



Hydroponics

What is Hydroponics?

Don't be intimidated by the array of products available - hydroponics is not a space-age technology. Simply put, it is the art of gardening without soil. Hydroponics is an extremely efficient way of supplying a plant what it needs, when it needs it, in the amount it needs. In soil, there are many variables that make gardening a guessing game. Hydroponic methods give you complete control over what nutrients the plant is receiving.

Hydroponics is used extensively worldwide - in countries where climate or poor soil can't sustain large crops, and in countries where crop production land is limited. In British Columbia, 90 percent of the greenhouse industry is hydroponics.

Advantages

- Plants grow up to 50 percent faster than in soil because they have easy access to food and water.
- Ability to grow year-round.
- Nutrients will not be bound in the soil, making them unavailable to plants.
- Little or no pesticides are necessary.
- Less labor required - no digging or weeding.
- More plants can be grown in a smaller area because they are not competing for nutrients.
- Increased control over growing conditions provide for better quality and higher yields.

What crops can I grow hydroponically?

Many crops are suitable for hydroponics but some require more space than others. Peppers, tomatoes, cucumbers, spinach, lettuce, chard, herbs, flowers, houseplants and more can all be grown in a hydroponic garden.

Supplies needed for hydroponic systems

Hydroponics can be complicated but it doesn't have to be. The potential to go high tech is limited only by your imagination and budget. Almost every part of garden management can be automated if you desire. You can build your own system using miscellaneous equipment from hydroponic and hardware stores, or you can choose to purchase a pre-built system. Pre-built systems range in price from \$100 - \$1000.

Several key items for hydroponic systems include: a reservoir to hold the nutrient solution, a pump to circulate the solution, a timer, an air stone to oxygenate the solution, a growing medium, and trays or pots to hold the plants. Natural or artificial light is obviously required.

What is "growing medium"?

Hydroponic plants are grown in an inert growing medium such as rockwool or hydroton. The solution of nutrients is perfectly balanced, highly soluble, and adjusted to the proper pH level. The solution is delivered to the roots without the roots having to search for nutrients. The plant can take up food with very little effort as opposed to soil, where the

roots must search out the nutrients and extract them. The energy expended by the roots in this process is energy better spent on vegetative growth, fruit and flower production.

Growing medium is the material supporting the plant roots. It is an inert substance that does not supply any added nutrition to the plant. The plant gets all nutrients from what you supply. The strength and pH of the nutrient solution is easy to adjust. Watering and feeding cycles can be controlled by an inexpensive timer.

Lighting

Lighting for outdoor hydroponic systems is not an issue, but artificial light of the correct spectrum and intensity is necessary for indoor grow rooms. This is usually accomplished by using High Intensity Discharge (HID) lights. There are two types of HID lights - Metal Halides (MH) and High Pressure Sodium (HPS.) Each covers a different part of the light spectrum. MH lights produce the blue end of the spectrum and are used for vegetative growth of young plants, as well as leafy green crops such as lettuce, herbs and spinach. HPS lights are used for plants that will flower and produce fruit, such as tomatoes.

The importance of pH

pH is the measure of acidity or alkalinity. pH is extremely important in hydroponics. Without a proper pH level, plants lose the ability to absorb different nutrients when the pH varies. Hydroponics makes it easy to quickly test and control the pH level.

Hydroponics is good for the environment

Hydroponics is more earth-friendly than many conventional gardening methods. Water is our most precious resource, and hydroponic methods use 70 to 90 percent less water than conventional gardening. The second major ecological benefit is that no fertilizer runoff finds its way into lakes, rivers and aquifers. The high yield expected from hydroponic growing means less land is required for cultivating crops. Another advantage is that the nutrients can be re-used and this decreases pollution. Because there is no soil involved, there will be no competing weeds and no need for strong chemicals to control the problem.