

Hydroponics Market Report by Type (Aggregate Hydroponic System, Liquid Hydroponic System), Crop Type (Tomato, Lettuce and Leafy Vegetables, Pepper, Cucumber, Microgreens, and Others), Equipment (HVAC, LED Grow Light, Irrigation Systems, Material Handling, Control Systems, and Others), and Region 2024-2032

Market Report | 2024-09-10 | 140 pages | IMARC Group

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Report description:

The global hydroponics market size reached US\$ 13.3 Billion in 2023. Looking forward, IMARC Group expects the market to reach US\$ 32.5 Billion by 2032, exhibiting a growth rate (CAGR) of 10.1% during 2024-2032. The increasing water scarcity concerns, the rising trend toward urban living, the growing concerns about the environmental impact of traditional agriculture, and the supportive government policies are some of the factors propelling the market.

Hydroponics is a cutting-edge agricultural method revolutionizing the way we grow plants. It involves cultivating crops without soil, instead using a nutrient-rich water solution to deliver essential minerals directly to plant roots. This innovative approach offers numerous advantages. It maximizes resource efficiency by drastically reducing water consumption compared to traditional soil-based farming. Additionally, hydroponics allows for precise control over environmental factors like temperature, humidity, and light, optimizing plant growth and minimizing the need for pesticides or herbicides. This method's versatility enables cultivation in various settings, from urban rooftops to arid deserts, and it permits year-round production, eliminating the constraints of seasonal farming. It also minimizes soil-borne diseases and enhances crop yields, posing a potential solution to global food security challenges. As our world faces increasing population pressures and environmental concerns, hydroponics stands at the forefront of sustainable agriculture, offering a promising path toward more efficient, resilient, and environmentally friendly food production systems.

The global market is majorly driven by the increasing food demand. Hydroponics, with its ability to produce crops year-round in controlled environments, offers a solution to this challenge by significantly increasing crop yields. Furthermore, the rising

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awareness of food safety and the demand for pesticide-free, organic produce are propelling the adoption of hydroponic systems, which inherently minimize the need for chemical inputs. Moreover, climate change and diminishing arable land also play pivotal roles in market expansion. Hydroponics' ability to mitigate the impact of adverse weather conditions, reduce water usage, and enable cultivation in non-arable regions positions it as a resilient alternative to traditional farming methods. Besides, urbanization trends are driving the need for localized food production, making hydroponics an ideal choice for vertical and rooftop farming in urban settings, thereby reducing food miles and environmental impact. Additionally, rapid technological innovations, including advanced nutrient delivery systems and automation, enhance the efficiency and scalability of hydroponic operations, attracting commercial growers and investors. Regulatory support and incentives for sustainable agriculture practices further promote market growth.

Hydroponics Market Trends/Drivers:

Increasing food shortage

The escalating global food shortage crisis is catalyzing the market. As the world's population grows, traditional soil-based agriculture faces mounting challenges in meeting the surging demand for food. Climate change-induced extreme weather events, diminishing arable land due to urbanization, and water scarcity further exacerbate this issue. Hydroponics presents a viable solution to bridge the growing food gap. These systems allow for highly efficient and year-round crop production, making them a compelling choice for bolstering food supply. By cultivating crops without soil in controlled indoor environments, hydroponics can achieve significantly higher yields than traditional farming, even in areas with adverse weather conditions or limited arable land. Moreover, hydroponic setups are adaptable to urban settings, facilitating localized food production that reduces the need for long-distance transportation, lowering carbon emissions, and improving food security. The technology's inherent resource efficiency, with reduced water usage and minimal reliance on chemical inputs, aligns with sustainability goals and reduces pressure on strained natural resources. In this era of increasing food insecurity, hydroponics emerges as a transformative force in modern agriculture, helping to ensure a more resilient, sustainable, and bountiful food supply, thus driving its rapid market growth and adoption worldwide.

Reducing arable land area

The diminishing availability of arable land is propelling the market growth. Across the globe, urbanization, land degradation, and competing land-use demands have severely limited the amount of land suitable for traditional soil-based agriculture. As this trend continues, finding innovative agricultural methods that can efficiently use limited space becomes increasingly imperative, and hydroponics emerges as a solution. It eliminates the necessity for vast expanses of arable land, allowing crops to flourish without soil. Instead, plants grow in nutrient-rich water solutions, often in vertically stacked systems or controlled indoor environments. This vertical and soilless approach enables cultivation in urban settings, such as vertical farms and rooftop gardens, making space most available. Furthermore, it provides a means to reclaim non-arable or contaminated land for agricultural purposes. Hydroponic systems can be set up virtually anywhere, including former industrial sites or areas with pollution concerns, by circumventing the need for fertile soil. They offer a pathway to sustainable and efficient food production in a world with limited land resources and an expanding population. Hydroponics ensures food security as the pressure on arable land continues to mount. It contributes to conserving vital natural habitats, underpinning its substantial growth in the modern agricultural landscape.

