



Hydroponics Basics

What is Hydroponics?

Hydroponics is soilless horticulture. Although soil acts as a mineral nutrient reservoir, soil itself is not essential to plant growth. Plants can be grown with their roots in an inert medium such as coconut husk (coir). When mineral nutrients are then dissolved in water and added, plant roots have easy, direct access to the oxygen, nutrients and water they need, allowing the plants to spend energy on growth. Essentially, if a plant has exactly what it needs, when it needs it, in the amount it needs, the plant will be as healthy as genetically possible. This is far more difficult in soil. With hydroponics, you are in charge!

Save Water with Hydroponics

If two genetically identical plants are grown using hydroponics for one and soil for the other, the difference in plant growth will soon be obvious. Better, faster growth and greater yields, while using 90% less water, are among the key reasons that hydroponics is being implemented around the planet for commercial food production as well as by home gardeners.

How It Works

The Aloha Vertical Victory Garden is a modified hydroponics system combined with vertical gardening, making it easy for anyone from novice to expert to use and appreciate. Six stackable planters sit on top of a water/nutrient reservoir. Each planter is filled with coir, a growing medium that protects and supports the plants and their roots. An outdoor timer triggers the water/nutrient solution to drip through each level of the garden, returning excess water to the reservoir for use in the next timed cycle.

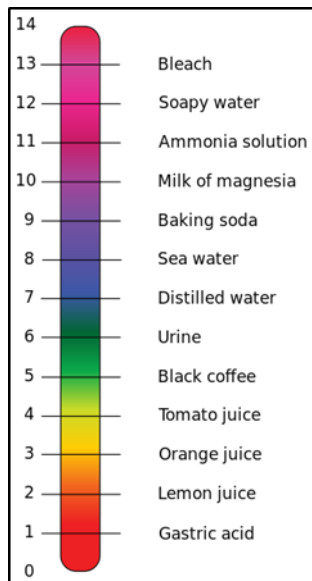
Why We Use Coir

Coir is a natural fiber and by-product of the coconut husk. Coir can also store unused water and minerals to be released to the plant when needed. The hydroponics and horticulture industries have observed that plants grown in coir develop larger roots, stems, leaves and blossoms. Coir provides a perfect oxygen-to-liquid ratio for plant roots, resulting in a stronger, healthier plant.

Nutrients: Feed Your Plants So They Can Feed You

All plants need to be regularly provided with nutrients to survive. Although the supply of nutrients in soil can fluctuate significantly, with hydroponics, you are in charge and can make nutrients available to plants in a far more precise manner.

Hydrogen, carbon and oxygen are all absorbed by plants from the water and air. Mineral salts are typically purified so they are water soluble and in a form that can be absorbed by plants. Containers of these nutrient salts list the percentages of each of three key elements included, for example: NPK 5-50-17 indicates 5% N (nitrogen), 50% P (phosphorus) and 17% K (potassium).



pH and Why It Matters

A pH meter or tester measures the acidity and alkalinity of a liquid or other substance on a scale with a range of 0 to 14, where 0 to 6 is acidic, 7 is neutral and 8 to 14 is alkaline. The ideal range pH range for most hydroponic crops is 5.5 – 6.5 which allows plants to properly absorb and process nutrients most efficiently. If water is too alkaline and you want to lower the pH, add a small amount of vinegar. If water is too acidic, you can raise the pH by adding a small amount of baking soda.

Organic Versus Hydroponic

In organic gardening, nutrients must be decomposed by micro-organisms and worms in the soil and then absorbed by plants, which is a slower process. In hydroponics, these same nutrients are provided by water soluble mineral salts directly absorbed by plants, which generates an immediate response.

Sustainability

Sustainability is about using resources in a way that ensures enough for both the present and the future. Hydroponics offers a holistic solution to the shortages of arable land and fresh water while maintaining the ability to grow nutrient-rich food. This means what is good for you is good for the earth and vice versa.

Aloha Vertical Victory Garden and Solar Garden

Benefits to You and the Environment

BENEFITS	WHY IT MATTERS
1. Uses 90% less water	<ul style="list-style-type: none"> • California and other states are in an extreme drought • Recycling water avoids harmful runoff
2. Uses less nutrients, no pesticides needed	<ul style="list-style-type: none"> • More cost effective • No pesticides means healthier food
3. Grows healthy food twice as fast	<ul style="list-style-type: none"> • Healthy food is the cornerstone of healthy living • Cost-effective in the long run
4. Small enough for a patio, balcony, porch or inside near a window (<i>Vertical Victory Garden only</i>)	<ul style="list-style-type: none"> • Grow farm-fresh food in condos, townhomes, apartments and retirement homes, in addition to a garden
5. All components included, easy to assemble and use without any tools	<ul style="list-style-type: none"> • No prior experience needed to grow healthy food and feed your family
6. Plants are grown above ground	<ul style="list-style-type: none"> • Minimizes garden pests • Garden while standing, not on your hands and knees
7. Optional 5-wheel plant dolly makes the gardens easy to move	<ul style="list-style-type: none"> • Move your garden to a location with greater sun exposure or to a more sheltered area during extreme weather

You Can Grow

Vegetables and Herbs

(Think living salad bar!)

Easy for Everyone

Arugula

Basil

Beans: bush, green

Bok choy/Pak choi

Carrots, short varieties only

Chicory: radicchio, endive

Chives

Cilantro

Collards

Cress

Dandelion greens

Dill

Escarole

Green Onions

Kale

Leaf lettuce and other salad greens

Mint

Mustard greens

Oregano

Parsley

Peppers, all types

Radishes

Savory

Spinach

Swiss chard

Tarragon

Tomatoes, all types (need trellis)

Thyme

Advanced (large plants)

Broccoli

Brussels sprouts

Cabbage

Cauliflower

Corn

Cucumbers (need trellis)

Eggplant, European and Asian

Okra

Peas, all types (need trellis)

Sorrel

Squash, all types (need trellis)

Fruits

(Think strawberry smoothies!)

Easy for Everyone

Strawberries (**need lower pH of 5.5*)

Advanced (large plants)

Blueberries (**need lower pH of 4.5*)

Growing Calendars

What you can grow each season, spring and fall, depends on your location and growing zone. For more information, <http://www.burpee.com/gygg/growingCalendarNoZipCode.jsp>.