

Hydroponics as an Advanced Technique for Vegetable Farming

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Abstract: In this experiment we are trying to consider urban problem of people who have interest in farming but lacks in having enough of land and also considering some draught parts of India where there is lack of water. In this project we are planning to build a system in which we will cultivate vegetables with minimal and utilized use of soil and water. And design a cost-efficient hydroponic system that can be easily set up and managed by groups of people in rural as well as urban areas. We are trying to create cost effective and easy platform for growing vegetables.

Keywords: Cultivate, Draught, Hydroponic, Minimal.

1. Introduction

We are working on the portable model of hydroponic farming system which focuses on the people who want to do farming in their house or on the roof of the building. The system in which we can grow different type of vegetables for household purpose which fulfills the daily needs of vegetables. Till this date peoples follows only traditional way for growing vegetables in their farms, but the people who lives in urban areas can't get the fresh vegetables due to late transportation of vegetables from farms in rural areas to market yards of different cities. We believe that modern problems can't be solved by traditional solutions, it requires modern solutions and hydroponic farming can be the one of the modern solutions which can fulfill the need of fresh, safe, and healthy vegetables in urban cities.

2. Problem Statement

As increase in population, demand of food is increasing and the vegetables available in the urban market have high concentration of fertilizer and chemicals. Due to this human health could get affected with various diseases. Therefore, to fulfill the future demand and to provide food which is free from harmful chemicals we need a new system to cultivate crops.

3. Literature Review

1) Mamta D. Sardare, Shradha V. Admane

Due to increase in growth of construction industry soil less farming is difficult for traditional farming method. So, to adopt a hydroponic system to secure the food requirements.

2) Dionysios Toulaitos, Ian C. Dodd, Martin McAins

Vertical farming requires less space as compared to horizontal farming. In vertical farming crop yield is more.

3) Fraz Ahmad Khan, Ahmet Kurklu, Abdul Ghafoor, Qasid Ali, Muhammad Umair, Shahzaib

Hydroponic with greenhouse technology will increase the production and quality of crop and the less land availability. This technology will use natural light for the cultivation.

4) Awadhesh Kumar:

Traditional farmers cannot use the hydroponic farming system as it requires more time workforce. It also requires actual knowledge about the system.

5) M. Jagadeesh, Dr. J. Verapandi

Vertical farming collaborated with latest advance technology such as artificial lighting, hydroponic system and farming management will increase the amount of yield.

4. NFT (Nutrient Film Technique)

As we are trying to improve yield in a small space, so we built 'A frame NFT'. A frame is easy to assemble and are merely an arrangement of already proven NFT methods. Moreover, there is space between the frame for reservoirs and tanks.

1) Indoors, inside your home

With adequate artificial lighting, you can easily grow indoors. People grow in basements, attics, closets, bedrooms, you name it, as long as you don't mind the constant sounds of a hydroponic system bubbling away. It's cheaper in that you can use already constructed space, but it'll cost you more in artificial lighting, energy, and living space. Microgreens can do really well indoors. They don't need the full spectrum lighting that full-grown plants need, so you can stack systems and provide pretty low light.



Fig. 1. NFT

2) Greenhouse

This is the best situation. A space dedicated to growing, with natural light, and in a size and shape easy enough for you to

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control the climate, pests, and whatever else nature might throw at you. You need power and a heating and cooling method depending on your climate, but that'll come in time. There's radiant heat through pipes towards the ground, blown heat from commercial heaters, vents and shade for passive cooling, and swamp coolers for more energy intensive cooling. The possibilities are endless, really, it just depends on how much money you want to spend.



Fig. 2. Green House NFT

5. Conclusion

This paper presented an overview of hydroponics as an

advanced technique for vegetable farming.

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