

# **Plant Growth Chamber Market Forecasts to 2030 – Global Analysis By Equipment Type (Reach-In Chambers, Walk-In Chambers), Function (Plant Growth, Seed Germination, Environmental Optimization and Tissue Culture), Application, End User and by Geography**

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## **Abstracts**

According to Statistics MRC, the Global Plant Growth Chamber Market is accounted for \$612.68 million in 2024 and is expected to reach \$869.09 million by 2030 growing at a CAGR of 6.0% during the forecast period. A controlled environment used to mimic and track particular conditions required for plant growth is called a plant growth chamber. Researchers and horticulturists can precisely regulate temperature, humidity, light intensity, and carbon dioxide levels in these chambers to create the ideal growing conditions for a variety of plant species. Plant growth chambers are used extensively in climate change research, plant breeding, and agricultural research to help scientists understand how plants react to various environmental conditions. Moreover, these chambers allow for year-round cultivation by simulating harsh or natural conditions, guaranteeing consistent results and enabling experiments that would be impossible outside.

According to the International Energy Agency (IEA) highlights that plant growth chambers play a significant role in sustainable agriculture by enabling researchers to study the effects of climate change on plant growth and develop resilient crop varieties, with controlled humidity levels of 60-70%.

Market Dynamics:

### Driver:

#### Growing research in agriculture

There has been a lot of research into increasing crop yields, quality, and disease resistance due to the need for increased agricultural productivity. Because they allow researchers to replicate and track a variety of environmental conditions, plant growth chambers are essential tools in this process. In a controlled environment, researchers can observe plant responses by creating different climates, light cycles, and moisture levels. Additionally, this has aided both established agricultural industries and new ones like precision agriculture and aquaponics by bringing about innovations in crop breeding, pest control, and nutrient optimization.

### Restraint:

#### Expensive initial investment costs

Due to the need for greater agricultural productivity, a great deal of research has been conducted. The high upfront cost of buying and installing these systems is one of the main obstacles facing the plant growth chamber market. While the long-term advantages of using plant growth chambers for crop development and research are significant, the initial capital expenditure can discourage potential buyers, limiting market growth in certain regions or sectors. Furthermore, high-quality plant growth chambers with advanced features like automated controls, IoT integration, and precise climate control can be costly.

### Opportunity:

#### Growth of urban and indoor farming

Indoor and vertical farming have become popular due to urbanization and the need for local food production. These techniques lower transportation costs and guarantee a consistent supply of fresh produce by enabling food production in urban areas with limited resources and space. The need for plant growth chambers, particularly those with vertical farming systems installed, is anticipated to increase as the urban farming trend continues to spread. Moreover, urban areas can benefit greatly from this since local food production can lessen dependency on conventional agriculture and cut down on the carbon footprint of food transportation.

### Threat:

#### Price sensitivity and fierce competition

As the market for plant growth chambers keeps expanding, manufacturers are facing more competition, particularly as new firms join the market and established businesses broaden their product lines. Because of the increased competition, prices are under pressure to decline, which could result in manufacturers' profit margins becoming thinner. Price reductions may be necessary for businesses to stay competitive, which could hurt their bottom line. Additionally, price-conscious consumers may also choose less expensive options, frequently at the expense of cutting-edge features and quality, especially small-scale farmers and educational institutions.

### Covid-19 Impact:

The plant growth chamber market was significantly impacted by the COVID-19 pandemic, both favourably and unfavourably. On the one hand, plant growth chambers gained attention as a means of achieving reliable crop production in small areas due to the pandemic's increased emphasis on food security, the growth of urban farming, and the need for controlled-environment agriculture. However, the pandemic caused delays in the acquisition of components, raw materials, and completed goods, upsetting global supply chains and impacting production schedules and availability. Furthermore, budget cuts in the public and private sectors as a result of economic uncertainty decreased investments in infrastructure and agricultural research.

The Environmental Optimization segment is expected to be the largest during the forecast period

The market for plant growth chambers is expected to be dominated by the environmental optimization segment. This section focuses on regulating elements like temperature, humidity, light, and CO<sub>2</sub> levels to create the perfect environment for plant growth. For many uses, such as research, commercial plant production, and sustainable agriculture, environmental optimization is crucial. It makes it possible to precisely regulate the conditions, under which plants grow, enhancing crop quality and yields in a range of settings, including large-scale agricultural settings and laboratories. Moreover, urbanization, climate change, and the need for high-efficiency farming methods are some of the factors driving the growing demand for controlled environments, which is fueling this segment's expansion.

