

HYDROPONICS

by:

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Hydroponics is a method of growing plants using mineral nutrient solutions in water, without using soil. Instead of soil, the plants are grown in a medium such as gravel, rock wool, or perlite. The nutrient solutions can be delivered to the plants via drip irrigation, ebb, and flow systems, or other methods.

One of the main advantages of hydroponics is the ability to control the growing environment, including temperature, humidity, light, and nutrient levels. This allows for optimal growth and yields, even in areas where traditional agriculture may be difficult or impossible. Additionally, since hydroponic systems can be set up in a variety of locations, including indoors or in greenhouses, they can be used to grow crops year-round, regardless of the weather.

Another advantage of hydroponics is the ability to conserve water, as the water can be recycled and reused in the system. This can be especially beneficial in areas with water shortages. Additionally, since the plants are grown in a controlled environment, they are less susceptible to pests and diseases, which can reduce the need for pesticides and herbicides.

There are a few different types of hydroponic systems, each with its own unique characteristics. Some of the most common types of hydroponics include:

Deep water culture (DWC), where the plants' roots are suspended in a nutrient solution.

Nutrient film technique (NFT), where a shallow stream of nutrient solution flows over the roots.

Drip irrigation, where nutrient solution is delivered to the plant's roots via a drip system.

Ebb and flow, where the plants are periodically flooded with nutrient solution and then drained.

Hydroponics can be used to grow a wide variety of plants, including vegetables, fruits, herbs, and flowers. Some common crops grown using hydroponics include lettuce, tomatoes, cucumbers, and strawberries. Additionally, hydroponics can be used to grow plants in space, such as on long-duration missions to Mars.

While hydroponics can be a highly efficient and productive method of growing plants, it does have some drawbacks. For example, it can be expensive to set up and maintain a hydroponic system, especially if high-tech equipment such as LED grow lights and computerized nutrient delivery systems are used. Additionally, the plants are dependent on nutrient solutions for their growth, so it's important the solutions are properly balanced and regularly replenished.

Overall, hydroponics is a useful method of growing plants that offers many advantages over traditional agriculture. With the ability to control the growing environment, conserve water, and reduce the need for pesticides and herbicides, it can be an efficient and productive way to grow crops in a variety of locations, including indoors or in greenhouses. With the increasing demand for food and the need to find sustainable agricultural solutions, hydroponics is becoming an important field to explore.

References:

Hydroponics: How It Works, Benefits & How to Get Started (foodrevolution.org),
<https://foodrevolution.org/blog/hydroponics/>

Hydroponics | Definition, Technology, Uses, Benefits, Disadvantages, & Facts |
Britannica, <https://www.britannica.com/topic/hydroponics>