Development of efficient indoor and outdoor hydroponic gardening methods

The development of efficient indoor and outdoor hydroponic gardening methods is expected to offer numerous opportunities for the market. These innovative cultivation techniques have unleashed the potential of hydroponics, making it an attractive and feasible choice for a diverse range of growers, from urban enthusiasts to large-scale commercial operations. Efficient indoor hydroponic systems have revolutionized the way crops are grown. Advanced setups employ technologies such as LED grow lights, automated nutrient delivery, and precise environmental control to create optimal conditions for plant growth. This enables year-round cultivation and the ability to tailor environmental parameters like temperature, humidity, and light intensity to specific crop requirements. As a result, indoor hydroponics has become a staple in urban farming, enabling fresh produce to be grown locally and sustainably, reducing food miles and associated carbon emissions. These methods, such as vertical farming and greenhouse cultivation, have extended hydroponics' reach. These systems maximize land use while protecting from adverse weather conditions. They're particularly valuable in regions with limited arable land or challenging climates. By optimizing

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resource utilization and crop yields, outdoor hydroponics addresses food security concerns and reduces the strain on traditional agriculture.

Hydroponics Industry Segmentation:

IMARC Group provides an analysis of the key trends in each segment of the market, along with forecasts at the global, regional and country levels from 2024-2032. Our report has categorized the market based on type, crop type and equipment.

Breakup by Type:

-□ Aggregate Hydroponic System

o□ Closed System

o□ Open System

-□ Liquid Hydroponic System

Aggregate hydroponic system dominate the market

The report has provided a detailed breakup and analysis of the market based on the type. This includes aggregate hydroponic system (closed system and open system) and liquid hydroponic system. According to the report, the aggregate hydroponic system represented the largest segment.

Aggregate Hydroponic Systems represent a crucial choice for modern agriculture as they offer numerous advantages. Closed systems, characterized by their controlled environment and efficient nutrient recirculation, minimize resource wastage, reduce water consumption, and mitigate the risk of pests and diseases. On the other hand, open systems provide flexibility, simplicity, and cost-effectiveness, making hydroponic farming accessible to a broader range of growers.

The dynamic duality of Aggregate Hydroponic Systems caters to a wide spectrum of agricultural needs, from large-scale commercial farms to small-scale urban growers. This diversity encourages more farmers to adopt hydroponics, particularly in regions with scarcity or challenging climates. As sustainability and food security become paramount concerns, the adaptability and efficiency offered by these systems continue to drive market growth, revolutionizing modern agriculture by offering a resource-efficient and productive alternative to conventional soil-based farming practices.

Breakup by Crop Type:

-□ Tomato

-□ Lettuce and Leafy Vegetables

-□ Pepper

-□ Cucumber

-□ Microgreens

-□ Others

Tomato dominates the market

The report has provided a detailed breakup and analysis of the market based on the crop type. This includes tomato, lettuce and leafy vegetables, pepper, cucumber, microgreens, and others. According to the report, tomato represented the largest segment.

When examining the hydroponics market, the cultivation of tomatoes stands out as a significant driver for its growth. Tomatoes are a widely consumed and versatile crop, and hydroponic systems have proven exceptionally well-suited for their cultivation.

Hydroponic tomato farming offers several advantages, including precise control over nutrient levels, water usage, and environmental conditions. This level of control results in higher yields, faster growth, and consistent quality, making hydroponic tomatoes appealing to both growers and consumers.

Moreover, hydroponics allows for year-round tomato production, eliminating the limitations imposed by seasonal changes in traditional soil-based farming. This steady supply meets the demands of consumers and commercial users, including restaurants and supermarkets, contributing to the market's expansion. The cultivation of hydroponic tomatoes also aligns with the growing emphasis on sustainable agriculture by minimizing soil degradation, reducing water consumption, and decreasing the need for chemical pesticides.

Breakup by Equipment:

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- HVAC
- LED Grow Light
- Irrigation Systems
- Material Handling
- Control Systems
- Others

HVAC dominates the market

The report has provided a detailed breakup and analysis of the market based on the equipment. This includes HVAC, LED grow light, irrigation systems, material handling, control systems, and others. According to the report, HVAC represented the largest segment.

HVAC systems are essential in controlled indoor hydroponic environments, providing precise climate control crucial for optimal plant growth. Hydroponic farms require specific temperature and humidity levels and adequate ventilation to ensure healthy plant development and prevent the growth of mold or pathogens.

