

How to Build A (Fairly Simple, Fairly Cheap) Greenhouse

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My dream for our new greenhouse: to be able to enter and exit without bumping my forehead, spin around inside it with my arms spread out, and have it be roomy enough to grow some blue-ribbon tomatoes and peppers. That last one will likely remain a dream, but the other two were accomplished!

I wanted the plans for this project to be free and readily accessible. As such, this factsheet includes a budget and materials list for the greenhouse, a list of the lessons I learned, and some photos of the building process. For more photos and info, check our website: <http://compost.bc.ca/new-greenhouse>

Feel free to call the Centre (250.386.9676) if you would like more details on the greenhouse build. May the future bring you many, many completely ripe tomatoes!

12x12x8 Greenhouse Materials List and Budget

Castle Building	Cost per piece	# of pieces	Total cost	Function
2x6x12 cedar	22.99	4	91.96	base
2x4x8 cedar	7.89	10	78.9	end framing
2x4x12 cedar	12.99	1	12.99	roofline
1/2" rebar (20' length)	5.5	2	11	foundation, cut into 4' lengths
lathe			20	securing plastic
U brackets			15	securing ends of hoops
metal strapping			5	securing rebar to frame
screws			20	screwing frame together
nails			5	nailing lathe
hinges			10	for door*
West-Tech Irrigation Supply	Cost per piece	# of pieces	Total cost	Function
Schedule 40 PVC 1", 20 ft	23.15	5	115.75	hoops
Schedule 40 PVC 1", 10 ft	1	1	13.23	2' hoop extension
Schedule 40 PVC 3/4", 20 ft	15	2	30	side hoops (extra support)
Home Hardware	Cost per piece	# of pieces	Total cost	Function
acrylic spray paint	8	4	32	spray hoops to protect plastic covering from reacting with PVC
B&W Greenhouses				
AC plastic	148.42		148.42	
TOTAL COST (approx.)			609.25	

*Cost for wood for door(s) is missing because this will be different depending on what size door you decide to frame in.

Vital stats:

- Greenhouse dimensions: 12'x12'x8'
- Length of hoops: 22ft
- Dimensions of plastic: 2 pieces for each end at 12'x14', 1 piece for body of greenhouse at 24'x16'
- Time to raise the frame and put roof plastic on (2 people): 7 hours (1 day)
- Time to wrap and tighten plastic on ends and roof: 4 hours
- Cost of materials: approximately \$600. We bought everything new using our discount at Castle Building Centre, so true cost may be slightly higher. This could definitely be off-set by scavenging for used/free materials on UsedVictoria or Craigslist.



What I learned:

- Ask for help! Wrapping the greenhouse in plastic and then tightening it is something that *can* be done by one person, but you will never want to build another greenhouse again and your plastic will likely end up with holes/mis-cuts in it. I could not have done this project as fast or with as much enjoyment without the help of Jesse Brown of Victoria Aquaponics, the always friendly and knowledgeable folks at Cook St. Castle Building Centre and Louis, one of our long-standing volunteers.
- PVC stands for polyvinyl chloride, that's what your hoops are made out of. "Poly" refers to the polyethylene plastic you will cover your greenhouse in. There are lots of different kinds of poly. You want 6mm with a UV barrier, possibly a condensation barrier too. Integrity Sales stocks this and sells it by the square foot. BW Greenhouse in Abbotsford has the UV + condensation barrier kind.
- Spray-paint the PVC hoops before installing. The PVC and the poly react with each other in sunlight, making the poly break down and split over time. Having a protective layer between the poly and the PVC extends the life of your greenhouse.
- **Always check that things are level, measure twice and take your time!**

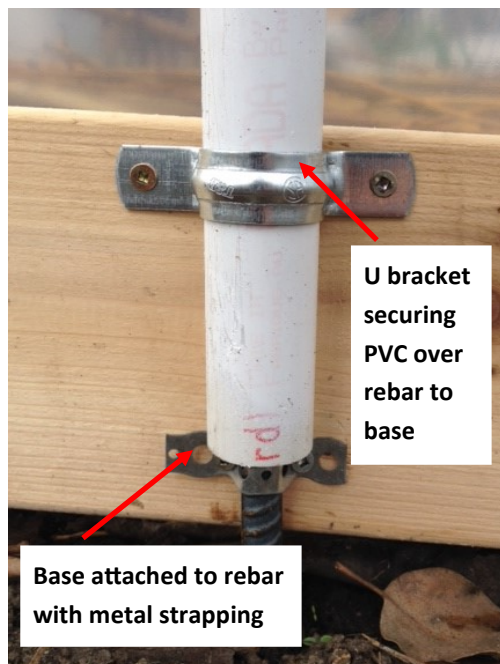
Building the Base:

