

Risky Business

What You Need To Know About...

Vertical Farming

Indoor vertical farming is a product of urban agriculture where crops are raised in vertical stacked layers, racks and rotating cylinders.

It uses **Controlled Environment Agriculture (CEA) technology**, where light, environment (humidity, temperature, gases, etc.) and fertigation is artificially controlled.

Robotics and other automated devices are utilized to minimize the manual labor requirements.

Advantages of Vertical Farming

100 times more produce per square foot than traditional methods

Customized LED lights help plants grow 2 1/2 times faster



40% less power



80% less food waste



99% less water usage



no soil needed



No nutrient runoff issues

Vertical farms **do not** use pesticides

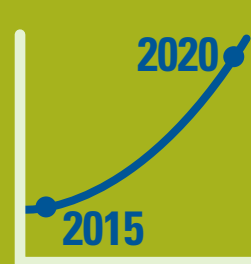
Vertical farms **ship locally**

Vertical farms harvest **90% of crops**

Expected Growth

24 currently in operation in the U.S.

Over 100 worldwide



The total market is expected to reach **USD 3.88 Billion by 2020** from USD 1.01 Billion in 2015, at a **CAGR of 30.7%** between 2015 and 2020.

Current Industry Inhibitors



High cost of powering lights 24/7/365



High startup costs for equipment and building



Unlike traditional farming, government subsidies are not provided for indoor vertical farming



Success limited to areas where cost of land, transport and food is already higher than average

The **major driving factors for market growth** are the need for high food quality without pesticides, no crop failures due to weather, increasing urban population, diminishing cultivable land and the ability to grow crops all year round. Other factors are the use of alternative energy systems and a drastic drop in lighting costs through the use of LEDs.

Equipment Breakdown Perspective



Business Interruption: The loss of electrical power to a vertical farm for as little as one day could be catastrophic to production. Plants are reliant on the proper temperature, air quality and lights that the artificial environment supplies.



Electrical Systems: Due to the large amount of lighting and equipment/motor controls, the potential for electrical arcing and fires is higher than in a traditional farm setting. This situation is exacerbated by the presence of water and high humidity which creates the potential for a high incidence of moisture-related electrical failures.