

Hydroponics Activity

Materials:

Two liter soda bottle
Wick (strip of old fabric, t-shirt or sock)
Growing media (rocks, marbles, legos, shredded paper)
Fertilizer
Starter plant or seed
Covering (duct tape, paper & scotch tape, markers)
Scissors

Instructions:

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1. Remove the cap from the 2 liter bottle. Cut off the top $\frac{1}{4}$ of the bottle and invert it so that the top is upside down and sitting inside the bottle.
2. Get the material you will use as the wick and measure a strip about 1 inch wide that will be long enough to touch the bottom of the bottle and extend into the inverted top. Stuff the wick through the bottle top opening so that it hangs down and is touching the bottom of the bottle. The other end of the wick should be long enough to extend about $\frac{1}{2}$ way into the inverted bottle top.
3. Place your seed or starter plant in the inverted top and fill in around it with your choice of growth media. The purpose of the growth media is to help suspend & support the growing plant and keep the wick in contact with the roots. You may have to fill in some growth media before placing the seed or plant in and then finish filling the top with the growth medium. Make sure the seed or plant roots are in contact with the top of the wick as this will be transporting water & nutrients to your plant. Be sure not to use anything too heavy that might crush your plant stem.
4. Mix the fertilizer of your choice with water (follow directions on the package) and pour your water-fertilizer solution into the bottle soaking the growth medium and wick. Make sure the wick gets wet and is suspended in the water-fertilizer solution in the bottom of the bottle once it all percolates through.



5. To prevent algae growth in the water & on the plant roots, you will need to block out the sunlight by covering the bottom part of the bottle with an opaque filter. You can use decorative duct tape to wrap the bottle in and add a fun, personal touch to your new hydroponic system. You can use a decorative paper and tape (make sure light can't pass through the paper) to cover the bottom. Or use a brown paper sack & markers to decorate it yourself! Some people prefer to use the paper cover so they can take it off every once in a while to observe what is happening in the bottom of the bottle!

6. To set up a science experiment at home, make 3 hydroponic systems. Be sure to use the same type of plant and all 3 should be about the same size/age of development. Also use the same growth medium, same material & size for wick and be sure to measure and pour in the exact same concentration & amount of water-fertilizer solution. The 3 hydroponic systems should be kept together in the same location during the experiment time so they are in the same environment & receive the same amount of sunlight. These are the controls in your experiment. Your variable will be the covering on the bottom of the bottle. Leave one uncovered, one covered in paper that blocks only some of the light, and one that is covered with something that completely blocks all of the light. Once or twice a week you can make observations of the plant - its color & growth measurement - and observations of the water in the bottom of the bottle - color & clarity as well as presence of algae.

7. Have fun & send us pictures of your hydroponics systems that you make at home or the experiment along with your observation results!