The first step of the build was to level the ground under the outer frame of the greenhouse. Rebar was pounded 2 feet into the ground at each corner and at 3 foot intervals along each side. The base of the greenhouse (2x6 cedar butted and screwed together) was then attached to the rebar with metal strapping. We ended by checking that the base was level all around.



Installing the Hoops

The PVC hoops slide over the rebar and are secured to the base with a U bracket. Since PVC hoops come in a maximum of 20 foot lengths and we needed 22 foot lengths, we cut a 10 foot piece of PVC into five 2 foot lengths. Each 2 foot length was slid into the wide end of each of the 20 foot lengths of PVC. The 22' hoops create an interior greenhouse height of 8'.



The two 20 ft long stabilizing side hoops were attached to the corners of the base with metal strapping, causing them to bend parallel to the side of the greenhouse.

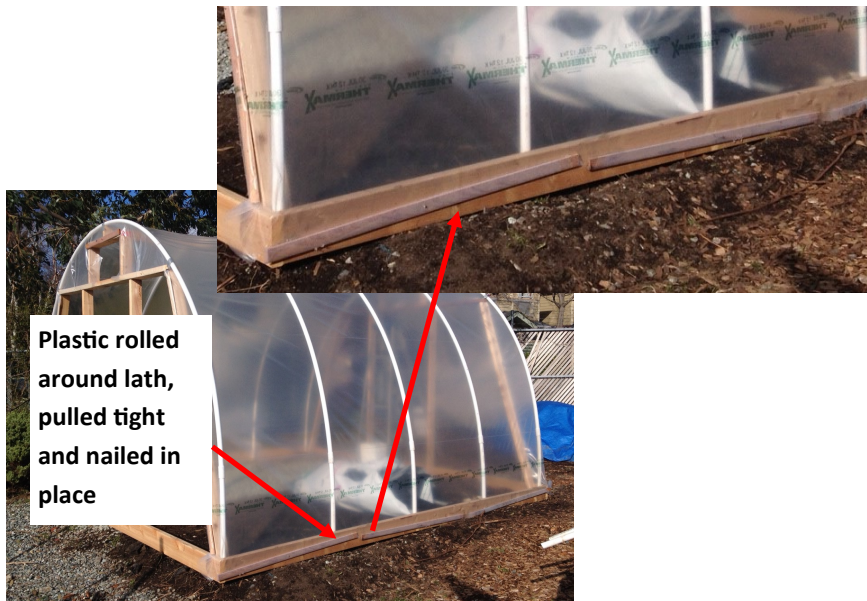


They were then secured to the frame hoops with zip ties.

Attaching the Plastic

There are a many ways to attach plastic to a greenhouse frame, and they are difficult to describe. Here is my attempt to communicate how we did it. Please drop by the Centre to take a look and ask me questions if need be. This is not the only way you can do it either, so feel free to Google and find your own way!

1. To attach the greenhouse plastic, we started by draping the large 24'x16' piece of plastic over the top of the frame (leave an equal amount hanging over each end). We temporarily tacked one side of the plastic to the base with a staple-gun. On the other side, we cut a length of lath into a few pieces. We took one piece of lath and wrapped it in plastic, rolled it up to the frame and tacked it in place with nails, repeating this down the side until the whole side was tacked in place. Then we went around to the other side, pulled the plastic out of the staples and did the same roll-up technique. We alternated sides on the greenhouse, stretching, tightening and tacking until the plastic was taut and even. The final attachment can be done with nails or drywall screws.



3. Framed in the doors and vents on each end of the greenhouse. To attach the smaller pieces of plastic to the ends and around the door frame, the same lath/rolling strategy was employed.

2. The overhanging plastic was also wrapped around lath, pulled tight and nailed to the end frame.



Overhanging plastic wrapped down to end frame and nailed in place

