

DIY Hydroponic Garden Tower

(this is for home personal use only)

This 9' tall x 10' long design is for growing one hundred and eleven plants of your choosing. It uses 80% less water than a square-foot garden and grows 10x the plants per square foot, with no bending down to plant or weed the garden. The plants grow almost twice as big and twice as fast, because their roots are not constrained by soil and they always have optimal water and nutrients. You can make one as small as 6' tall and 6' long by halving the dimensions below. The plants it can grow are:

Onions	Spinach	Zucchini
Chives	Arugula	Yellow Squash
Basil	Lettuce (of all types)	Pickle Cucumbers
Mint	Cabbage (of all types)	Broccoli
Cilantro	Peas	Cauliflower
Oregano	Strawberries	Green Beans
Peppers	Raddishes	Cherry Tomatoes
Chilis	Parsley	Any above ground veggie

Parts List:

1. Two 10 ft long wood 4x4s [for the frame]
2. One post hole digger [to dig the hole to anchor the 4x4s into the ground]
3. Seven 10 ft long 4" PVC pipes (with no holes in it) [for the body]
4. Twelve 90 degree 4" pipe elbow joints [to come around the 4x4s]
5. One more 10 ft long 4" PVC pipe (with no holes in it) [to be cut into small sections to connect the elbow joints]
6. One can of Low Voc Pipe Glue [glue the elbow joints together, once you have them in place]
7. Eight 13" metal strappings [to connect the elbow joints to the 4x4 frame]
8. Two endcaps for 4" PVC pipe [one for the top pipe and one for the bottom pipe]
9. One 2 ft long 2" PVC pipe [for the drain into the reservoir]
10. One 2" adapter [to connect the bottom end cap to the elbow joints that lead to the pipe draining into the reservoir]
11. One 2" steel locknut [to secure the 2" adapter onto the endcap]
12. One 2^{3/8} in non-arbores drill bit [to drill the hold in the bottom endcap for screwing the 2" adapter into for the drain into the reservoir]
13. One tube of silicon caulk [to seal the adapter to the endcap and prevent any leaks]
14. Two 2" 90 degree elbow joints (compression "L"s) [to turn corner in connecting the pipe draining into the reservoir]
15. One 2" 90 degree elbow joint [to guide the redirect drain pipe straight down into the reservoir]
16. One 40 gallon reservoir (Botanicare) [box shaped, made of food grade plastic], or something of similar size and durability.
17. One 40 gallon reservoir lid
18. One EcoPlus Eco1267 submersible pump... if you don't go 9 feet high, then you can use a smaller pump. The EcoPlus Eco1267 can pump up to 14.8 feet high, but draws 0.82 amps of

- power. The EcoPlus Eco633 only pumps 7.9 feet high and only draws 0.32 amps of power.
19. One 20 ft section of ½ in tubing [to bring the water from the pump in the reservoir to the endcap connecting into the top PVC pipe]
 20. One 3/4" x 6" Speedbor drill bit [to make the hole for connecting the tubing into the top endcap]
 21. One 1/2" Male Elbow with barbs [to connect the tubing into the top endcap]
 22. Six 90 degree ½ in compression elbows for turning the corner with the ½ in tubing as you guide it from the submersible pump up to the top endcap]
 23. One bag of 11" zip ties [to secure the tubing against the PVC pipes and the 4x4s]
 24. One drill gun [to drill the holes in the 4" pipe for the net pots]
 25. One 3^{5/8} inch non-arborescent drill bit [to drill the holes in the 4" pipe, 14 holes per pipe at 8" spacing from center, except for the top pipe at 4" spacing from center for 27 holes]
 26. One Hundred Eleven 3.75 inch round net pots [to hold the plants]
 27. One 50 lb bag of Hydrocorn/Hydroton clay pebbles as your grow medium
 28. One Hundred Eleven seedlings of your choice [from a local plant nursery. Cut a small hole in the bottom center of each net pot. Then put the seedlings in water and "tickle" the dirt off the roots. Thread the roots through the hole at the bottom of the net pot, so that the roots can reach the water running along the bottom of the 4" PVC pipes. Put some hydrocorn in the net pot to secure the plant stem. Then place the net pot back into the PVC pipe.]
 29. Nutrient mix: House & Garden AquaFlakes A & B [to feed the plants]
 30. Nutrient mix: Superthrive [to feed the plants]
 31. Nutrient mix: Great White Mycorrhizza [to increase root growth]
 32. Nutrient mix: Flora Kleen [to remove the mineral deposits]
 33. Nutrient mix: SeaCrop Mineral Nutrients [to enhance the brix level in the plants, making them more temperature resistant, bug resistant, and sweeter tasting].
 34. Nutrient mix: Safe End All [for pest and fungus control]

Maintenance:

1. House & Garden AquaFlakes A&B: 2 part (4 oz A and 4 oz B) 1x/wk add to reservoir and stir, or a less expensive alternative is Dyna-Gro Liquid Grow 7-9-5.
2. Superthrive: 1 cap full per week (this equals 1 drop per gallon)
3. Flora Kleen: 1 cap full per week (this breaks up the salts)
4. Mykos Mycorrhizza: 10 oz of wettable powder into reservoir ever 2 weeks
5. Test the pH using a simple pH Testing Kit (get details from local hydroponics store)
6. Pest control: Safer End All
7. Refill reservoir weekly, add the nutrients, trim dead leaves, trim excessive root systems, move plants with small roots next to plants with big roots, place big plants near elbows, have the water run at a trickle, if lots of big plants, can put pump on a timer, 1 hr on, 1 hr off, to prevent overflow.