



Simple Hydroponic System

by [akcarl](#) on December 24, 2013

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Intro: Simple Hydroponic System

Grow your own fresh food in less than a month and for under \$10 with this system. It is quiet and takes little maintenance. Much cheaper than store bought alternatives too. This system works well for plants that are fast to germinate such as leafy greens and herbs.



Image Notes

1. spinach!
2. arugula!
3. basil!
4. chives!!

Step 1: Parts

Storage Bin - about \$10 for one

<http://www.walmart.com/ip/Sterilite-41-Quart-Stora...>

Grow Light - about \$10

<http://www.walmart.com/ip/Good-Earth-Lighting-Inc-...>

2" Garden Cups - \$0.30 each (sourced locally)

http://www.amazon.com/Inch-Round-Orchid-Hydroponics-Slotted/dp/B0058PB574/ref=pd_sim_lg_11

Rock Wool - 8\$ per 24 (sourced locally)

<http://www.amazon.com/Grodan-Rockwool-Cubes-Inches...>

Water Pump - about 15-20\$ (all about preference)

<http://www.amazon.com/Watts-Jebao-Submersible-Foun...>

Vinyl Tubing - \$4 (0.50\$ per foot)

Home Depot/Lowes

Zip Ties - cheap

Home Depot/Lowes/Ace/Online/Anywhere

Plant Nutirents - 14\$

<http://www.amazon.com/UltraGrow-Liquid-Nutrient-Se...>

Step 2: Construction

Cut holes that are approx. 5" apart from each other. A Dremel tool works well for this or a sharp box cutter or a hole bit and drill. The size of the holes depend on the size of your pot you will be using for each of the seeders. A space should be let on one side of the top to keep the pump to be away from the roots.

Using 1/2" inner diameter tubing, about 8' was planned to wrap around the holes and then secured in place with zip ties. A small drill bit was used to make the holes for the zip ties. On the side of the tube facing the hole for the pot, a small hole was drilled so water would shoot at the bottom of the pot.

A slight rim of hot glue was built upon the edge of the container to eliminate any leakage.

The tubing was fitted into the output of the water pump sealed with hot glue**. The end of the tube was also plugged with hot glue.

Disclaimer.. Hot glue is an amazing invention and can be used to fix anything as it is extremely stong. Some sources say it was used to build the Eiffel Tower.

The lighting system was not fully designed. It is largely a matter of preference and available tools. The lights should be adjustable.



Image Notes

1. area where pump will be

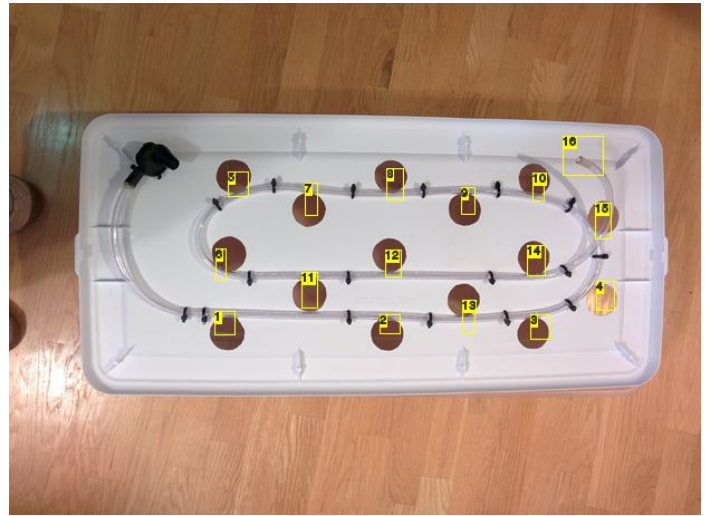


Image Notes

1. hole
2. hole
3. hole
4. hole
5. hole
6. hole
7. hole
8. hole
9. hole
10. hole
11. hole
12. hole
13. hole
14. hole
15. hole
16. plugged with hot glue

