FCCI
Research & Development Center

Hydroponic Farming

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Hydroponics: -

It is a type of horticulture and a subset of hydro-culture, which is a method of growing plants, usually crops, without soil, by using mineral nutrient solutions in an aqueous solvent.

Figure No. 1

What Does It Imply: -

Hydroponic farming is a high-tech growing method, where vegetables are grown without soil. The roots of the plants are grown in a nutrient solution or in a medium such as perlite or gravel. Hydroponic farming is a standard farming method in the Netherlands where crops are grown in hot houses on rock wool.

Working & Mechanism: -

Hydroponics is the cultivation of plants without using soil. Hydroponic flowers, herbs, and vegetables are planted in inert growing media and supplied with nutrient-rich solutions, oxygen, and water. When a plant is grown in soil, its roots are perpetually searching for the necessary nutrition to support the plant. As shown in below figure no 2.

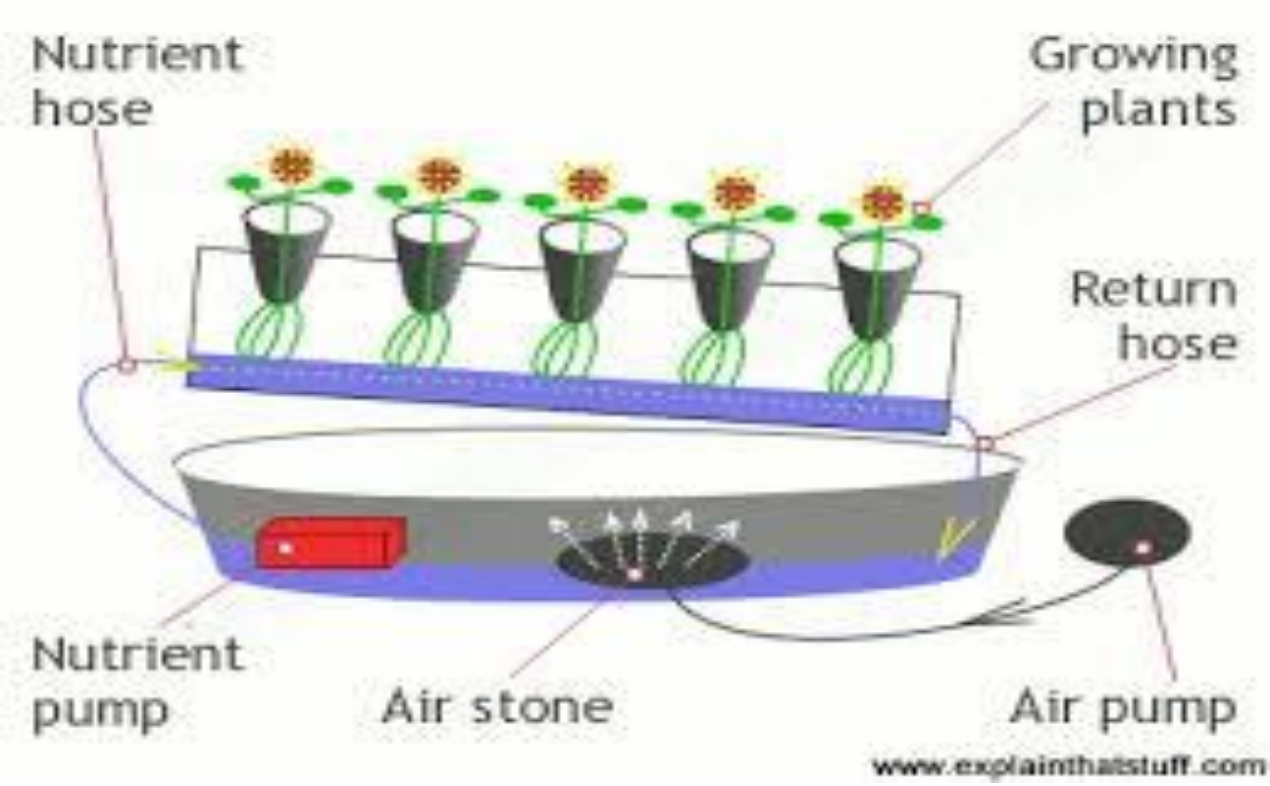

Figure No. 2

Some terms of Hydroponic Farming: -

Nutrients:

This is one of the basics of any Hydroponic system. Any good **Hydroponic nutrient** should contain all of these elements; Nitrogen (N), Potassium (K), Phosphorous (P), Calcium (Ca), Magnesium (Mg), Sulphur (S), Iron (Fe),

Manganese (Mn), Copper (Cu), Zinc (Zn), Molybdenum (Mo), Boron (B) and Chlorine (Cl).

Medium:

The material used in a container to grow a plant. Growing media are often formulated from a blend of different raw materials in order to achieve the correct balance of air and water holding capacity for the plants to be grown.

Solutions:

It consists of minerals in the raw water and nutrients added with fertilizers. Minerals such as calcium, magnesium, sulfur, and trace elements such as boron, manganese, iron and zinc may be present in the source water.

Hydroponic Farming Advantages:

- Plants grown in hydroponic systems grow 30% to 50% faster than those grown in soil. Crops grow faster in hydroponic systems because they receive an ideal amount of nutrients and, if grown indoors, have less environmentally induced stress.
- Hydroponic systems feed plants a nutrient solution mixed with water, giving the farmer better control over what nutrients their crops soak up. Cultivar grown in soil may need the help of fertilizers to survive. But in hydroponics, the plants are already receiving all the help they need and the right amount of it.
- Controlling every aspect of the growing environment is Possible. So, you can control pests, bugs, etc.
- It provides extra oxygen to the plants that stimulate the root growth. So, the nutrients are absorbed faster.

- Controlling the hydroponic nutrients is possible. So, the plants won't have a deficiency of nutrients.
- The nutrients are mixed with water in the hydroponic system. These nutrients are sent to the root system directly, which doesn't happen when plants are grown in the soil.
- Grown indoor is also the big advantage of hydroponic farming.

References: -

- www.homehydrosystems.com
- www.cleantechloops.com
- puregreensaz.com
- smart fertilizer.com