

# Carrots



**FAIRSHARE**  
CSA COALITION

**Laura Mortimore**  
Orange Cat Community Farm

**Steve Pincus**  
Tipi Produce

**Dan Fillius**  
Featherstone Fruits and Vegetables

Location	Reedsburg, WI	Evansville Wis.	Rushford, MN
Acres in vegetables	3	40-43	130
Acres in Carrots	.2 acres	5+	8.7
How these tasks are done for Carrots			
field prep/tillage	with a tractor	with a tractor	with a tractor
creating stale beds	do not do this task for carrots	with a tractor	with a tractor
direct seeding	by hand	with a tractor	with a tractor
cultivating	by hand	with a tractor	with a tractor
spreading amendments	by hand	with a tractor	with a tractor
laying irrigation lines	by hand	by hand	by hand
spraying for pests or diseases	do not do this task for carrots	with a tractor	do not do this task for carrots
harvesting	with a tractor	with a tractor	with a tractor
topping	by hand	with a tractor	with a tractor
bagging	by hand	by hand	by hand
incorporating residues	with a tractor	with a tractor	with a tractor
farming style	certified organic	certified organic	certified organic

## Varieties & Schedule

SPRING Varieties	Nelson: pro - early; con - no longer available Yaya: similar to Nelson	For July harvest- Nelson, Romance	Nelson, Yaya
SUMMER Varieties	Purple Haze: pros - excellent carrot flavor; cons - tops not as disease resistant Bolero Romance	For early fall harvest- Nectar, Negovia	
STORAGE Varieties	Bolero: pros - very strong tops, disease resistant, excellent sweet flavor, stores all winter in the cooler	Bolero, mostly; we're always trialing varieties. Purple 68 has good looks and taste, but is not a good grower. We are not settled on a yellow cultivar.	Bolero is the unmatched standard for flavor, storability and appearance. One year while working at Michigan State University's Student Organic Farm I used Hercules when Bolero was not available. It was delicious, good sized and kept well. It was not as attractively shaped as Bolero.

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**Featherstone Fruits and Vegetables**

Planting Schedule	<p>I do four plantings of carrots.                  First planting: as soon as I can in the spring (approx. 2nd week of April); variety Nelson                  Second planting: three weeks later; varieties Purple Haze and Romance                  Third planting: 4th week of May; variety Bolero                  Fourth planting: 3rd week of June up to the 1st week of July; variety Bolero; large planting for winter storage carrots</p>	<p>Early April-1/4 acre; late April/early May-1/4 acre. Then wait until 3rd week in June- 2/3 acre. Usually four July plantings, from 7/1 to 7/20, of late fall and storage carrots; about 4 acres.</p>	<p>Spring carrots are seeded in early May after a round or two of stale bedding.                  Our goal is to start seeding storage carrots around the summer solstice and seed 3-4 successions each 5-7 days apart. This gives sufficient time in between each succession to flame weed and get the propane tank refilled for the next flaming.</p>
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**Field Prep**

Preceding Cash Crop	<p>For the first two carrot plantings the preceding cash crop is a long-term, mulched summer crop such as tomatoes and peppers. This is because the ground is ready to work early in the spring and the weed pressure should be low. Fall carrots are planted after incorporating an overwintering vetch or clover cover crop.</p>	<p>No fixed rotation; often brassicas, corn, peppers, tomatoes the previous year. We often double crop a late July planting after peas, lettuce.</p>	<p>Our rotation is not set 100% yet. As we move from rented fields to fields we own, we are solidifying a rotation. Generally it is either cover crop, brassica, or cucurbit/solanum ahead of the carrots. Ideally I would want brassicas to be ahead of the carrots since we have better weed control in brassicas.</p>
Preceding Cover Crop	<p>My general rotation is one year summer crops, one year spring crops, two years nitrogen fixing perennial cover crop. In 2016 I added a bare fallow/quack grass control to the second year of cover cropping followed by a late summer planting of overwintering vetch.</p>	<p>Often, a rye/hairy vetch cc. Sometimes, a spring planted cc of oats alone or with peas, chickling vetch.</p>	<p>Either fall seeded rye/vetch or spring seeded oats/peas</p>
Soil Amendments	<p>To all carrot plantings at the time of seeding I apply:                  Midwest BioAg Veggie Plus at 300 lbs/A                  Midwest BioAg Veggie NKO at 200 lbs/A                   I have used composted poultry manure at 1000 lbs/A if the preceding cover crop did not happen as planned.</p>	<p>Rarely fertilize before planting</p>	<p>Midwest BioAg General Blend: Analysis=1-2-6-4S. 300# per acre applied as beds are being shaped                   Chick Magic: Analysis=5-3-2-7Ca 2000# per acre applied in spring before beds are shaped</p>

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**Featherstone Fruits and Vegetables**

