

High Tunnel/Hoop House Construction



This is a cost-effective approach to designing a structure that will protect crops from the wind and cold of the winter months, but can be erected and maintained with minimal effort or investment. This design requires leveling the field area and squaring the corners of the structure. Use two-by-fours to construct the framing for the baseboard, the end walls and the corners. Use 1" PVC tubing for the overall frame, rafters and perpendicular supports (Use 1 ½" PVC if you expect snows greater than 6"). Ideally, a structure of this type will allow an adult to enter without crouching and allow for digging out beds and paths for year-round production. Combine this with a heavy-grade cover cloth in the cold months to protect leafy greens and radishes.

Heavy-Duty Cold Frame Construction

A cold frame is a semi-permanent structure used to shield crops from wind and cold night temperatures during the winter. It uses a simple solar design to keep crops warm in the winter. These cold frames are integral to seasonal extension and winter production of salad mix as well as hardy leafy greens and radishes.

Tool List:

String line
Measuring tape
Sledge hammer
Post cap
Level
Drills: 1/4", 1/8" bits esp.
Drivers: #2Phillips, hex, socket
deep sockets & wrenches: esp. 1/2" and 7/16"
Ladders (at least two 10')
wood saw
metal saw
channel locks/visе grips

**Coldframe Material List**

For 30'x96':

2"x6"x12': 38 pieces
2"x4"x12': 36 pieces
16' rebar
240' chain link fence top rail
30' of 1 1/4" PVC
3/4" Tek screws: about 150
3" Wood screws: 5lbs.
1" Drywall screws: 2lbs.
1/4" eye screws: 8
1/4" eye bolts, washers, nuts: 36
300' of 3/8" rope

Don's Tip

Here are a few good ideas when assembling a cold frame made of galvanized steel tubing. First, have three to five ladders on hand of various heights; second, have two or three complete sets of drills, ratchets and multiple battery packs charged; third, consider assembling the arches (or rafters) on the ground and then hoisting into place with two to four people; fourth, square and plumb in sections of four arches (rafters) at a time.



Farm tools

- Four flat shovels
- Four round shovels
- Four hoes
- Four hula hoes

Toolkit

- 18-volt battery-powered drill
- Sawzall reciprocating saw
- Circular saw
- Extra battery

Additional

- 5-gallon water cooler
- 60-gauge wire—3000'

Rental List

- 8" auger

Shared List

- Shovels
- Wheelbarrow
- Hose
- Ladder
- 55-gallon drums



Constructing a Heavy-Duty Cold Frame

1. Identify site based on accessible area, water access and sunlight.
2. Square the area based on the dimensions of the structure.
 - a. Identify the corners of the structure
3. Set up the batter boards approximately 8' from the projected end wall area.
 - a. Drive two metal stakes into the ground with a sledgehammer. Nail 4' two-by-fours to the two stakes. The batter boards meet at 90 degrees.
4. Use two two-by-four boards at the corners of each intersecting wall for a total of 8 boards.
5. Use the Pythagorean theorem to square the building. $A^2 + B^2 = C^2$.
6. Use a dry line that is tied across the batter boards to determine the building dimensions and exact corner points.
7. Use an 8" motorized auger to dig holes 12" deep along the length of the side walls. The holes should be spaced to meet engineering specifications (approximately 5–6' apart).
 - a. Determine the amount of concrete needed per hole. Mix concrete and set poles level in the ground.
8. Assemble bows and start to place them atop the poles and begin to assemble the building.
9. Frame in end walls with doors and openings. Assemble the frame on the ground based on measurements of the opening to frame. Then hoist the frame and secure it with many helpers on hand.
 - a. Determine whether to use galvanized steel, treated wood or aluminum. Also, end walls are secured to 6" × 8", 16" pumice (cinder) block that will be buried halfway along the length of the end wall.
10. Skin it—put plastic in place and secure with spring-loaded tie-downs.
 - a. Use 3/8" rope to "pull" the plastic sheet over the frame of the structure.
11. Prepare beds for planting and seeding.