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Vertical Farming Market by Growth Mechanism (Hydroponics, Aeroponics, Aquaponics), Structure (Building-based and Shipping container-based), Crop Type, Offering (Hardware, Software, Services) & Region - Global Forecast to 2029

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Abstracts

The global vertical farming market was valued at USD 5.6 billion in 2024 and is projected to reach USD 13.7 billion by 2029; it is expected to register a CAGR of 19.7% during the forecast period. The market of vertical farming is progressing through several aspects:This is a human centred approach and is adopted to facilitate efficient use of available resources, water and land through influencing climate change. Altruistic demands are also driven by food security issues like population growth, urbanization and safe food. Some of the examples of benefits that could be attributed to the economic aspect includes; transportation cost, year round production and production of high valued crops. The use of IoT, Hyper intelligent transport system (HITS), AI, LED lighting, and hydroponics increases effectiveness in the organization. All of them provide the needful argument for vertical farming, which indeed can be viewed as one of the most promising models of contemporary agriculture.

“The lighting hardware type to hold the largest share during the forecast period.”

Lighting has tremendously improved owing to its pros specific to indoor vertical farms’ requirements, and the use of LED lighting has gained huge popularity. LED lights give the farmers the control of both the light composition and the brightness, so that the former are able to adjust the light to the needs of the plants, thus helping them grow faster and produce more. In addition, LED lights are energy saving, that is, they use way much power than most conventional sources of lighting. It also cuts on costs of maintenance due to their longer lasting as compared to other lamp types. Thirdly, LED

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lights produce comparatively little heat that reduces the possibilities of heat injury of plants and making the working condition of farmers much better. This has made the LED lighting to be popular among the vertical farm operators since it add more value to the vertical farming technique by averting the key reason behind the failure of the farming methodology in the past.

“The aeroponics growth mechanism segment to record highest market share during the forecast period.”

The aeroponic growth mechanism is anticipated to exhibit the highest growth rate in the vertical farming market due to its higher productivity in contrast to hydroponics as well as the substantially lesser utilization of water. Aeroponics occupies a lesser amount of space let plants get all optimal conditions necessary for their growth and provide rich nutrient solution directly to roots of the plant, thus it is more resourceful. The fixed cost of aeroponics, compared to hydroponics are higher, but the payback is much higher given that the yields are much higher. With the increasing global awareness towards conservation of natural resources and water the need to increase production using limited space and water especially in built-up areas is likely to boost the uptake of aeroponic systems and therefore fuel the growth of this segment in the vertical farming market.

“The shipping container-based vertical farms is likely to grow at the highest CAGR during the forecast period.”

Vertical farms use shipping containers, that is sustainable, space optimal and can easily be moved from one location to another since they are designed to be transported via sea and rail hence the name ‘shipping’ containers. Shipping container-based vertical farms are comapritively more affordable. This is due to the ability of the farms to be built in different regions fully equipped without large capital investments in infrastructure. Also, shipping container farms are climate controlled meaning less water is used during the production processes and also there is production all year round which plays a pivotal role especially in the aspects of food insecurity. Knowing this, the market for vertical farming utilizing shipping containers will inevitably grow as technology progresses in an attempt to enhance the efficiency of these systems and provide entrepreneurs and investors with a competent solution in the agriculture industry.

Breakdown of primaries

The study contains insights from various industry experts, ranging from component

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suppliers to Tier 1 companies and OEMs. The break-up of the primaries is as follows:

By Company Type - Tier 1 – 40%, Tier 2 – 45%, Tier 3 – 15%

By Designation— C-level Executives - 40%, Directors - 30%, Others - 30%

By Region—North America - 20%, Europe - 30%, Asia Pacific - 35%, RoW - 15%

The vertical farming market is dominated by a few globally established players such as Signify (Netherlands), Freight Farms (US), AeroFarms (US), Sky Greens (Singapore), Spread (Japan), Plenty (US), Valoya (Finland), Osram (Germany), Everlight Electronics (Taiwan), and Heliospectra AB (Sweden). The study includes an in-depth competitive analysis of these key players in the vertical farming market, with their company profiles, recent developments, and key market strategies.

Research Coverage:

The report segments the vertical farming market and forecasts its size by offering, growth mechanism, structure, crop type, and region. The report also discusses the drivers, restraints, opportunities, and challenges pertaining to the market. It gives a detailed view of the market across four main regions—North America, Europe, Asia Pacific, and RoW. Supply chain analysis has been included in the report, along with the key players and their competitive analysis in the vertical farming ecosystem.

Key Benefits to Buy the Report:

Analysis of key drivers (high yield and numerous other benefits associated with vertical farming over conventional farming, advancements in light-emitting diode (led) technology, year-round crop production irrespective of weather conditions, and requirement of minimum resources). Restraint (lack of technically skilled workforce and limited crop types, and high start-up costs). Opportunity (reduced environmental impact from agriculture by adoption of vertical farming, and cannabis cultivation through vertical farming). Challenges (maintenance of temperature, humidity, and air circulation in a vertical farm, and vertical farming on a large scale)

Product Development/Innovation: Detailed insights on upcoming technologies, research and development activities, and new product and services launches in

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the vertical farming market.

Market Development: Comprehensive information about lucrative markets – the report analyses the vertical farming market across varied regions

Market Diversification: Exhaustive information about new products and services, untapped geographies, recent developments, and investments in the vertical farming market.

Competitive Assessment: In-depth assessment of market shares, growth strategies, and service offerings of leading players like Signify (Netherlands), Freight Farms (US), AeroFarms (US), Sky Greens (Singapore), Spread (Japan), Plenty (US), Valoya (Finland), Osram (Germany), Everlight Electronics (Taiwan), and Heliospectra AB (Sweden) among others in the vertical farming market.

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