<p>Bed Prep</p>	<p>I use my Kubota B3200 with a 60" Land Pride rototiller to prep the bed. The seeder works best and the carrots germinate well when the soil works up evenly without clods.                  Step 1: walk the bed and spread the fertilizer                  Step 2: rototill                  Step 3: if needed, walk the bed with a garden rake smoothing any lumps and bumps to leave a nice, even surface for seeding</p>	<p>Big rye/vetch cc are chopped, moldboard plowed, then rotovated, finished with Perfecta field cultivator and packing roller; sometimes chopped, disced, rotovated and so on. Smaller cc may be chisel plowed, rotovated, Perfecta + roller.</p>	<p><b>4-5 weeks Before Seeding:</b> Mow down cover crop (preferably with flail mower. If brush hog is used, an additional discing is done before chiseling)  <b>3-4 weeks B.Seed:</b> Chisel Plow field perpendicular to orientation of beds  <b>3 weeks B.seed:</b> Disc/Finish disc field depending on level of vegetation or if many clumps exist  <b>2.5-3 weeks B.seed:</b> Create beds using Rainflo 2600 bed shaper. Rotovate tops of beds to create better texture and widen bed tops to ~40"  <b>0-2.5 weeks B.seed:</b> Stale Bed (see below)</p>
<p>Stale Beds</p>	<p>none</p>	<p>We try to prepare fields 2 weeks ahead of planting, to get weeds germinating. We always need a light tillage right before planting to make a fine seedbed.</p>	<p>We make 3-4 passes over each bed. We use a belly mounted Budding Basket Weeder (lacking gaps for plant rows), and alternate 3pt mounted Lely tine weeder and wheel track shovel clean outs. Most seeding passes include the basket on the belly cultivating while seeding happens.</p>
<p>Notes on Field Prep</p>		<p>With our sandy loam soils, we don't use raised beds.</p>	<p>We chisel plowed perpendicularly to our bed orientation in 2016 in an attempt to solve a problem with beds not being parallel. Tractor tires would fall into the chisel ruts and make it difficult to control where beds were being made in 2015. It was a good solution!</p>

**Seeding**

<p>Bed Width</p>	<p>Carrots are planted in mini beds so that I can drive my small tractor over them at harvest. 18" bed top with 2' path</p>	<p>6 ft</p>	<p>5.75' wide on center. However we utilize every tenth bed as a permanent irrigation bed - add that into the equation and our average bed width is 6.4' wide on center.</p>
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**Featherstone Fruits and Vegetables**

Spacing	<p>Field carrots: 2 double rows, 18" apart seeded with the carrot plate on the Earthway seeder. Thin to 1.5-2".</p> <p>For the double row I make a pass with the earthway seeder and then make a second pass right next to the first to create a wider band of seeds.</p>	<p>3 rows per bed, 18" apart. 20-24 seeds/ft. Goal is 8-10 carrots/ft.</p>	<p>We plant our first 2 successions in 3 rows each 15" apart. We plant our 3rd and 4th successions in 2 rows, 30" apart. The later ones have fewer rows so the soil can dry faster in years with a wet fall. That makes our mechanical harvest easier and leads to less cleaning in the end.</p> <p>In row spacing: we aim for around 20 carrots per row foot.</p>
Seeding Process	<p>After the bed is prepped I set a 100' string to mark the first row. I push the earthway seeder next to the string and use the rowmarker to mark the second row 16" away. The seeder is set to a depth of 1/8". I always use a string to set the first row of each mini bed.</p>	<p>We use raw seed with a 3 row Mattermacc vacuum seeder. 20-25 psi vacuum, 2.5-3.0 knocker setting, 0.8 x 196 hole plates, 1.5-2 mph. Plant about 1/2" deep</p>	<p>Our seeding tractor is a Farmall Super C. We use 3 Planet Jr. seeders ganged together attached to the rear 3-pt. We use pelleted seed only. We keep a 6 foot fiberglass fence post lodged on the implement to poke jams and soil clumps with from the operators seat!</p>
Water at Seeding	<p>One line of drip tape is laid out between the two rows of carrots and left on until the seeded rows are moist. Sometimes this may not happen until the following day.</p>	<p>Sprinkler or traveling gun irrigation soon after planting, if needed.</p>	<p>If it has not rained by the next day, we will water in our plantings with a few hours of overhead sprinkler irrigation.</p>
Row Cover	<p>none</p>	<p>Not used. Carrots germinate fine in cold soils, row covers create weed problems.</p>	<p>None used</p>
Germination	<p>I prepare an even bed, plant shallowly and maintain even moisture. I used to set the drip tape directly on top of the seeded rows, but it would get too wet around the emitter and I would get uneven germination. It works better to wet the soil near the row and let the moisture wick into the row of seeded carrots.</p>	<p>We keep summer plantings moderately moist for 12 days after planting, with sprinkler irrigation every day if needed, or rain. Drip tapes work fine, too.</p>	<p>We maintain moisture in the surface of the soil until germination by irrigating when needed.</p>
Thinning	<p>I thin my carrots. It goes along with hand weeding them. No special tools. Just get down on all fours and use your thumb and forefinger. I aim for a 1.5-2" final spacing.</p> <p>I have a goal to reduce the time spent thinning carrots. I purchased a Jang precision seeder to help achieve this, but don't have enough experience using it to offer input on it.</p>	<p>No farmer can afford to thin carrots- meter seeds for a proper stand. Final plant population per row ft is a major factor in growing good commercial carrots.</p>	<p>We do not thin. If a stand is too thick or too thin we will till it in right away and reseed. We did so with 2 acres this year that were too thin - very sad!</p>

