

# The Future of Indoor Gardening Hydroponics in Tomato Plants

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**Abstract:** Hydroponic culture had many advantages such as increased yield, health and uniform conservation of water and land, better product, control of environmental pollution and reduces workers of cultivation. We make soilless culture machine for food needs In future. Though it is artificial, it will give better growth, good yields and good quality foods. The machine has light source, nutrients solvent and water. It does not need too much space and can be able to use it within the house itself. We can produce good growth by using less water and nutrients. The pesticides are not attacked the plants and are protected from diseases. By using this machine we can get healthy foods quickly and it does not give any side effects.

**KEYWORDS:** Hydroponics, Nutrient solvent, Medium.

## I. INTRODUCTION

Hydroponic culture had many advantages such as increased yield, health and uniform conservation of water and land, better product, control of environmental pollution and reduces workers of cultivation. The aim of these theory of Dennis R. Hoagland and Daniel I. Arnon says that soilless culture is not a benefited the soil culture. Nowadays it was totally changed agriculture land and there is no sufficient land for agriculture. So soilless culture is the formers needed things for the future world. The soilless culture wants to improve the technology and improving practices in the formers. The soilless culture want introduce a new technologies for the formers. Because the whole world fully depend on a agriculture. So I created a new technology in soilless culture in medium and liquid controller machine. This medium was fully based light source and nutrient source no need sunlight and soil. It's easily grow in indoor.

This medium in this process, it needs low power and low space so it can be free from insect and diseases. This method will very helpful to yield formers. They want to use new technology in agriculture. Many of them are not aware of this process but they should improve knowledge about this land etc. First we use good water to grow the plant health and also is support to the other plant growing well. We can use thermacol for to water floating easily the soilless culture it is acceptable one to for the nutrient.

## II. RELATED WORKS

The soilless culture design was first used by pvc pipes on fitting a medium and they are using a high powerful motors on floating a water, some designs are same like containers but it's not fit inside the propeller that's alternatively they fix oxygen pumps but I will fix a motor and propeller inside the container, so there is no nutrients sediment in the bottom but oxygen pump designs have sediment of nutrients in bottom and pvc pipe models was took large place and it's high expensive and lights were fixed near the plants, so easily they take lights for photosynthesis and the manufacture of this machine costs low.

## III. METHODS AND METERIALS

### METERIALS

- Big container
- DC motor(6v)
- Light(3v)
- Small containers (2)
- Nutrients
- Thermacol
- Propeller
- Test tube
- DC adapter
- Tomato seeds
- Cotton cloths
- Controller switches

### METHODS

First we could take a big container, in the top side of this container we can fix small containers and we create a lot of holes, so that through the holes water could float allows the area. The inside we can fix a DC motor and propeller and this motor should covered by some rough cloth to stop the water coming inside the motor. Container top side we can fix a light in the with test tube because test tube increase a light level in height and fill a nutrient solvent in a container and fill with thermacol.

The light will help to photosynthesis on plant and regulate a temperature. The motor was preventing a nutrition precipitation in bottom that is very important for nutrition management on hydroponics. The DC adapter connect into motor it have separate switch system to control properly working hydroponic machine.

#### IV. SOLVENT PREPARATION

First take normal water and warm to kill the bacteria, fungus and other micro organisms. just we add a nutrients on very low level so that water there are is no waste of nutrients. Higher nutrients were creating problems and effect the plant growth. Then maintain a  $p^H$  on 6.0 to 6.5 suppose  $p^H$  going to higher adds to citric acid to maintain a  $p^H$  level.

Then on a propeller to dissolve a nutrients don't mix a nutrients our hand and make sure hygienic.

#### NUTRIENTS

##### Macronutrients

Nitrogen (N)\*  
Phosphorus (P)  
Potassium (K)  
Calcium (Ca)  
Magnesium (Mg)  
Sulfur (S)  
Chloride (Cl)

##### Micronutrients

Iron (Fe)  
Boron (B)  
Manganese (Mn)  
Copper (Cu)  
Molybdenum (Mo)  
Zinc (Zn)

#### V. SEEDING

The process of seeding, do it in properly and select a good seeds and seed in medium thermacol and add only few seeds on selectable and increase a water level to manage a seed. Fix a separate place on that soilless culture machine and give to a power for that machine and turn on light only on night time because this manage a temperature. The propeller is in every time because that prevent to precipitation of nutrients.

#### VI. RESULT AND DISCUSSION

The soilless culture model is one of the best method for growing plants freely and give protection to this plant and don't take a lot of nutrients and water and low expensive for nutrients and pesticides. plants grow quickly and it gives good harvest in short time period and it will not affected by any disease, so this is good method for agriculture and gives high yield quickly. The hydroponics technology has few workers in field and only few persons know to use technologies.

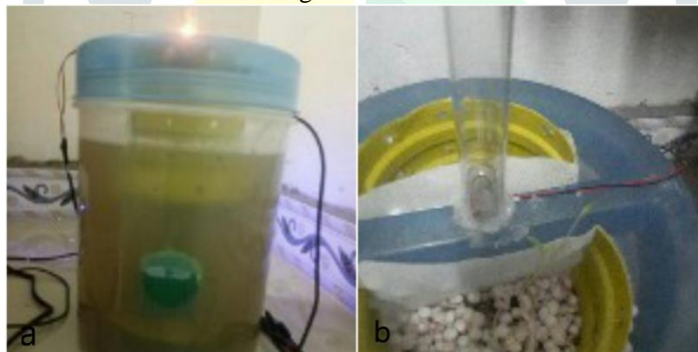


FIG 1: soilless culture medium machine

a) Full soilless culture machine b) Thermacol medium in machine

This image was soilless culture machine in using thermacol medium and small plants and filling a nutrient solvent inside the container and light is turn on the night time and propeller was always on because we want to prevent the sedimentation of nutrients.



**FIGURE 2:** Tomoto plants growing in soilless culture machine

The tomato plants growing quickly by using only 4litre water and it take only 1gram of nutrients and it grows very healthy on that medium on thermacol and the roots were freely grown.

Thermacol provides free root growing inside the medium and it easily takes nutrients in that solvent and water consumption is very low and power conception is only 6v/ hour.

During of growth for tomato plants	50days
Water consumption	4 litre
Power consumption	6v/hour
Nutrient consumption (macro)	1gram
Nutrient consumption (micro)	1grama

**TABLE 1:** consumption and plant growth of tomato plants in hydroponic machine

## VII. CONCLUSION

The soilless culture becomes one of the most important requirement process in future. Because now a days people are not having any awareness about the agriculture. Agriculture lands are now using for construction factory etc. At this time we want to improve this soilless culture by using science & technology.

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