**Demeter**

Demeter is a fusion between the concepts of a Hydroponics, the fastest growing agricultural system and LED conductive rendering for enhanced plant growth.

The various features and guide lines that Demeter encompasses are:

1. **sustainability** – The global population is expected to hit the threshold of 9.5 billion by 2050, and by that time 50% of the arable lands on this planet will be rendered useless. In order to cater to the growing demand of an efficient and technologically advanced agricultural monitoring and enhancement system, Demeter plays a vital role in solving the crisis of status quo. Since we opt for a soil free environment for cultivating a vast array of crops (both leguminous and non-leguminous) and cherishes the ecosystem/ we cannot use anything that we can’t eat to stimulate the plant growth
2. **Makes optimum use of space and location:**

Because all that plants needs are provided and maintained in a system, you can grow in your small apartment, or the spare bedrooms as long as you have some spaces.

Plants' roots usually expand and spread out in search of foods, and oxygen in the soil. This is not the case in Hydroponics, where the roots are sunk in a tank full of oxygenated nutrient solution and directly contact with vital minerals. This means you can grow your plants much closer, and consequently huge space savings.

1. **Water Conservation** – Demeter proposes to use only 5% of the water used in contemporary irrigation facilities.
2. **Climate control :** Like in greenhouses, hydroponic growers can have total control over the climate - temperature, humidity, light intensification, the composition of the air. In this sense, you can grow foods all year round regardless of the season. Farmers can produce foods at the appropriate time to maximize their business profits.

### Effective use of nutrients:

In Hydroponics, you have a 100% control of the nutrients (foods) that plants need. Before planting, growers can check what plants require and the specific amounts of nutrients needed at particular stages and mix them with water accordingly. Nutrients are conserved in the tank, so there are no losses or changes of nutrients like they are in the soil.

**6)  Fewer pests & diseases**

And like weeds, getting rids of soils helps make your plants less vulnerable to soil-borne pests like birds, gophers, groundhogs; and diseases like Fusarium, Pythium, and Rhizoctonia species.Also when growing indoors in a closed system, the gardeners can easily take controls of most surrounding variables.

### 7) Labor and time savers:

Besides spending fewer works on tilling, watering, cultivating, and fumigating weeds and pests, you enjoy much time saved because plants' growth is proven to be higher in Hydroponics. When agriculture is planned to be more technology-based, Hydroponics has a room in it.

**8) An efficient check on contamination via a controlled environment:**

The health of seedlings used for hydroponics is one of the major factors contributing to the success of a hydroponic experiment. Sterilization of instruments, seeds, and culture media also play an important role in reducing the risk of contamination and provide a good start for the plants before they are transplanted into the hydroponic system. A working environment with facilities such as an autoclave, fume hood, cold-room (4 °C), and growth space with controlled conditions (light intensity and temperature) is necessary for a good experimental set up.