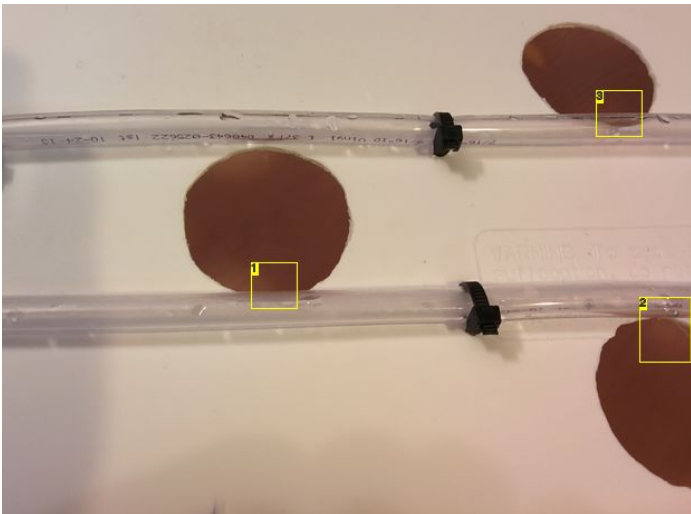


Image Notes

1. Hole drilled here.
2. Hole drilled here
3. Hole drilled here

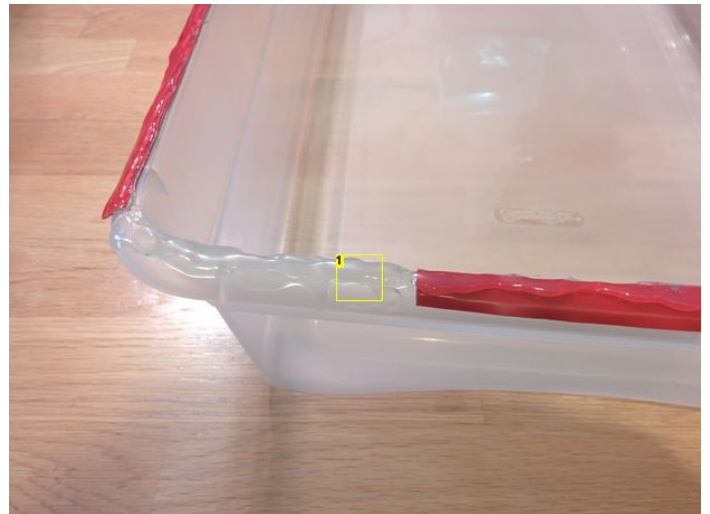


Image Notes

1. Hot Glue

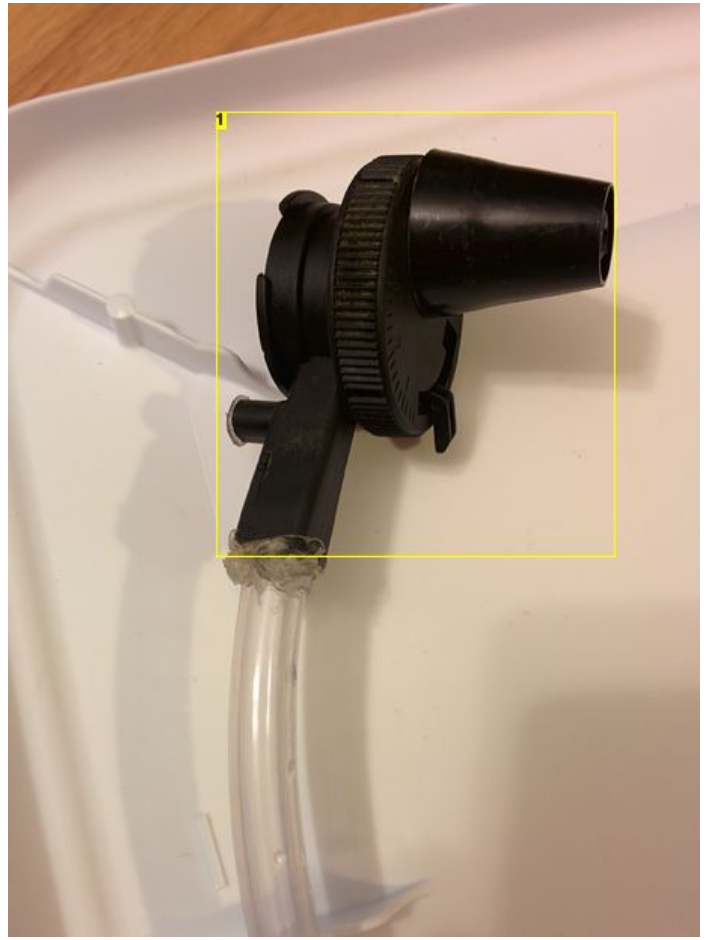


Image Notes
1. pump attachment

Step 3: Planting

The **rock wool blocks** were cut into **semi conical shapes** that would fit into the pots. A standard scissor works well. **Don't breathe in rock wool shavings!**

Liquid plant nutrients were also added to speed up the growth rate. Using a **siphon** and removing a gallon of water and then **replacing the gallon of water** with one with nutrients added should be done every other week. It does take some preference and experimenting to determine what works best for you.

