



# MARUMEGH

## Kisaan E- Patrika

Available online at [www.marumegh.com](http://www.marumegh.com)



ISSN : 2456-2904  
© marumegh 2022

Received: 28-04-2022

Accepted: 28-04-2022

### HYDROPONICS : A SMART WAY OF FARMING

<sup>1</sup>Bhavna Singh Rathore\*, <sup>2</sup>Biram Singh Gurjar & <sup>1</sup>Akshika Bhawariya

<sup>1</sup> PhD Scholar (Agronomy), SKRAU, Bikaner

<sup>2</sup> M.Sc. (Agronomy), SKNAU, Jobner

\*Corresponding Author's mail ID- [bhavnasingh0409@gmail.com](mailto:bhavnasingh0409@gmail.com)

#### Introduction:

Soilless agriculture can be defined as growing plants in controlled environments in different medium other than soil which is enriched by nutrition. Hydroponics is always soil less culture, but not all soil less cultures are hydroponics. "Hydroponics" is the growing of plants without soil. The term "soil less culture" covers all types of planting technologies without soil. With soil less culture, the plants are grown in



an inert growing medium where the plants do not get anything from the growing medium. The plants receive only what you give them and nothing else. You have complete control over the pH, nutrients contents and the nutrient strength. In the soil, you really have no idea what the plants are getting. So farming becomes a big guessing game. One of the most recent discoveries is Aeroponics a technology that proves plants do not require soil to grow, not only that but that soil may even inhibit swift and healthy growth of plants.

#### The core objective for hydroponics is to:

1. Make farming easier to manage.
2. Eliminate waste of vegetables during harvest caused by pathogens
3. Increase speed of plant growth which increases frequency of harvest as well as profit.
4. Increased profit allows for reinvestment and expansion
5. A substantial expansion creates more jobs and raises the standard of living.
6. Eliminate seasonal dependency due to controlled climate within the green house. This increases profit due to lack of certain vegetable availability in the market within certain seasons.

#### Types of hydroponics:

There are six basic types of soil less culture systems, namely:

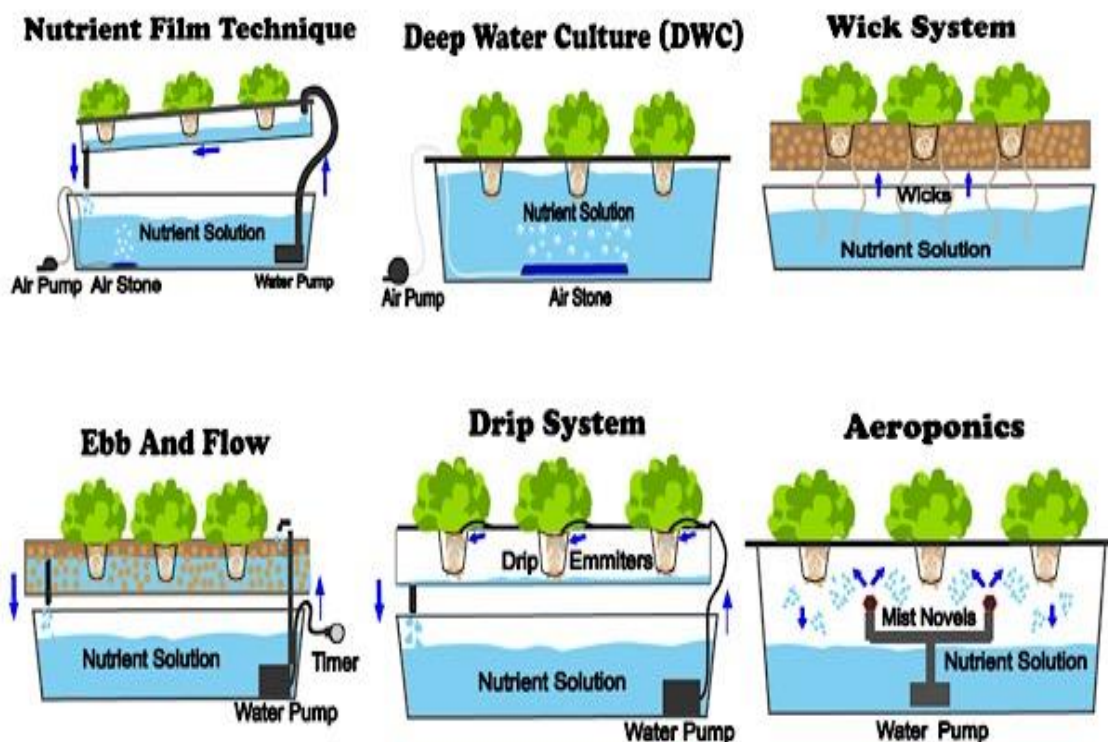
**1. Wick system:** The wick system is probably the easiest kind of hydroponic system to get started with, and they require very little effort to maintain. It is a completely passive system, so it has no moving parts to keep track of or maintain

