



Growth Technology

Focus on plants

**What is
Hydroponics?**

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What is Hydroponic growing?

Hydroponics is a subset of hydroculture, which is the growing of plants in a soilless medium, or an aquatic based environment. Hydroponic growing uses mineral nutrient solutions to feed the plants in water, without soil.

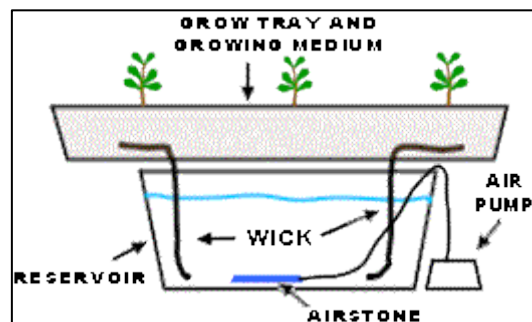
For those of us who love growing plants these are exciting times indeed. We are no longer limited by climate or by season in the pursuit of our harmless pleasures. We can now grow virtually any plant at virtually any time of the year – the only limitation is our imagination. The simple, effective hydroponic systems now available, coupled with modern horticultural lighting, have transformed our hobby and freed us to grow our favourite plants where and when we choose.

Types of Hydroponic systems?

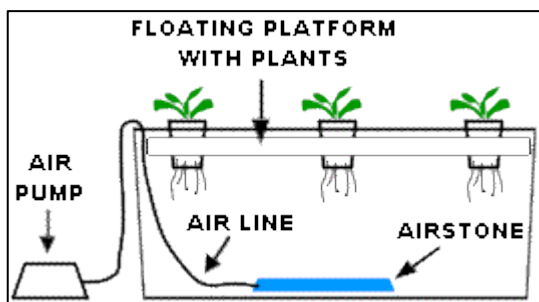
When you think of hydroponics, you instantly imagine plants grown with their roots suspended directly into water with no growing medium. However this is just one type of hydroponic gardening known as N.F.T. (nutrient film technique). There are several variations of N.F.T. used around the world and it is a very popular method of growing hydroponically. What most people don't realise is that there are countless methods and variations of hydroponic gardening.

Wicks System

Seen as the most simplistic hydroponic system. The Wick system is described as a passive system, by which we mean there are no moving parts. From the bottom reservoir, your specific Growth Technology nutrient solution is drawn up through a number of wicks into the growing medium. This system can use a variety of mediums, perlite, soil or coco.



	Advantages	Disadvantages
Perlite	<ul style="list-style-type: none"> • Very cheap to buy and available everywhere. • Super capillarity for ease of use and great plant performance. • Sterile and inert. • Lightweight, especially when dry. • Re-usable and can be used for soil amendment 	<ul style="list-style-type: none"> • Usually requires hand-watering • Needs regular flushing • Dusty and unpleasant to hand when dry • Can be too light to support plants - circular trellis needed
Soil	<ul style="list-style-type: none"> • Good performance but slower growth than in inert mediums like Perlite • High level moisture retention in the medium. • Extra weight makes pots more stable. 	<ul style="list-style-type: none"> • Can be more expensive than Perlite • Often difficult to get hold of suitable quality although Growth Technology provide suitable additives. • Much harder to flush than Perlite • Can be heavy when wet.
Coco	<ul style="list-style-type: none"> • Great performance when used with correct nutrients. • Can be automated • Politically and environmentally positive growing medium 	<ul style="list-style-type: none"> • Quality of Coco is variable – essential to source high quality.