The Tall Plants segment is expected to have the highest CAGR during the forecast period

In the Plant Growth Chamber Market, the Tall Plants segment is anticipated to have the highest CAGR. Because more and more people are using plant growth chambers to grow taller crops like trees, big shrubs, and high-value plants, this market has grown significantly. These chambers offer controlled environments to maximize growth and yield owing to improvements in lighting systems and chamber designs that can accommodate taller plants by providing more vertical space. Additionally, tall plants are becoming more and more in demand in fields where growth consistency and efficiency are crucial, like horticulture, forestry, and biotechnological research.

Region with largest share:

It is expected that the plant growth chamber market is anticipated to be dominated by the North American region. In the agricultural and biotechnology industries, where plant growth chambers are widely used for crop research, genetic studies, and controlled-environment agriculture, the region's dominance is fueled by large investments in research and development. North America's well-established agricultural infrastructure, along with the increasing adoption of advanced farming technologies, has fostered high demand for plant growth chambers. Furthermore, urban farming, sustainability, and food security are also becoming more and more important, especially in nations like the US and Canada, which has further stimulated market expansion.

Region with highest CAGR:

The plant growth chamber market is anticipated to grow at the highest CAGR in the Asia Pacific region. Growing urbanization, the demand for sustainable agricultural methods, and an increased focus on food security as a result of population growth are the main drivers of this region's explosive growth. To increase crop yields and satisfy the demands of their growing urban populations, nations like China, India, and Japan are making significant investments in controlled-environment agriculture. Moreover, the use of plant growth chambers is also being accelerated by government programs to support agricultural technology research, as well as developments in smart farming and vertical farming.

Key players in the market

Some of the key players in Plant Growth Chamber market include Conviron Inc,

Emerson Electric Co., Percival Scientific, Inc., General Electric Company, Danaher, Agilent Technologies Inc., Saveer Biotech Limited, Hettich Benelux B.V., Caron Products & Services, Inc., PHC Corporation, Darwin Chambers Inc, Binder GmbH, Weiss Technik , Thermo Fisher Scientific Inc and Siemens AG.

#### Key Developments:

In July 2024, Agilent Technologies Inc. announced it has signed a definitive agreement to acquire BIOVECTRA, a leading specialized contract development and manufacturing organization, for \$925 million. Both BIOVECTRA and Agilent are fully integrated CDMOs with state-of-the-art facilities that follow current Good Manufacturing Practices (cGMP), a high standard for methods, facilities, and controls used in manufacturing, processing, and packaging of active pharmaceutical ingredients.

In July 2024, Siemens AG and Boson Energy have signed a Memorandum of Understanding (MoU) to facilitate collaboration on technology that converts non-recyclable waste into clean energy. The collaboration aims to advance sustainable, local energy security, enabling hydrogen-powered electric vehicle charging infrastructure without compromising grid stability or impacting consumer prices.

In August 2023, Emerson announced a definitive agreement to acquire FLEXIM Flexible Industriemeßtechnik GmbH, a global leader in clamp-on ultrasonic flow measurement for liquids, gases and steam. Flexim brings highly differentiated, complementary technology and strong customer relationships to Emerson, with an installed base of more than 100,000 flowmeters, as well as approximately 450 employees.

#### Equipment Types Covered:

Reach-In Chambers

Walk-In Chambers

#### Functions Covered:

Plant Growth

Seed Germination

Environmental Optimization

Tissue Culture

Applications Covered:

Short to Medium Height Plants

Tall Plants

Other Applications

End Users Covered:

Clinical Research

Academic Research

Regions Covered:

North America

US

Canada

Mexico

Europe

Germany

UK

Italy

France

Spain

Rest of Europe

#### Asia Pacific

Japan

China

India

Australia

New Zealand

South Korea

Rest of Asia Pacific

#### South America

Argentina

Brazil

Chile

Rest of South America

#### Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & 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 2022, 2023, 2024, 2026, and 2030
- 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)

#### Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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