**Crop Maintenance**

Irrigation	Drip irrigation. One line of drip tape is laid out between the two rows of carrots and irrigated twice a week if no rain for 8 hour shifts.	Important to keep fields adequately moist during 4 weeks after planting, during taproot elongation. After that, irrigate as needed- our soils need about 4-6" water/month for best growth.	We use solid set aluminum irrigation pipe. 6" diameter pipe runs from the pump/well and that feeds 3" sprinkler pipe with risers.  We aim for 1.5" of rain/water on our carrots each week until a couple weeks before harvest. We supplement accordingly. We monitor rainfall with a \$5 plastic rain gauge.
Irrigation Modifications	I stop irrigating my carrots altogether a few weeks before harvest. Once the canopy closes on the bed, the soil does not thoroughly dry out and irrigation or too much rain results in rot and difficult harvest conditions.	Drier soils during middle stage of growth encourages longer roots. We want soils fairly dry during harvest- not fully dry.	We increase the amount to ~2" of water if it is hot and the carrots are sizing up.
Supplemental Fertility	none	We broadcast 800-1000 lbs/A of Ohio Earth Food's Re-vita Pro (5-4-5 + 9% Ca) about 6 weeks after planting, before a cultivation. Have also used soybean meal at same rate.	In 2016 we grew carrots in a sandy field. We side dressed the carrots just after hand weeding with 300#/acre Midwest BioAg General Blend. We applied it with a 3-pt mounted whirlybird spreader.
Insects	I used to have a problem with carrot fly larvae damage but not in the past three or four years. If I notice any damage whatsoever, I get the carrots out of the ground promptly before more larvae can migrate into the roots.  Voles can cause quite a bit of gnawing damage to the top of exposed roots. No great solution for this, but I make sure to get them all out of the ground as soon as possible to prevent further damage.	Leafhoppers spread aster yellows	Ants in the sandy soil this year chewed off the carrots at the 3-4 true leaf stage. Not a huge issue, only in isolated areas.

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**Tipi Produce**

**Featherstone Fruits and Vegetables**

Diseases	<p>In the field I have mostly encountered crown rot as a significant disease problem. Once I began cutting back on my irrigation on the later part of the crop, I have not had a significant issue with this. Also, prompt harvest at first notice of disease has helped. Except of course the fall of 2016 when it never stopped raining.</p>	<p>Alternaria is main issue in spring plantings. Bolero is quite tolerant.</p>	<p>No major problems. In 2015 we had alternaria in our 3-row carrots, which I attribute to poorer airflow (seeded thickly and more rows per bed). We harvested these early enough that the tops were able to be grabbed by the harvester still.</p>
Weeding	<p>I make an effort to plant my carrots in a low weed pressure area. Foxtail grass is a problem at my farm and it will swallow up the carrots if the pressure is high.          First weeding happens when weeds are about half an inch high and the germinated row of carrots is large enough to discern. A wheel hoe is used in the pathways and a stirrup hoe is used between the rows.          Second weeding is a hand weeding/thinning and happens maybe a week or two later when the first true leaves of the carrots are visible so the workers can discern the carrots from the weeds. Only hands used here.          In the spring plantings there may need to be a second wheel hoeing. The fall plantings usually have lower weed pressure and do not require a second wheel hoeing.          All plantings get spot hand-weeded a couple more times before being harvested. This usually happens on a wet day when other weeding cannot occur.</p>	<p>Flame beds 6 days after planting (or after 1st irrigation) in summer, wait longer in spring; cultivate using Kult-Kress Duo as soon as rows are visible from tractor seat; repeat cultivation in 7-10 days; thoroughly hand weed using small hand hoes; cultivate with larger Super-C sweeps and maybe shields; pull weeds missed in 1st hand weeding and continue cultivating as needed. I like to hill the carrot crowns slightly-prevents greening, smothers small late weeds, and adds cold protection in late plantings.</p>	<p>Stale bedding does the majority of the weed management. That said, we do hand weed in-row weeds in every row foot of carrots (in 2016 that was 157,000 row feet or 29.75 miles!) Just before emergence, we flame weed every bed of carrots with a tractor mounted, 4 torch unit mounted on a Ford 1710 cultivating tractor. After emergence we use a Budding Basket weeder to knock down between-row weeds at the white thread stage. This is done 1-2 times, and can include either the Lely tine weeder or the 3-pt wheel track shovels depending on the situation.          Hand Weeding comes next and is usually with a large team of up to 25 for several days. Finally we use a 4 shovel set up (~6" shovels) to tackle remaining between row weeds and hill slightly to bury remaining in-row weeds.</p>
Notes on Crop Maintenance		<p>Rows of short misshapen forked roots can be caused by tractor wheel soil compaction during tillage. Best balance of yield and quality occurs when root tips (of Nantes types) have rounded (good stubbing).</p>	