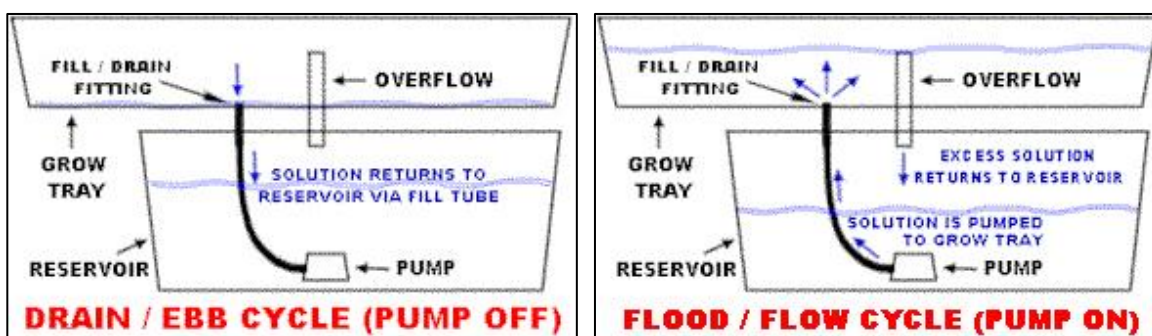
Water Culture

This system is an active system with moving parts. As active hydroponic systems go, water culture is the simplest. The roots of the plant are totally immersed in the water which contains a Growth Technology nutrient solution. An air pump with help oxygenate the water and allow the roots to breathe.

NOTE. Very few plants other than lettuce will do well in this type of system.

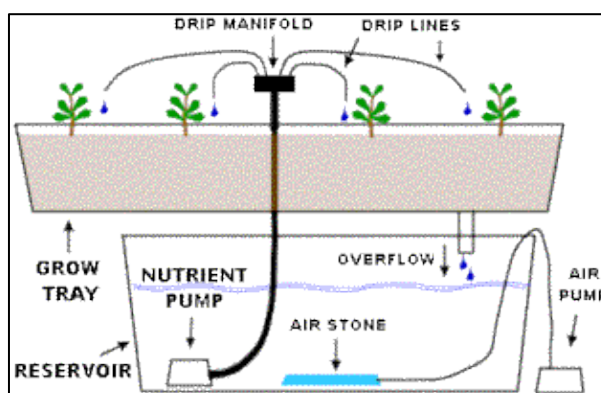
Ebb and Flow System (Flood and Drain)

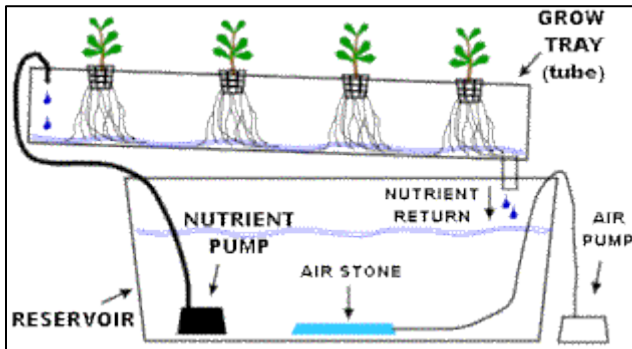
This hydroponic system works by temporarily flooding the grow tray. The nutrient solution from a reservoir submerges the roots before draining back to the holding tank. This action is usually automated with a water pump on a timer.



Drip System (recovery or non-recovery)

Drip systems are a widely used hydroponic method. A timer will control a water pump, which pumps water and the Growth Technology nutrient solutions through a network of elevated water jets. A recovery system will collect excess nutrient solution back into the reservoir. A non-recovery drip system will avoid this allowing the pH of the reservoir not to vary. If using a recovery system, be sure to check the pH level of the reservoir regularly and adjust using either pH UP or pH Down solutions on a more frequent basis.





N.F.T System

The N.F.T system is at the forefront of people's minds when hydroponics is mentioned. Nutrient Film Technique uses a constant flow of your Growth Technology nutrient solution (therefore no timer is required). The solution is pumped from a reservoir into the growing tray. The growing tray requires no growing medium. The roots

draw up the nutrients from the flowing solution. The downward flow pours back into the reservoir to be recycled again. Pump and electric maintenance is essential to avoid system failures, where roots can dry out rapidly when the flow is disturbed.

Aeroponic System

Aeroponic systems are seen to be a high tech method of hydroponic growing. Like the N.F.T system the growing medium is primarily air.

The roots hang in the air and are misted with nutrient solution. The misting of roots is usually done every few minutes. The roots will dry out rapidly if the misting cycles are interrupted.

A timer controls the nutrient pump much like other types of hydroponic systems, except the aeroponic system needs a short cycle timer that runs the pump for a few seconds every couple of minutes.