HVAC systems create the ideal growing conditions and contribute to energy efficiency, reducing operational costs for hydroponic growers. These systems help maintain stable temperatures year-round, regardless of external weather conditions, enabling consistent crop production and reducing the risk of crop loss due to extreme weather events.

As the hydroponics industry continues to expand to meet the demands of sustainable and high-yield agriculture, the importance of efficient HVAC equipment becomes increasingly evident. Growers rely on these systems to optimize crop growth, quality, and yield, making HVAC a significant driving factor behind the market's continued growth.

Breakup by Region:

- North America
 - o United States
 - o Canada
- Asia-Pacific
 - o China
 - o Japan
 - o India
 - o South Korea
 - o Australia
 - o Indonesia
 - o Others
- Europe
 - o Germany
 - o France
 - o United Kingdom
 - o Italy
 - o Spain
 - o Russia
 - o Others
- Latin America
 - o Brazil
 - o Mexico
 - o Others
- Middle East and Africa

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North America exhibits a clear dominance, accounting for the largest market share

The market research report has also provided a comprehensive analysis of all the major regional markets, which include North America (the United States and Canada); Asia Pacific (China, Japan, India, South Korea, Australia, Indonesia, and others); Europe (Germany, France, the United Kingdom, Italy, Spain, Russia, and others); Latin America (Brazil, Mexico, and others); and the Middle East and Africa. According to the report, North America accounted for the largest market share.

Several factors contribute to this strong market presence. There is a growing emphasis on sustainable agriculture and food security in North America, leading to increased adoption of hydroponic farming methods. These methods enable year-round crop cultivation, helping to mitigate the seasonal limitations of traditional soil-based farming. Furthermore, the region has witnessed a rise in urban and indoor farming initiatives driven by the desire for locally sourced, fresh produce. Hydroponics offers an efficient solution for urban agriculture, allowing growing crops in controlled environments within city limits. This trend aligns with the region's focus on reducing food miles and supporting environmentally friendly practices.

Moreover, the region's technological advancements, research, development, and robust infrastructure for hydroponics further boost market growth. In addition, government incentives and initiatives supporting sustainable agriculture contribute to North America's growing hydroponics industry.

Competitive Landscape:

Top companies are pivotal in bolstering market growth through innovation, research, and industry leadership. These companies continually invest in research and development, pushing the boundaries of hydroponic technology to enhance efficiency, reduce resource usage, and optimize crop yields. Their commitment to sustainability and eco-friendly practices resonates with a global audience increasingly concerned about food security and environmental impact, spurring the adoption of hydroponics.

Furthermore, top players actively engage in educational initiatives and partnerships to promote awareness about hydroponic solutions among growers, communities, and governments, fostering broader acceptance and adoption of this agricultural method. By pioneering cutting-edge systems, driving sustainable practices, and promoting knowledge dissemination, these top hydroponics firms strengthen their market presence and contribute significantly to the industry's growth and its vital role in shaping the future of agriculture.

The report has provided a comprehensive analysis of the competitive landscape in the hydroponics market. Detailed profiles of all major companies have also been provided.

- AeroFarms
- Argus Control Systems Limited (Controlled Environments Limited)
- BrightFarms
- General Hydroponics Inc.
- GreenTech Agro LLC
- GrowLife Inc.
- Hydrodynamics International
- Hydrofarm LLC
- Logiqs B.V.
- LumiGrow Inc.
- Thanet Earth Limited
- Village Farms International Inc.

(Please note that this is only a partial list of the key players, and the complete list is provided in the report.)

Recent Developments:

- In July 2023, AeroFarms agreed with an existing group of its investors to provide \$10 million in debtor-in-possession ("DIP") financing as part of a larger round of financing that includes those investors.
- In September 2023, BrightFarms entered an exclusive licensing deal with Partner Element Farms.

Key Questions Answered in This Report:

- How has the global hydroponics market performed so far, and how will it perform in the coming years?
- What are the drivers, restraints, and opportunities in the global hydroponics market?

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- What is the impact of each driver, restraint, and opportunity on the global hydroponics market?
- What are the key regional markets?
- Which countries represent the most attractive hydroponics market?
- What is the breakup of the market based on the type?
- Which is the most attractive type in the hydroponics market?
- What is the breakup of the market based on the crop type?
- Which is the most attractive crop type in the hydroponics market?
- What is the breakup of the market based on the equipment?
- Which is the most attractive equipment in the hydroponics market?
- What is the competitive structure of the global hydroponics market?
- Who are the key players/companies in the global hydroponics market?

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