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Vertical Farming, Plant Factory Market Shares, Strategies, and Forecasts, Worldwide, 2014 to 2020

https://marketpublishers.com/r/V955E914FF4EN.html
Date: April 2014
Pages: 455
Price: US$ 3,900.00 (Single User License)
ID: V955E914FF4EN

Abstracts

WinterGreen Research announces that it has published a new Plant Factory. Vertical Farming study. The 2014 study has 455 pages, 233 tables and figures. Worldwide markets are poised to achieve significant growth as the food supply for the world starts to adopt automated process. Grow lights have become more sophisticated and less expensive to run as solar and wind energy are adopted by greenhouses and plant factories.

Plant Factory (PF), vertical farming is a closed environment in which plants are grown under lights in shelves stacked one on another. All the elements needed for plant growth are artificially controlled, a process that removes detrimental influences such as pesticides and poor weather conditions. Traditional agriculture lives at the mercy of the elements. A plant factory is run based on science. Science is used to produce plants based on carefully controlled spectrum best for plant growth, to produce plants of a fixed quality, quantity, cost, time to harvest, and tuned to control the sale price.

Plant factory weed control is able to achieve crop-yield increases. Robot technology is deploying machines for weed control, promising to improve crop yields. Robots make the crops safer by eliminating or virtually eliminating herbicides. Downstream processing system solutions and robots achieve automation of process. Robots meet stringent hygiene and safety regulations, work tirelessly 24 hours a day, and relieve human workers of physically arduous tasks. Robots contribute to the freshness, variety and quality of food. Projects are ongoing.

High value crops are a target of agricultural robotic development. What could be tastier than a strawberry, perfectly formed, and perfectly ripened? New plant factories that grow fruits and vegetables on shelves indoors are able to improve the delivery of

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consistent quality food, and to implement efficiency in managing food production.

Strawberries are a high profit crop. A new generation of plant factories have just been born making it forever spring in the strawberry growing business. Strawberry Harvesters with the world's most advanced technology to give maximum performance to a plant factory. Harvesting robots can optimize the productivity of the farming business. Growers can get the best results in a berry farm using automated process. Automated picking collection systems improve labor productivity, give speed and agility to harvest operations.

Food factories produce organic vegetables. This represents a next step in the application of automated process to everyday life. Automated process for farming provides immediate help for food stores. Plant factories support farming practices that are not dependent on the climate. Food factories produce organic vegetables 24 hours a day. With the land available for farming depleting quickly, new types of farming are evolving.

PLANT FACTORIES MARKET DRIVING FORCES

Demand for ability to grow food consistently

Demand for ability to grow food locally

Can grow food in warehouses

Can grow food in the home

Dedicating space that is efficient for producing food

Fresh, sanitary food available consistently

Food factories

Ability to produce organic vegetables

Ability to produce vegetables 24 hours a day

Land available for farming depleting quickly

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New types of farming are evolving

Growing of vegetables indoors all year round

A plant factory allows the growing of vegetables indoors all year round. It is a system that artificially creates the environment necessary for plants to grow by controlling the amount of culture solution, air, and light from light-emitting diodes (LED).

Because the amount of light, temperature, humidity, and carbon dioxide (CO2) concentration levels can be optimized without being affected by the weather, the growth rate of vegetables is two to four times faster than those grown in open-air fields, and yields are ten to twenty times higher.

Visible natural light has a spectrum different from grow lights. Visible light is measured by lux or energy. Plant factory grow lights are different. Grow lights provide artificial light used for plant growth. The spectrum of growth lights is tuned to the plant growing task. Plant light has photons from the blue to red (400-700 nm) part of the spectrum. This is called growth light.

Horticulture lamps address the role of light in the growth and development of plants. Plant growth is a function of photosynthesis. The plant growth lights work in three different ways:

To provide all the light a plant needs to grow

To supplement sunlight, especially in winter months when daylight hours are short

To increase the length of the "day" in order to trigger specific growth and flowering

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According to Susan Eustis, lead author of the study, "Plant factories use growth light to automate and control growing. The ability to grow food consistently, locally represents a major breakthrough for humanity." Grow lights permit people to grow food in warehouses and in the home, dedicating previously unused space to a purpose and in a manner that is efficient for producing food.

Plant factory market forecast analysis indicates that markets at $403 million in 2013 are anticipated to reach $1.97 billion by 2020. Growth is a result of the unmitigated march of automated process driven by the semiconductor industry, by microprocessors, and more directly by the need for food that is uncontaminated.

The ability to use solar energy to grow food using LED lights is a compelling new way to produce food. Using plant factory technology the containers can be put in homes and restaurants, apartments and greenhouses to grow food more efficiently and that is not contaminated with pesticides or other things that should not be on food. The ability to grow food in layers, 24 x 7 represents a major shift in the way food is provided to people. It means fresh food can be available year around at home and anyplace a person is.

Companies Profiled

Market Leaders

Spread Co.

Granpa

Iwasaki Electric

Nihon Advanced Agri Corporation

Pacific Group

Ryobi Holdings

Philips Horticulture Lamps

Everlight Electronics

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Market Participants

AeroFarms

Aizufujikako Co., Ltd.

Genesis Photonics (GPI)

Gotham Greens

Hon Hai

Hydrofarm

Inventec

JGC / Granpa

Jingpeng Solar Powered Plant Factory

Natural Vitality

Ozu Corporation

Rockwool® Group

Rambridge

Ringdale ActiveLED®

Tingyi International / Wei Chuan Foods

Check Out These Key Topics

Plant Factory

Green Technology

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Smarter Farming

Smart Agriculture

Beijing Plant Factory

China Plant Factory

Jingpeng Plant Factory

Plant Verticsl Factory

Indoor Farm

Green Farming

Indoor Vertical Farming

Food

Vertical Farm

In-store Production/Consumption

Urban Farming

Solar Energy for Growing

Hydroponics

Indoor Vertical Farms

Vertical Farming

Local garden

Building-Integrated Agriculture

Grow Lights

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Moving Light

Solar energy for food

CEA

Phalaenopsis

Cermaic Metal Halide System

High Pressure Sodium (HPS) System

Plant Technology Advances

Plant Factory Growing

Plant Factory Server Controls

Light Farming

Green Flooring

Vegetation

Safe Food

Organic Vegetables

Plant Factory Vegetables

Plant Factories

Grow Light Plantations

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