought and can aid in overcoming challenges posed by droughts, including poor quality and low yields. Increasing emphasis on the production of genetically modified crops by different government institutions is expected to bolster the global agrigenomics market growth and aid organizations in combatting food shortages.

North America Holds Significant Market Share

The expansion of the agrigenomics market in North America can be attributed to the presence of strong research and development infrastructure, major agritech companies, and increasing efforts of different organizations to overcome the usage of pesticides in the region. Additionally, the rising partnerships and collaborations between the leading market players in the region and government agencies are supporting the expansion of the North America agrigenomics market. For instance, Illumina, Inc. and Texas A&M AgriLife are working together to reduce demultiplexing time and single nucleotide polymorphism (SNP) call time.

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Countries such as the United States are actively investing in the agrigenomics sector to identify the genetic control of various desirable adaptations in different species. National and international collaborators and Agricultural Research Service (ARS) researchers in College Station, Texas, sequenced, annotated, and assembled the G. herbaceum genome, providing the building blocks for further defining the genetic control and development of cotton along with identification of genes for tolerance to environmental stress. The genome sequence supports the genetic improvement of cotton crop in the United States, which in 2022 had an annual farmgate value of USD 6.4 billion.

Future Market Scenario (2024 - 2031F)

The market is expected to witness significant growth in the forecast years due to supportive measures by the government, increasing investments by key market players, and rising efforts and collaborations between leading research institutions across the globe. Due to the ability of agrigenomics to leverage genomic applications for enhancing sustainability and efficiency in livestock breeding and crop cultivation, the technology is expected to aid in combatting the growing threat of food shortage. Additionally, the deployment of advanced technologies including next-generation sequencing (NGS) is expected to aid researchers and farmers in identifying genetic markers linked with undesired and desired traits, allowing them to make informed decisions in breeding and cultivation.

The integration of genomics in agriculture with integrated automation solutions holds the potential to transform the future of agricultural practices by providing scalable results and bolstering innovation. Genomic data aids in uncovering the genetic foundations of the desired traits, such as drought tolerance, disease resistance, and crop yield. Thus, agrigenomics is expected to bolster the production of genetically modified varieties of crops that possess beneficial characteristics. By ensuring potential improvements in the quality of crops and animal products, agrigenomics is expected to play a crucial role in climate change, along with other challenges associated with the expansion of the global population.

Key Players Landscape and Outlook

The increasing partnerships between key market players to bolster technological enhancement and propel the adoption of genomics in agriculture are providing lucrative growth opportunities to the market. In September 2024, Illumina, Inc., and LGC Bioresearch Technologies (LGC Limited) announced a partnership to deliver innovative solutions to breeders and researchers from Latin America and Asia-Pacific (excluding China). The companies aim to do so by combining Illumina's highly scalable and proven sequencing technology and LGC's targeted genotyping-by-sequencing library preparation methodology. Such partnerships are expected to ensure the availability of technologies and tools that have the potential to revolutionize the agriculture sector and provide a wide range of solutions and services to support animal and plant breeding programs.

Furthermore, the growing efforts of market players to introduce novel technologies in different regions across the globe are positively influencing the market's expansion. In May 2022, Gencove, Inc. and Neogen Corporation launched InfiniSEEK, a cost-effective and innovative solution for targeted SNP analysis and whole genome sequencing. With this launch, customers have data-rich methods to get specific genetic traits, parentage markers, and genome-wide sequencing data with enhanced accuracy to characterize cattle across the globe.

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