

Basic Hydroponics Methods

Plant foliage requires light, oxygen and carbon dioxide. Plant root systems require water, nutrients and oxygen. When plants are grown normally water leeches nutrients from the soil and carries them to the roots. The water and nutrients are taken up by the roots to feed plant growth. Soil drainage then allows water to be replaced by air in the gaps between soil grains.

Plant foliage requires light, oxygen and carbon dioxide. Plant root systems require water, nutrients and oxygen. When plants are grown normally water leeches nutrients from the soil and carries them to the roots. The water and nutrients are taken up by the roots to feed plant growth. Soil drainage then allows water to be replaced by air in the gaps between soil grains. This supplies the roots with oxygen. In hydroponics the nutrients are dissolved in the water. Soil is replaced with a growing medium to supply the roots with water, nutrients and oxygen. Hydro juice (nutrient solution) can be drip fed to each plant, it can also be used to regularly flood the root chamber, then drain out. Both methods require a pump and timer to circulate the nutrients through the roots and are covered by these diagrams and notes. Roots can also be grown in the air by spraying roots with a fine mist of hydro juice, or grown in the hydro juice and the solution aerated under each root mass with an air pump. With both of the second two methods the plants must be secured at the base of the stem or something. The hydroponic system described does work and is suitable for any plant with stringy roots. I have not tried it with any bulb plants or plants such as orchids that require fungus or mold in the soil to grow. This method is similar to Nutrient Film Technique (NFT) the thin Rockwool slice acting as a capillary mat. This eliminates the need to have a flat bottom the root chamber and to level the bottom of the root chamber, making it easier and cheaper to set up. This method will get the most vigorous growth if each plant has its own continuous drip feed. The dripper is positioned to drip on roots growing from the base of the seedling block, the roots will grow thick, hairy and compact under the dripper. 4L per hour drippers are used however their drip rate depends on pressure, this is affected by height and size of the drip feed tank. The drip rate will slow as the tank empties. Feeding can also be achieved with a faster dripper at the top of each top end of each side of the root chamber. The plants grown like this had a large root mass, the roots of three plants taking up about a third of the root chamber. With the timer I had could only flood the root chamber every 4 hours, the growth rate was similar to the last. The growth rate will improve by flooding every hour or even less. After the root chamber is flooded it should drain to a trickle in a few minutes.