

**Crop Diversity in Winter Storage at Kilpatrick Family Farm**  
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Kilpatrick Family Farm is a year-round mixed vegetable farm. Our main markets are year round Farmer's Markets and CSA. Over the years, we have experimented with pushing the crops we go to see just what can be done. We run 5 distinct different environments for winter crops. This allows us to tailor the environment for the many different crops we grow.

Root cellar (34 degrees, 95% humidity) This is the main storage facility on the farm. A 40' X 8' x9' insulated overseas shipping container with stainless walls and aluminum slated floor, it holds up to 18,000 lbs of crop. We spent around \$15,000 buying the container, installing it on a shale pad, and installing refrigeration and electric. To maintain organization in the cooler, we put all crops on pallets, and fill out a grid chart that is shared with all employees. The cooling system is a 3 HP Trenton compressor with 2 evaporation units. If we had know we would have employed a low velocity evaporation unit to reduce moisture loss. Right now our humidity system is "man with hose" but we would like to install a misting system at some time.

Our warm storage area is an unused, insulated garage under our apartment. It has a cement floor that allows us to move stacks of bulk crates of squash and sweet potatoes around with a pallet jack. We regulate the humidity and temperature very unconventionally through opening and closing an inside door or outside window. Our goal is to maintain a temp of 55 in this area.

We store our onions and garlic currently off-farm in a rented 8x14 cooler. It is managed as a low humidity cooler by draining all evaporator drainage into a closed container and limiting visits. We are currently building our own onion storage facility by walling off a section of another insulated shipping container and installing a coolbot.

All of our prepped crops and second vegetable storage is in 2 coolers located in our washing shed. We will also store extra storage greens (greens cut in Nov/Dec and stored for up to 8 wks) in these coolers when we run out of space in our root cellar. We built our main cooler (8X11) out of used cooler panels and a used compressor. We added onto the backside of it 4 years ago for the second cooler (8X8) buying some "second" insulated structural panels from winter panel company out of Brattleburo, VT. They come in 4' widths in varying lengths and at the time ran around \$2 a square foot. We cut 2 12" by 6" holes in the shared wall between the coolers and consequently the new cooler runs around 10 degrees warmer than whatever we set the main cooler at. We use the second cooler in the summer for storing tomatoes, peppers, and cukes.

The last area we use to store overwintered crop is directly in the ground. We have successfully over-wintered parsnips, carrots and Jerusalem artichokes this way. Carrots do best with at least 2 layers of rowcover, while JA's and Parsnips are fine with no cover. All of these crops do best when they are on raised beds, out of any danger having saturated soil. Last year, we did have quite the problem with carrot rust fly in our over-wintered carrots and parsnips. We're not sure if it was overwintering that did it, or just the season.

Storing greens was something that we almost discovered by accident. We had several beds of beautiful spinach in the field in December and cut it all to use for the next several markets. We ended up keeping some for 6 weeks. We have found a variety of factors contribute to greens that store well.

A later, high quality planting. This allows for the crop to be in the prime of growth and to want to hunker down and go into hibernation for the winter. They then seem to fill their leaves with sugars, antifreeze, and carbohydrates and thus produce a very sweet, long lasting, durable leaf.

Cutting at a low temperature and immediately getting it into good cold (34) storage. We do find that if spinach has some snow in it, it seems to keep better. We have successfully done this with spinach, lettuce, kale, brussel sprouts, Chinese cabbage, boc choy, hakuri turnips with greens, and mesclun.

We will be trying this with mache, and working to improve our system with the other greens this year. This technique allows us to bunch our greenhouse greens up for the really cold months of January-March and allows us to sell high quality, sweet, relatively inexpensive to produce, greens for the high paced, busy, Holiday markets.

Without the storage facilities we have made the effort to perfect we wouldn't have anywhere close to the diversity that we are able to display at our weekly markets. Please follow the below URL or scan the QR code to access the custom resource page which has much more information on varieties, dates of planting and harvesting, storage, the presentation slides and other relevant resources.

[www.kilpatrickfamilyfarm.com/NEVF](http://www.kilpatrickfamilyfarm.com/NEVF)

