AEROPONICS - WHAT IS IT & WHY IS IT IMPORTANT?

The term aeroponics, meaning “working air,” stems from the Greek words for air, “aer,” and labor, “ponos.” This form of hydroponics involves growing plants without the use of soil. Instead, it relies on air to deliver a nutrient-rich mist to the plant’s roots.

The History of Aeroponics

Over the years, many agricultural system variations have been developed to better suit changing operations and a diverse range of plants. First used in the 1920s for academic studies of root growth, aeroponics would not become a real contender until the late 1990s, when The National Aeronautics and Space Administration (NASA) began looking at it as an option for growing food in soilless environments—such as in space. While the process is still in its infancy, aeroponics is quickly gaining popularity in places where traditional farming simply isn’t an option.

The Current State of Farming

Around the world, usable farm space is shrinking. Environmental pressures, including climate change and natural disasters, are exacerbating the issue of a growing global population. As the population grows, areas that once were farmlands, now drained of nutrients and no longer usable, are transformed into urban centers and residential communities.

As if these issues were not enough, traditional farming is losing its place as a viable occupation. Younger generations, especially those raised in farming communities, see the amount of work and time that goes into a successful operation and opt for alternative means of work. With 60 being the average age of a traditional farmer, these

older generations are aging out. Technology has opened the doors to new methods of growing, and with it, a revitalized interest in cultivation.

The Aeroponic System

While the physical growing process of the plant is the same as in other forms of farming or hydroponics, aeroponics differs in how nutrients and environmental conditions are delivered and controlled. With the goal of helping plants grow healthier, aeroponics is carried out in a closed environment in which the grower controls all aspects of the system.

Plants are held in large vertical grow racks. Essential organic liquid nutrients, such as nitrogen, phosphorus, and potassium, are added to a large water reservoir. These organic nutrients in pure form are more easily digested by the plants, making uptake faster and simpler. Plants do not have to go looking for sustenance as this nutrient-rich mist is delivered directly to the root zone. Indoor grow lights are optimized to fall within certain wavelengths to further promote plant growth. The overall enclosure is kept within certain limits for both temperature and humidity.

This system maximizes nutrient absorption while putting less stress on the plant itself, leading to produce that is healthier overall. Plants grown through aeroponics contain higher nutritional value all while having better color, texture, and taste.

Why Aeroponics?

Aeroponics addresses modern farming issues by offering an alternative way to produce greens and vegetables. Some important advantages of the system include:

- **98% less land.** Simply by the nature of the system, aeroponics uses 98% less land than traditional farming methods by making use of vertical space as well as horizontal.
- **Year-round production**. Aeroponics falls into a family of practices known as “Soilless Controlled Environment Agriculture” (CEA). This umbrella term applies to all types of indoor plant cultivation in which the environmental conditions, including temperature and sunlight, are controlled by the grower. Growing in a controlled environment improves a farm's ability to predict crop timing, grow quality plants, and maintain high food safety standards.
- **95% less water**. There is considerably less variability in a controlled environment, lending to less waste and lower cost. Although aeroponic systems use water-based solutions to perform properly, they use about 95% less water than standard farming.
- **More efficient**. Growers design their systems and nutrient solutions to maximize the growth and production of their plants. Plants grown in these indoor gardens are known to grow as much as 3x faster than those in outdoor farms.
- **Safer for the consumer**. A closed environment eliminates possible contamination from soil or crossover with Mother Nature, so there is no need for herbicides or pesticides, resulting in a more organic product.

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