

## Harvest, Handling and Storage at Nature's Route Farm

Kent Coates  
Nature's Route Farm  
785 Route 16  
Point de Bute, NB E4L 2P1  
CANADA  
[kentcoates@naturesroutefarm.ca](mailto:kentcoates@naturesroutefarm.ca)

### Introduction

History. In 2007 Nature's Route Farm started with 28 CSA members who all got the same "easy to grow" vegetables every week from July until March. In 2015 Nature's Route Farm offered a CSA from July until November for over 300 people and does two farmers' markets all year long. We only sell what we grow ourselves.

In 2012 we decided to focus on storage crops for several reasons:

- a. Opportunity. There was limited supply of locally produced crops during the winter and spring months;
- b. Sign Up All Year. By maintaining presence at the markets all year long we maintained and grew our customer base and were able to promote our CSA baskets all year long;
- c. Carrots. Our regional climate/soil enabled us to grow high quality carrots and customers really like them;
- d. Personal Interest. Mechanically inclined and enjoy growing heavy crops; and
- e. Winter is Long. There are a lot more weeks during the winter and spring than there are during the growing season!

Winter market sales have grown and February sales (\$14,400 in 5 markets) are typically similar to August sales (\$14,500 in 5 markets)!!!

### Two-Pronged Harvest

Growing Season Harvest. Throughout the season we harvest approximately 3-5 days per week. We cluster our CSA pick-ups on Tuesday and Wednesday to enable us to harvest larger volumes at once and reduce the amount of task changes the crew undergoes throughout the day. We do 3 pick-ups in parking lots of approximately 100 people each. Harvesting during the summer season is mostly done with ship'n'shore fish tote boxes and wheelbarrows. Larger volumes and heavier crops are picked up with a tractor and trailer. Vegetables are prioritized by susceptibility to heat and are harvested as early in the day as possible then hydro-cooled / washed as quickly as we can. Pallet loads of veggies are then placed in the cooler. Refrigerated vehicles will help with this in the future as we will be able to load directly from the wash station.

Storage Crops. We grow a wide variety of storage vegetables and in 2014 we stored over 200,000 lbs of crops for winter and spring sales. Storage crops are harvested by hand. Carrots, beets, parsnips are picked into woven bags (2x5gal bucket per bag). Potatoes, cabbage, kohlrabi and rutabaga are picked into large tote bags (up to 3000lbs). Onions are picked into pallet totes.

Our quest to have the best at storage crops and provide customers with 52 week/per year service led us to expand our cold storage significantly over the last few years.

## **Infrastructure**

2007-2011 – 2 cold rooms in basement with fresh air fan that was turned on during colder nights enabled us to store up to 30,000lbs of mostly carrots and potatoes. Everything was stored in ship'n'shore fish totes, washed with a pressure washer in a tub of water outside all winter long. Very little mechanization. Wheelbarrows and lifting were the main way vegetables were moved around. Vegetables were delivered in a pop-up trailer that we towed with an old VW.

2011 - insulated and installed a coolbot in a 5ftx8ft trailer. This trailer has worked incredibly well and is still used today. Up to 3000lbs of root crops fit into this trailer which was used behind a car for 3 years before upgrading to a sprinter van. We now have a cooled 16ft 3 ton truck too.

2012 – basement cold rooms + 16ft truck box with coolbot. Still washed all winter veggies outside all winter with pressure washer. In the summer of 2012 we built our first dedicated vegetable building. 82x28 ft R30 building with 32ft semi trailer cooler.

2013 – 112ftx44ft R30 building with two 53ft semi trailer coolers. Loader tractor with pallet forks added in spring of 2013 and forklift added in December 2013.

## **Quality, Quality, Quality**

To maintain quality of carrots and potatoes into July and even August (Rutabaga into October of 2015) we control temperature with walk in cooler systems and humidity by using woven 50-80lb polypropylene bags. Larger bulk bags that are vented (built for potatoes) are also used.

## **Our Buildings:**

Both buildings were built with a large vegetable room, one for washing and one for dry handling. There is a smaller room on the end of each building where all of the waste heat is dumped from the coolers. One is the workshop and one is the lunch room. The buildings are built to put greenhouses on the end as well. Currently there is only one greenhouse (27x95ft) on the end of the first building.

Both buildings are built the same way, on a concrete pad with a thickened edge and 6in concrete curb under the walls. 2x6 construction, 17ft tall main room with wet (sticky) cellulose insulation and food grade steel on the inside. Building very rarely freeze and stay between 32degF and 41degF for December until the end of March.

We poured concrete between buildings to enable us to forklift and pallet jack product from one barn to the other.

Things we learned: Concrete contractors will never get the job exactly like you want. Design for this. Make sure man-doors are brought up on top of a curb as they always have water under them in the wash barn and will eventually rot. Build big the first time if you can! Insulate the floor (below concrete) if you can to provide the best flexibility going forward. Know and understand what you want and do as much as you can. Hire the best contractor possible. Remember, you are the one that has to live with the building when it is done, not them.

## Why?

1. Walk-in coolers were expensive and once installed limit the use of our farm for prospective buyers.
2. Semi trailers are very modular. We can add or subtract coolers as required. They are cheap, easy to dispose of and do not conduct cold into the floor. Without a footing (just a concrete pad) I wanted to avoid driving the frost into the floor which could be significant during winter if the cooler is being held at zero all year long. T
3. The buildings are built with lots of doors to make moving product easier and provide ultimate flexibility if the buildings are ever repurposed.
4. The buildings are built in dimensions that would be convenient for other uses including as a shop for highway trucks and trailers.
5. Ceiling height was maximized for more space and forklift operation. All doors were made large enough for semi trailers.
6. We installed water cooled walk-in cooling systems on the two larger trailers. This lets us move the heat to wherever we want it and it is tied into the hydronic system which heats the workshop and will (eventually) heat the house. In retrospect, this system is interesting and innovative but is not off the shelf and requires some babysitting.

### Semi-Trailer Pros

Modular – can add or subtract cooling easily  
-separates vapours and temperature zones easily  
Initial Cost – low purchase cost  
Keeps frost out of floor  
Fast and easy set up  
Can fill them before building was completed  
Storage space underneath?  
Mezzanine on top?  
Easy to decommission

### Semi-Trailer Cons

Loading (requires forklift)  
Packing and Access (narrow)  
Wasted space above and below  
R Value

### Cost (Cdn \$)

Building: 60x28x15 + 22x28x11 R30, finished in steel inside and out including septic waste water system, water, and electricity. \$120,000 (\$52.25/sqft)

Cooler 32x8ftx8ft - \$2500 +\$7000 cooling system (\$4.64 / cuft)

Building 82x44x17 + 30x44x13 R30, finished inside and out with steel, including 3 phase power, water, drains. \$250,000 (\$50.75/sqft)

Coolers 2 x (53x8ftx8ft) = \$3000+\$11,000 cooling system (\$4.13 / cuft)

Do It Again? Start with small cooler trailer. Ensure vehicles are cooled to eliminate extra handling. Move to pallets sooner and build BIG the first time.