Hydroponics Encyclopedia Article

Hydroponics

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Hydroponics

There are several early examples of hydroponics, or soil-free agriculture, including the hanging gardens of Babylon and the floating gardens of China and Aztec Mexico. Early Egyptian paintings also depict the growing of plants in water.

In 1600, the Belgian Jan Baptista van Helmont (1579-1644) demonstrated that a willow shoot kept in the same soil for five years with routine watering gained 160 pounds in weight as it grew into a full-sized plant while the soil in the container lost only two ounces. Clearly, the source of most of the plant's nutrition was from the water, not the soil.

During the 1860s, German scientist Julius von Sachs (1832-1897) experimented with growing plants in water-nutrient solutions, calling it *nutriculture*.

In 1929, W. F. Gericke of the University of California first coined the term hydroponics, which literally means "water labor." Gericke demonstrated commercial applications for hydroponics and became known for his twenty-five-foot tomato plants.

Hydroponics has been shown to double crop yield over that of regular soil. It can be categorized into two subdivisions: *water culture*, which uses the Sachs water-nutrient solution, with the plants being artificially supported at the base; and *gravel culture*, which uses an inert medium like sand or gravel in conjunction with wire mesh to support the plants, to which a water- nutrient solution is added.

Hydroponics was used successfully by American troops stationed on non-arable islands in the Pacific Ocean during the 1940s. It has also been practiced to produce fresh produce in arid countries like Saudi Arabia. In the 1970s, researcher J. Sholto Douglas worked on what he called the *Bengal hydroponics system*. He sought to simplify the methods and equipment involved in hydroponics so it could be offered as a partial solution for food shortages in India and other developing countries.

Successfully adopted in certain situations, hydroponics will remain in limited use as long as traditional farming methods in natural soil can support the world's population.