**2. Drip system:** The drip system is another common and versatile kind of hydroponic system. It's similar to ebb and flow systems, in that the nutrient solution is set apart, in a reservoir, and the plants are grown separately in a soil-less medium. Unlike other kinds of hydroponic systems, drip systems dispense nutrients at a very slow rate, through nozzles. Any extra solution can either be collected and re-circulated, or merely allowed to drain right out. Since the drippers flow can be adjusted, it's possible to grow several kinds of plants using this technique.

**3. Ebb and Flow:** This type of hydroponics system utilizes a growing tray and a reservoir that is filled with a nutrient solution. A pump periodically floods the grow tray with nutrient solution which then slowly drains away. This lets the plants get regular infusions of nutrients without requiring special oxygenation. Since the plants don't stay submerged, they have to be grown in a medium like rock wool or gravel. Plants that need a lot of moisture can be grown in vermiculite or coconut fiber as they retain more moisture between flooding.

**4. Water culture system:** Water culture systems have a simple hydroponic set-up where the plants are exposed directly to the nutrient solution. Just like in a dripper system, air pumps and stones are used to keep the oxygen circulating through the solution. Plants that are very thirsty, or plants with a fast growth rate, do very well in this kind of system.

**5. Nutrient Film Technique:** NFT is a versatile and popular hydroponics system. This type of hydroponic system supplies a constant flow of nutrient solution directly to the exposed plant roots. Given the system uses a pump 24 hours/day, no timer is necessary. Additionally, no medium is required to support exposure to the nutrient. Plants are held in place by a basket.



**6. Aeroponics:** This is a more sophisticated and high-tech method which entails suspension of the plants above special nozzles that mist the nutrient solution directly on the roots. This provides the roots a light layer of nutrient every few minutes. Similar to other pump based systems, aeroponics systems must be monitored for pump failure.

**Conclusion:**

Plants can be grown anywhere, better control over plant growth, less work with soil less farming, water and nutrients are conserved, pest and disease problems are reduced, culture is extensive and transplanting shock is reduced for seedlings are the benefits of soil less farming whereas disadvantages of the soil less farming are starting cost is high, sound technological knowledge is required for proper training, the mediums require some sort of container, the nutrients have to be mixed in water and then applied to the plants, hydroponic cultivation usually requires more capital investment than soil cultivation and some water borne diseases can spread rapidly in recirculating system.

**References:**

- Benton Jones Jr., J. (2004). Hydroponics. A Practical Guide for the Soilless Grower. *Hydroponics*.
- Resh, H. M., & Howard, M. (2012). Hydroponic Food Production: A Definitive Guidebook for the Advanced Home Gardener and the Commercial Hydroponic Grower. In *Santa Bárbara, California EUA* (Sixth).
- Treftz, C., Kratsch, H., and Omaye, S. 2015, Hydroponics: A Brief Guide to Growing Food Without Soil, Extension | University of Nevada, Reno, Fact Sheet FS-15-08

\*\*\*\*