

Germination Chamber Case Study

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Farm Name: Cold Spring Farm

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Case study prepared by Crystal Stewart of Cornell Cooperative Extension's Eastern NY Commercial Horticulture Program: enych.cce.cornell.edu or cls263@cornell.edu

This chamber consists of an custom-fabricated metal frame with poly-coated racks. The insulation is solid foam board. Humidity and heat are provided by a water pan with a heat element placed in the bottom. The thermostat controls are mounted on the outside of the unit. Supplemental lighting is mounted on the top of the unit, providing illumination to the first row of trays.

Metal Frame Costs			
	# of Units	Unit Cost	Total
1.75" Square steel greenhouse endwall tubing	66	\$2.35	\$155.10
1/2" galvanized conduit for shelf supports	18	\$5.50	\$99.00
Fabrication cost	1	\$650	\$650.00
Casters, 4 inch rigid	2	\$22.99	\$45.98
Casters, 4 inch swivel	2	\$22.99	\$45.98
Insulation and Shelving Costs			
Close mesh pantry shelving	9	\$21.97	\$198
2-inch foam board (4'x8' sheets)	4	\$33.92	\$135.68
Tuff-R r12 insulation board 7/8"	2	\$31.95	\$63.90
Foamboard adhesive	2	\$3.58	\$7.16
Tek Screws, box of 30	1	\$5.49	\$5.49
Electronic Equipment			
Thermostat	1	\$116.72	\$116.72
LED lighting strip	1	\$201.15	\$201.15
Aluminum pan and heating element	1	\$61.53	\$61.53
Assembly of chamber			
Labor	10	\$20	\$200.00
Grand Total			\$1,985.42

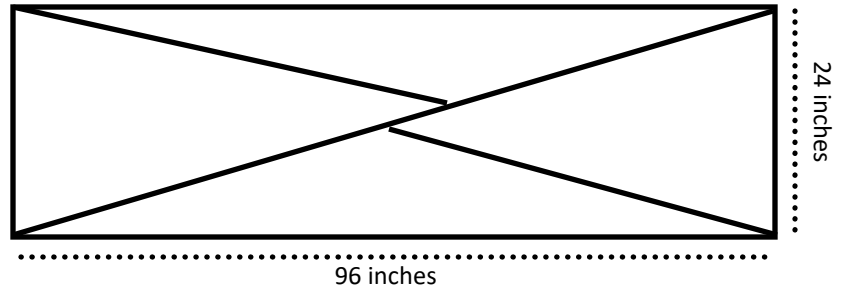


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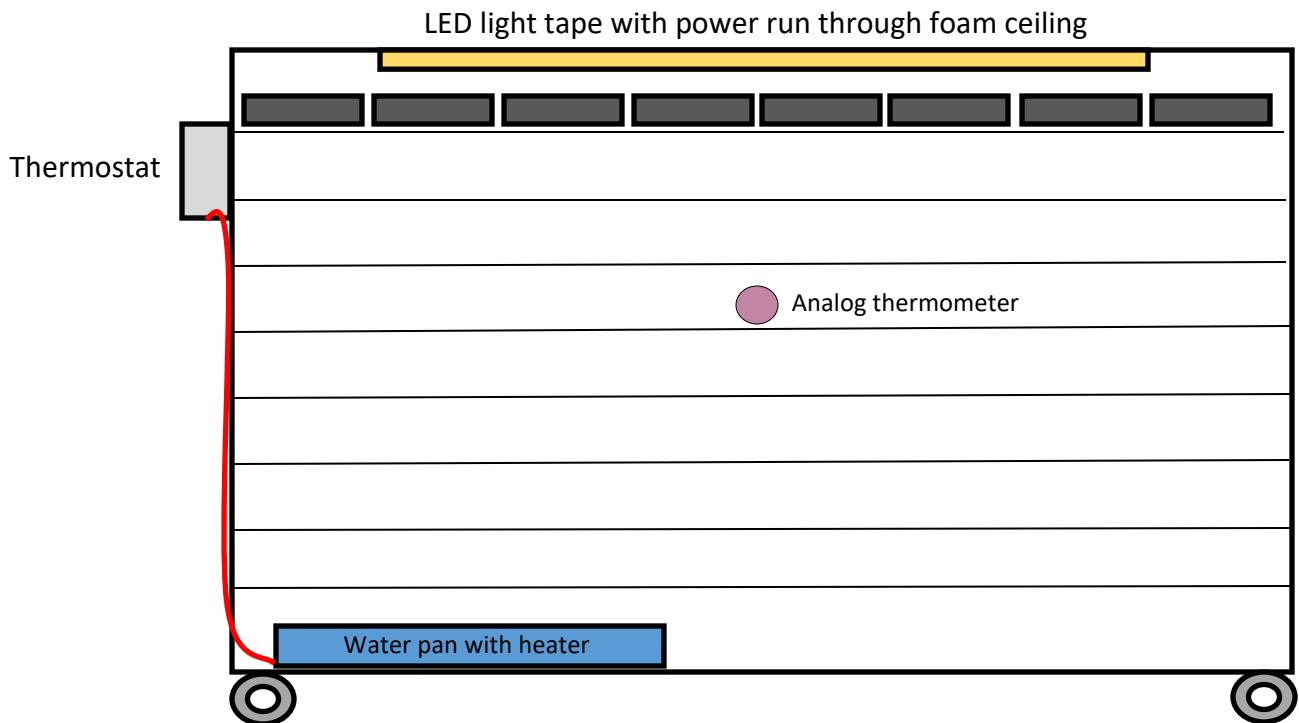
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Construction Sketches

Top view of shelf support: the dimensions of the unit are 24x96, with cross braces made of welded conduit on each shelf to support the wire mesh. Nine shelves are welded to the frame, which is described below. An LED light strip is mounted on the ceiling of the chamber.



Side view: the frame is made from square 1.75 inch steel greenhouse endwall framing material. Foam board is attached on the outside of the framing using Tek Screws. The door is a piece of foam board the size of the front mounted on a channel that allows it to slide. It is held in place by a 2x2 piece of lumber across the front (see picture next to profile)



This chamber is located inside the greenhouse, and is powered by an extension cord. Because the unit is in the greenhouse, high temperature controls have been a more significant factor than low temperature controls, which are automatically corrected by the heating element located in the chamber. During year one of use, high temperatures were regulated by opening the door of the chamber to release warm air. This strategy relies on human monitoring and intervention, which is not ideal. In the future Lenny would like to install a thermostat-driven exhaust fan in the chamber.

The fact that the chamber needs venting for temperature control may contribute to sub-optimal relative humidity as moisture is lost during the venting process. This is a concern which growers wanting to site chambers in the greenhouse instead of a cooler head house should be aware of.

Key Suppliers for this Project:

- Waterproof LED strip light: Allied Electronic:
<http://www.alliedelec.com/>
- Steel endwall framing: Nolts Greenhouse Supply:
<http://noltsgreenhousesupplies.com/>