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Hi-tech Horticulture

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INTRODUCTION

Horticulture is an agricultural sector responsible for planting, producing and selling of fruits, vegetables, flowers, herbs, ornamental or ornamental plants. It builds a large share of agriculture. With population growth and change in climate, food shortages are growing day by day. Access to food, nutrition and income security is a top priority anxiety. Food security is therefore a multi-faced situation, one that extends beyond access to supply and inclusion of nutritious food security and farmer's income security.

In this case, population growth will be fed by depletion of land and water due to climatic transitions. The result of weather transitions is likely to grow dramatically temperatures, climate instability, the evolution of novel pests and disorders. Additionally, to risk of sea level rise and depletion of ice resources, hence feeds to enhanced number of people we have to act smarter and it is our moral responsibility to conserve natural sources for the benefit of future offspring.

Presently, with the growing population, the demand for food and nutritional safety has enhanced. The traditional approach of cultivation cannot fight with the growing requirement, so it is necessary to develop approaches in the agricultural sector.

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The Horticultural field offers a wide range of applications of hi technology in this field ranging from farming in a small land of the country to high productivity (specifically vegetable, flowering plants and medicinal plants) comparative to other agronomic plants. Hi-Technology horticulture offers great ability to produce high value and product quality. Hi-tech horticulture may be introduced as the precise approaches used in crop cultivation by applying the right inputs at the right time and value to improve yield and product quality. Using cultivation approaches to enhance yields, ensuring better quality (generally fungicides or without pesticides) and get increased market demand. Generally, advanced farming practices need a high level of accuracy in order to use inputs and crop management from planting to harvesting.

Potential Area of Hi-tech Horticulture:

1. *Integrated Nutrient Management (INM)* - Hi-tech horticulture is heavily dependent on the use of irrigation and nutrients in horticultural crops so the use of drip irrigation has resulted in higher yields and higher qualities of fruits (bananas, grapes, papayas, etc.), vegetables (cabbage, cauliflower, tomatoes etc.), cut flowers (rose, carnation gerbera etc.), pharmaceutical plants and planting. To find an effective site for nutrient utilization special use of the recommended dose of fertilizer is applied.
2. *Integrated Disease Management (IDM)* - This means to integrate various disease regulation approaches. Physical, chemical, mechanical approaches are applied together to eliminate various diseases in various plants.
3. *Protected/greenhouse cultivation* - Protected cultivation is an approach of planting crops in regulated conditions where light, humidity can be regulated. Multiple types of protected formations consist of greenhouse, glass house, shade net, automatic greenhouse etc. Under a Protected formation Hybrid Seed and Seedling could be formed for Crops with High value. Hi-tech propagation provides quality planting materials at the needed prices during the basic demand of the agricultural industry.
4. *New technologies like Global Positioning System (GPS) and geographic information systems (GIS)* - GPS receivers gather location idea to map field boundaries, irrigation systems, roads, and problem areas for plants such as weeds or disorders. GPS accuracy supports farmers to create farm maps with accurate acreage of field locations, road positions, and distances between areas of interest.
5. *Precision farming* - It concentrates on the recent approaches and creativities related to crop cultivation. It describes that the farmer has ideas about exactly how to direct his cultivation process to get the best yield and quality of the related crop. By joining small inputs with high productivity without wasting energy, it not only improves environmental well-being but also enhances its profit. All the available tools for hi-tech horticultural fall under precise farming.
6. *Vertical gardening* - It is the formation of planting of horizontal plants and plants developed in temperatures, humidity and nutritious food that are controlled indoors can also ensure the development of the crop at the same time limiting the external environment.
7. *Use of Drones* - Drones are wireless and sensory devices applied for field exploration. They conveniently capture all the data in low-lying areas and take high-quality photographs. They are also utilized to sprinkle pesticides and pesticides in the areas.
8. *Hydroponics* - It is a method of growing plants without soil and instead of using mineral nutrient aqueous solutions. The idea behind hydroponics is to get rid of the barriers between roots, water, vitamins and

oxygen in order to grow properly. Vitamins used in the hydroponic system can come from a variety of sources such as fish manure, duck manure or purchased chemical fertilizers. Commonly grown hydroponic crops include tomatoes, peppers, cucumbers and lettuce.

9. *Food processing & Value addition* - For long time utilization, horticultural foods like fruits and vegetables are processed into variety of value-added substances viz. pickles, cereals, squashes, marmalade, concentrate, fruit mixes, jam, jelly, canned vegetables and fruits.

Advantages of Hi-tech Horticulture:

1. Yield enhances around 5 to 8 times - maximum productivity in each area.
2. The best quality growth and similarity exists.
3. Great savings on essential nutrients such as water (up to 50 percent), fertilizer (up to 25 percent), and pesticides.
4. It also occurs in problem areas such as lakes, high salinity, and flooded areas.
5. The product is available at intervals.
6. One can get benefits all year round.
7. Impact on the ecosystem will be minimized.
8. Low chemical flow in rivers and groundwater.
9. This method gives better, more consistent outcomes.
10. This can happen in sandy soils, with sandy and hilly soils, salty soils, etc.
11. Plants will not depend on the climate and can be planted all year round.

Disadvantages of Hi-tech Horticulture:

1. Start-up costs are very costly and require a lot of money.
2. Skilled workers are needed to work.
3. There is a need for research and development.
4. It takes time and commitment.
5. Much experience and lots of technical knowledge is needed.
6. Water and electricity hazards are also present.
7. Threats to system failure.
8. Disorders and pests can transmit rapidly.

CONCLUSION

With the progress of novel strategies every day and its integration with the modern innovations and strategies for conventional agriculture, we can feed a growing population despite of lots of challenges. This will not only assist the product sustainability but it will also assist to enhance the economic situation of farmers.

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