

# Week 2: "Water" Your Plants

Did you know that plants don't need soil to grow? All that's needed is a way for nutrients to get directly to a plant's roots. Build a simple hydroponic garden system where water takes the place of the soil and see if your plants grow faster and better. Try growing herbs or sprouting some beans for a yummy summer meal!

## Experiment

# HYDROPONIC GARDEN

## Materials

Yogurt cup

Small cup or can slightly larger than the yogurt cup

Plant (like ivy, pothos, herbs or seeds)

Cotton wick, like a strip of t-shirt, yarn or rope

Growing medium, like marbles, LEGO bricks, cardboard pieces or perlite (those tiny white pellets found in potting soil)

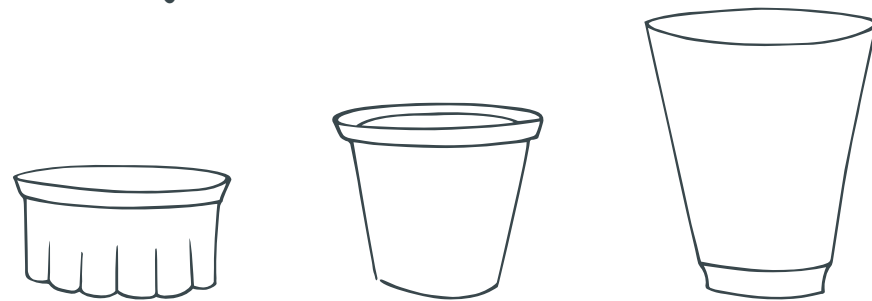
Scissors

Water

Water-soluble plant food (optional)

## Instructions

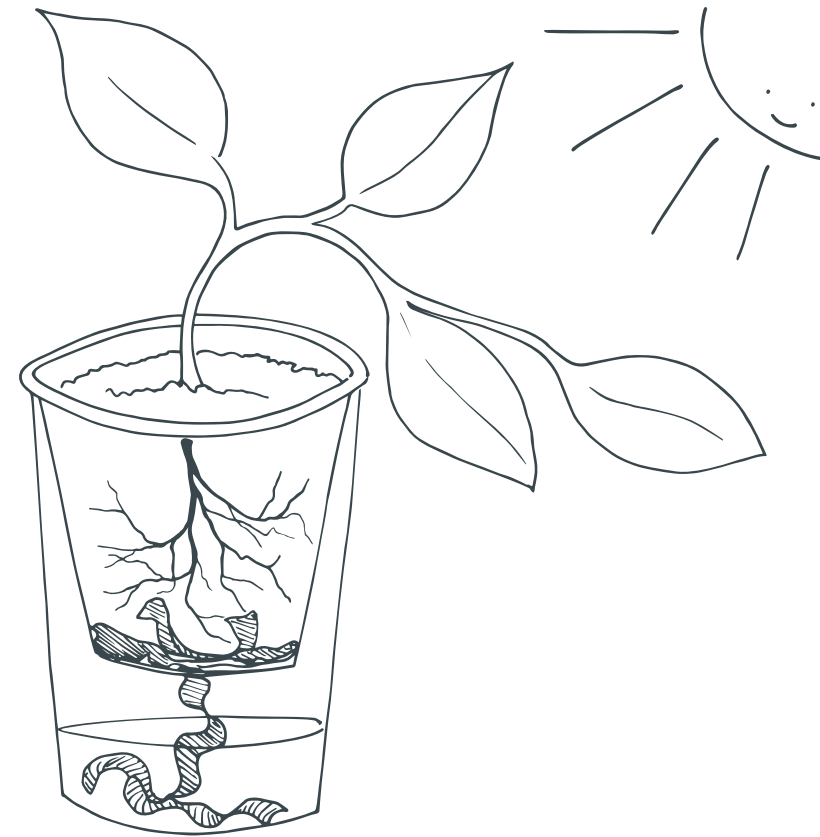
Poke a small hole in the bottom of a yogurt cup with scissors. Thoroughly wet a cotton wick in water and thread it through the hole, leaving several inches inside the cup. Add water to your larger cup or can—keeping the water level below the bottom of the yogurt cup—and submerge the bottom of the wick. Nestle the yogurt cup inside the larger cup or can.



Coil the wick throughout a growing medium in the yogurt cup so water will spread throughout. If you're using a plant, gently clear the dirt from its roots and place it in the yogurt cup, adjusting the growing medium to hold it upright. You can get seeds to sprout by burying them in perlite, which is found at gardening stores. If your cups are clear, cover the outside with paper; roots like to be in the dark. Place your hydroponic garden in a sunny spot and add water to the larger cup when the level looks low.

Some plants, like ivy, pothos and spider plants, will grow in just water. Others, like lettuce and herbs, may wilt even though they're

getting enough water from the wick. For a healthier plant, add nutrients to the water, like water-soluble plant food or nutrient solution made for hydroponic gardens.



## What's happening?

Plants don't need soil as long as there's a way for nutrients to go directly to the roots. In hydroponics, water takes the place of soil. Plants will often grow faster and better in hydroponic systems because the nutrients are delivered more efficiently. It also eliminates soil pests and many diseases. In this system, water travels up the wick to provide nutrients to the roots. NASA is experimenting with hydroponics as a way to provide food on long-term space missions.

## Game on!

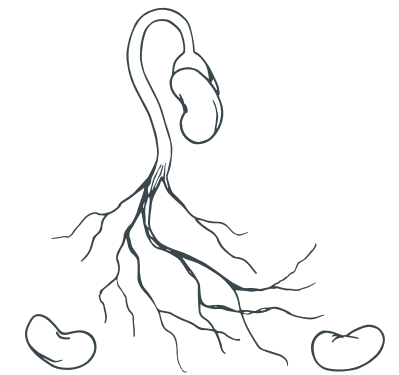
Design your own hydroponic garden system. Try making a vertical "window" setup that links several bottles together, on top of each other, so that water dripping from the top bottle drains down into the one below until it reaches the bottom bottle. Add tubing and a pump at the bottom reservoir to bring the water back up to the top.

## Tips

Make sure the wick is wet all the way up, to make sure water is reaching the plant roots.

Using torn pieces of cardboard as a growing medium provides extra moisture to the roots. Clay pellets and perlite also expand and hold moisture.

Try growing plants from seeds by nestling the seeds in perlite.



## More Ways to Play With Hydroponics

Experiment with different types of plants to see which ones grow best. Keep track of how your plants are doing and make observations all summer long in a science journal.

Learn about vertical farms in MSI's *Fast Forward ... Inventing the Future* exhibit and the latest in farming crops in *Farm Tech*.

## Like this activity? You could be a ...

- Agricultural Researcher
- Chemist
- Environmental Scientist
- Horticulturalist