Small cups were placed on top to keep the **humidity levels** high.

Seeds were placed in the main hole and then in two other holes made by pencils in the rock wool. About **5 seeds went into each hole**.

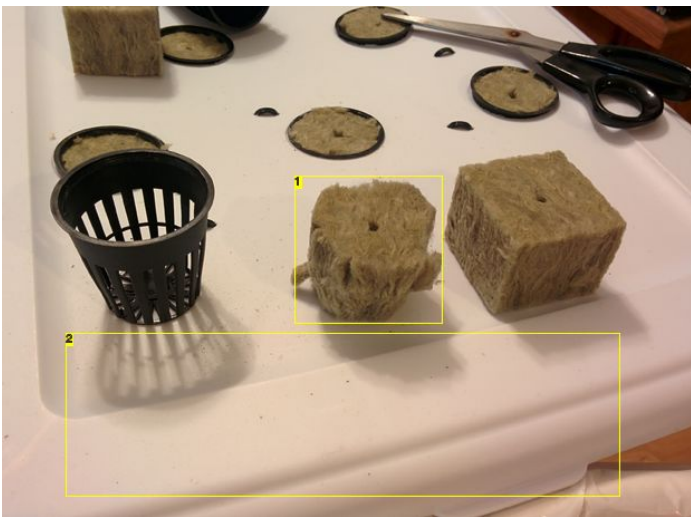


Image Notes
1. rock wool
2. dont breathe this stuff!



Image Notes
1. plant nom nom



Step 4: Growth

This is after 7 days of growth in a room averaging 61 oF with 16 hours of artificial light .

Seen growing is spinach , arugula , basil , chives , and lettuce . These plants have the fastest maturity rate .

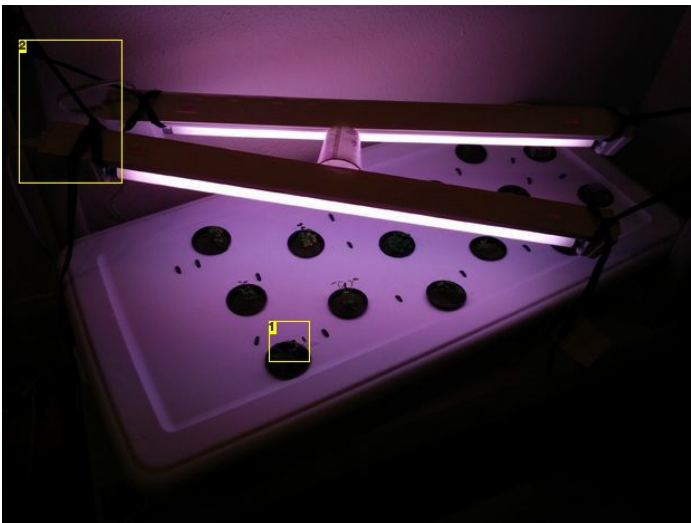


Image Notes

1. light is too far away :(
2. shoe laces holding up the lights...



Image Notes

1. spinach!
2. arugula!
3. basil!
4. chives!!

Step 5: Engineering Thoughts

Flow rate?

The flow rate out of the first hole isn't a noticeable difference compared to the last hole. Thanks to a short tube, a low overall flow rate and minimal frictional loss.

Cost Effective?

Neglecting the initial cost, the pump power, lights and nutrients are what matter over time. The 2 lights are 17 watts each, the pump is about 5 watts and the nutrients 15\$. Assuming the lights are on for 16 hours a day for 45 day and the pump is continuously running while the cost of electricity is \$0.10/kWh....math...**The electricity cost alone is about \$2.65** and maybe 1/2 a bottle of nutrients which is \$7.50. So about \$10 for a full 15 pots of food!

I would say yes!

Enjoy!

Related Instructables



Aquaponics by rokey94



How to build a desktop aquaponics system for indoor gardening. (video) by Get Forked



Hydroponic AeroGarden seed starter tray-homemade (Photos) by jodi8727



Small Aquaponic Unit by leja1965



Indoor Aquaponics by jonathondk



Hybrid Aquaponic / soil indoor winter garden by thajesta