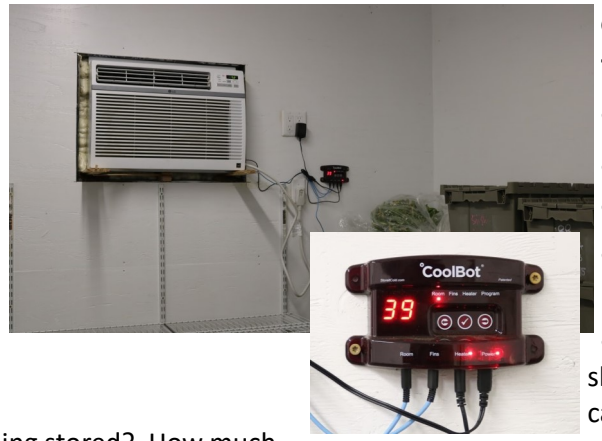
CoolBots ™: Inexpensive Cold Storage

Demand for on-farm cold storage of produce is increasing as local markets for these goods expand. Many local producers are asking about CoolBots™, a tool that works with a window air-conditioner to make a cooler out of an insulated space. This article collects information about CoolBots and highlights some considerations growers should be aware of.

Why use a CoolBot?

CoolBots cost less to install than a traditional refrigeration system. They can be installed by anyone with basic mechanical skills. The maintenance is also something that can be done by most people with basic skills.



In a nutshell

- Understand your storage needs;

  - How much of each crop is being stored? How much space is needed for each crop?

  - Target temperature and humidity for each crop or group (see USDA Handbook 66 and UVM Crop Storage Planner)

  - Cooler size (UVM Crop Storage Planner)

  - How often will you be opening the cooler door? How can you reduce that?

  - How will you remove field heat prior to storage?

- Build a good cooler box (room)
- Understand the limitations of the CoolBot
- Use a recommended AC unit of appropriate size
- Plan for maintenance (cleaning the air conditioner coil, off-season storage, protection from elements, clearing the drain pan and drain hole, etc.)

  - Maintenance and troubleshooting guides are available from storeitcold.com

Many vegetable farmers utilize Coolbots ($349), a controller that allows the AC unit to run with a lower temperature than normal, to simplify the refrigeration system of their walk-in coolers.

Store It Cold, the manufacturer, has a website with excellent resources and FAQ's, including a list of recommended AC units.

CoolBots are NOT recommended for:

- Rapidly cooling a product
- As a freezer – CoolBots perform best above 36 °F and will not go below 32 °F.
- Sites with many door openings per day (for example > 6 times per hour)
- Running through the winter – not a show stopper, but you need to be more careful about which AC unit you choose

Other things to be very aware of, according to the CoolBot controller manufacturer, include

- A well-constructed cooler box – Start with a well-insulated (>R24), well sealed (caulk and spray-foam everything, no gaps) cooler box. The University of Kentucky has an excellent set of documentation, and presentation for a low cost cooler design. North Carolina State University also has a fact sheet with guidance on cooler sizing and construction.
- A well-suited AC unit – avoid portable AC units. The AC unit will need to have a digital display and automatic restart.
- Cooling a space above 61 °F.

A NYSERDA report found that a cost estimate of the CoolBot system (15,000 BTU/hr) is $750 installed compared to $4,400 for a conventional system. The operating costs of a CoolBot system are comparable to traditional refrigeration system.

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An online version of this publication is available at go.uvm.edu/coolbot

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September 24 2020 —v 1.2