



Vertical Farming: Landless Farming for the Future

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Abstract

With the soar of time, it's turn out to be not possible to feed the growing populace with confined resources. Since the human beings are very a whole lot listen to exceptional meals, farming machine must be improvised and shifted to new dimension. These healthful meals need to be produced in a sustainable manner. Keeping those in view, vertical farming has come to the floor as an amazing option. Though the additives of vertical farming contain excessive instalment price initially, however it produces greater meals with very confined resources. Different forms of vertical farming viz. hydroponics, aeroponics and aquaponics compel the concept to be location specific urban agricultural system.

Introduction

With the passing of time, it's far pretty not possible to feed the ever-growing population with confined land resources. Besides, excessive price worried in cultivation of vegetation, there may be an inclination amongst farmers to shift to any other profession to maintain their lives. Therefore, it has brought about greater hobby in presenting healthful meals and that need to be produced sustainably. In this context, vertical farming seems to be as an answer. Vertical farming is developing of vegetation in managed indoor environments inside skyscrapers or on vertically willing surfaces that seeks to maximise manufacturing and performance in keeping with rectangular foot. In 1915, Gilbert Ellis Bailey coined the term 'Vertical Farming'. Although the idea of vertical farming has been commenced many years in the past however it's far now gaining recognition to fight the environmental in addition to overwhelming population issues. The contemporary-day idea of vertical farming incorporating strategies much like glasshouses, in which herbal daylight is augmented with synthetic light. The concept of vertical farming is increasing unexpectedly in Asia specially in China and Japan.

Why Vertical Farming?

The followings are the principal backdrops for the evolution of vertical farming

- Food security to the growing population.
- To fight weather abnormality.
- Increasing city density.
- Concern approximately health (residue unfastened meals).
- To preserve environment stability and economics.

Types of Vertical Farming

Hydroponics: Hydroponics as “the cultivation of vegetation in nutrient enriched water, without or with the mechanical aid of an inert medium together with sand or gravel” (Harris, 1992). The time period is derived from the Greek word's ‘hydro’ and ‘ponos’, which interprets to “water doing labor” or “water works”.

Advantages

- Rapid plant boom.
- Reduce soil associated cultivation problems. (each biotic and abiotic)
- Decrease using fertilizers and insecticides.
- Labour extensive.
- Reduces using water and vitamins via way of means of approximately 50 %.

Aeroponics: In 1990s, the National Aeronautical and Space Administration (NASA) has coined the time period ‘Aeroponics’ to grow plant in space. Aeroponics is largely a technologically innovative, a version and a breakthrough to hydroponics.

Advantages

- Requires 95% much less water than conventional farming strategies.
- Plant wishes minimum area to develop.
- Free from pesticides.

Aquaponics: Aquaponics is an amendment of hydroponics integrating recirculated aquaculture (fish farming) with hydroponics. Fish is grown in indoor ponds generating nutrient wealthy water answer thru excreta that is the nutrient supply of plant in vertical farming.

It has bountiful blessings together with

- Water saving due to the fact that water is re-used through organic filtration and recirculation.
- Eliminates the wishes of artificial fertilizers.
- Provides natural liquid fertilizers that make sure healthful boom of the vegetation.
- Cleaning water for the fish habitat.

Advantages of vertical farming

- Year-round crop production.
- Reducing water intake for food production and recycling.
- Recycling of natural waste.
- Reduces fertilizers requirement and pesticide residues in food.
- Improve productiveness.
- Protection from climate associated versions in crop production.
- Promoting the excessive-tech and inexperienced industry- ‘Green Technology’.
- Creating local jobs.

Challenges

- Land and constructing price (Fletcher, 2012).
- High operation price because of use of electricity.
- Location specific.
- Controversy over USDA natural certification.
- Limited wide variety of crop species.

Conclusion

Vertical farming is a sturdy competitor of traditional farming concerning the unsustainability of agriculture. But its confinement to positive obstacles restricts it from globalization. Vertical farming's success is dependent not only on technological innovation, but also on local conditions such as people's need for certain food items, information transmission, and agricultural conditions, among other things.



References

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