

Germination Chamber Case Study

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Farm Name: Poughkeepsie Farm Project

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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

"The chambers are essential to our greenhouse system. We're noticing quicker and higher germination rates."

-Leon Vehaba, Poughkeepsie Farm Project

Key considerations for chamber design: Leon wanted to have two different chamber areas that could be set at different temperatures (one for tomatoes, for example, and one for lettuce). In order to accomplish this goal, he created two chambers which face each other in the head house to the greenhouse. The design provided is for one of the two chambers, which accommodates 96 flats. Other key considerations were that the chamber be cleanable, durable, simple, fixable, have temperature alarms, and be rodent-proof.

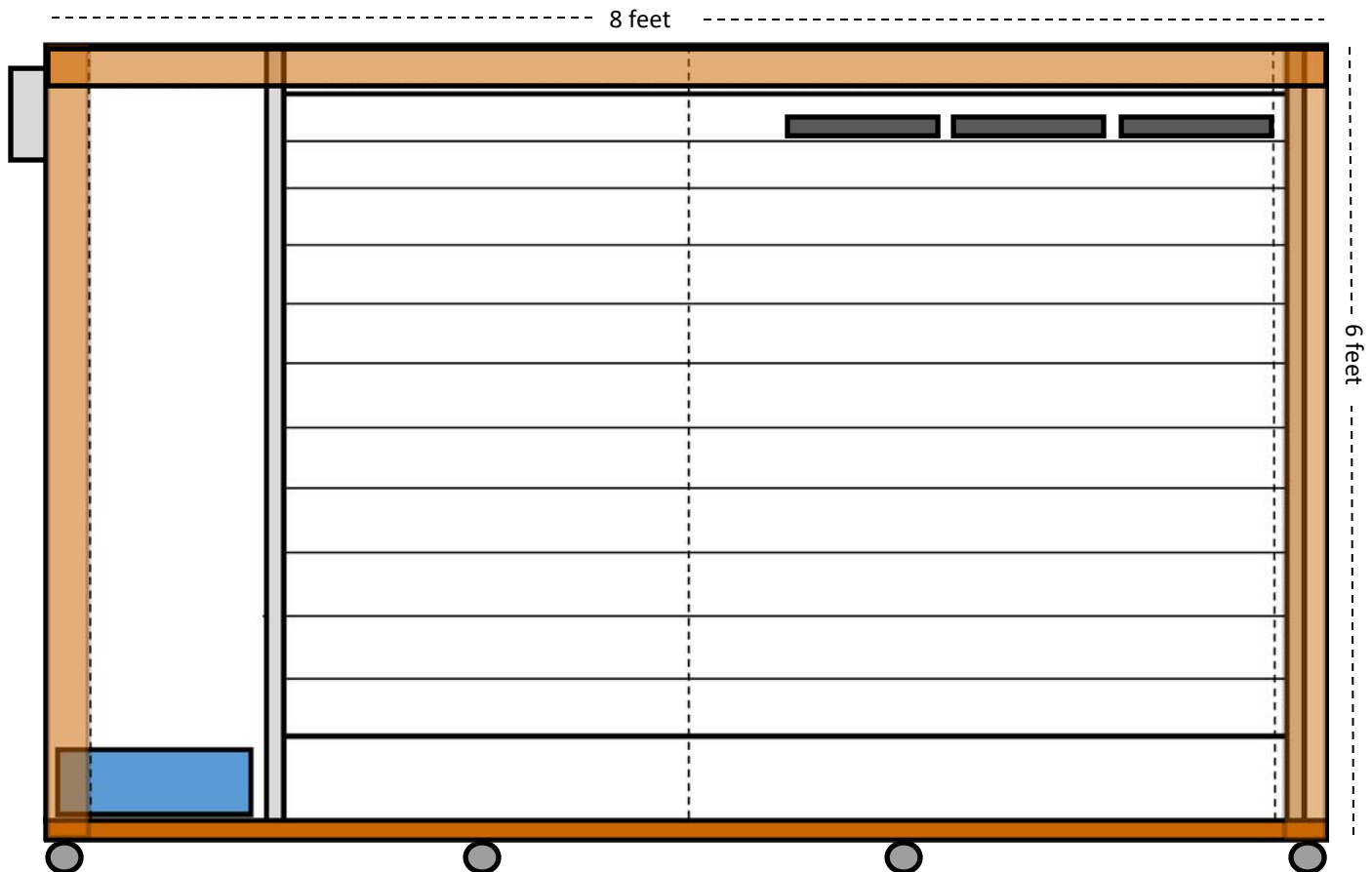
Materials	#	Unit Cost	Total
Box Materials			
2 x 4's Doug Fir (12, 10' and 20, 8')	1	\$74.3	\$74.3
1/2" plywood (walls)	6	\$19.16	\$114.96
3/4" pressure treated plywood	1	\$44.5	\$44.5
2" Blue foam insulation	8	\$41.1	\$328.8
Swivel casters	8	\$14.25	\$114
Chamber shelving			
Metal shelving base	1	\$210	\$210
Metal shelves	9	\$43	\$387
Freight	1	\$192	\$192
Temp/RH Control Materials			
Monnit temp. and humidity monitor	1	\$224	\$224
Monnit cellular gateway	.5	\$249	\$124.5
Digital thermostat	1	\$83	\$83
Water pan gasket and auto-fill valve	1	\$35.7	\$35.7
Aluminum pan	1	\$27.94	\$27.94
Wiring hardware and materials	1	\$154.61	\$154.61
Grand total			\$2115.31



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Construction overview: the germination chamber is made of an untreated lumber frame with a plywood exterior and blue foam inside. All exposed wood on the inside was painted with leftover water resistant paint to slow rotting. The plants are placed in a pre-made shelving unit and the temperature/humidity control is located on the floor next to the shelving unit. The door is made of two pieces of blue foam held with wood. The unit is deep enough to accommodate flats length-wise with room for air exchange around the shelving unit—almost 48 inches.



This unit could be easily made to accommodate a variety of spaces, with the box consisting entirely of common lumber. The key technology features of this chamber are the temperature and humidity monitors, which allow the farmer to constantly monitor the chamber despite not living at the farm. Each chamber needs its own monitor, but the cellular relay which conveys information is shared by the two units.

This chamber was placed in the headhouse, but had to have new electrical lines brought to it from the box. This increased the cost of the unit, but placement in a temperature-moderated area brings down the long-term costs of operation and increases the convenience of the unit.

Key Suppliers for this Project:

- Monnit Greenhouse Monitors:
info@monnit.com, 1-801-561-5555
- Johnson Controls Digital Thermostat: Available through Amazon
- Metal shelving units: Wellmaster:
<http://www.wellmaster.ca/>