**Harvest and Yields**

<p>Harvest Window</p>	<p>Carrots are harvested when I stick a fork in the row and see that they look nice and big- maybe an inch thick in the spring and a little fatter than that in the fall. When harvesting, the entire planting gets dug and stored in the cooler.</p>	<p>We like to start harvest when carrots are close to mature, for best yields. April seedings are harvested mid-July to early August. Harvest from a June 15-20 seeding starts Sept. 20-25, July seedings harvested from mid-October to mid-November.</p>	<p>We need to harvest our carrots before a hard frost weakens the tops. This is ideally mid September through mid October. Late seeding the last 2 years has pushed this to mid October through early November. Thankfully we had late frosts both years!</p>
<p>Harvest Procedure</p>	<p>Carrots get harvested when there is a big crew to help with the job. A homemade undercutter is used with my kubota B3200 to loosen the carrots. If soil conditions are dry enough the carrots then easily pull out of the ground by their tops. This is ideal. If conditions are too wet from rain, a digging fork is used to pop them out of the ground--using the fork is much, much easier after the undercutter has loosened the carrots! Carrots with their tops are neatly piled next to the row. Crew members snap the tops off the carrots by hand and place them directly into a plastic lined black bulb crate.</p>	<p>Carrots are 100% machine harvested, one row at a time. Our older harvester, used since 1998, is a 1954 Scott-Viner, modified to pull directly behind a tractor (50-65 hp) straddling a full 3-row bed. Roots are caught in plastic crates (1.7 bu) on a platform attached behind the harvester. This old machine can harvest individual rows in the middle of a field. We have changed the main drive sprocket to slow this harvester by about 30%, so that we can drive 30% slower. In 2015, we bought a used 2007 model DeWulf tractor-mounted harvester. This is a major upgrade, with many advanced features. But it cost almost \$30,000, including shipping from Sweden, and requires a 100 hp tractor. Because the pick-up head is mounted on the side of the tractor, we can only harvest from the outside rows of a field, spiraling into the middle. This machine can carry three 18 bu bulk bins, which lets us harvest a full 620' row without stopping.</p>	<p>We use a 50s era Scott Vine Harvester. It is PTO powered and we pull it with a John Deere 4020 running at around 1,100 RPM. We run a International Hydro 70 tractor alongside this pulling a wagon loaded with 4 pallet bins (preferably plastic). One person rides the Harvester and steers the intake snouts so they are always centered on the carrot row. One person rides on the harvest wagon and gently deflects the carrots falling from the elevator into a bin using a waxed produce box. When not deflected, the first 1/8th -1/4 of a bin worth of carrots are at risk of breaking from the impact. This person also picks out greens when they enter. A fifth person is waiting in a truck with a replacement trailer full of bins. After one trailer is full and the replacement trailer is swapped out, the truck driver drives the full trailer back to the warehouse and unloads it and picks up a new trailer/new bins. Morning harvests have wet foliage, but we usually harvest anyway without problems. When mornings are frosty, we wait to harvest until after the frost has melted since the leaves stand upright more once thawed.</p>

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**Featherstone Fruits and Vegetables**

Grading	Carrots with large splits and rot are left in the field at harvest time. Carrots smaller than your pinky are also left in the field. More diseased carrots may be culled when washing. Otherwise, I do not grade my carrots.		Straight unforked carrots 6-9" long are #1s. These are packed straight off the wash line into 5/9 bushel waxed boxes lined with a plastic liner bag. All other carrots go into a pallet bin to dry and be sorted/packed into 2# or 5# bags and bulk juicing carrots. Carrots that are very large or severely forked or are very broken but not tiny end up in the juicing carrot boxes.
BULK Topping	By hand in the field. They snap off easily.	Topped in the field by the harvester	The Scott Vine Harvester we harvest with shears off the tops. We aim to leave a stub of greens around an inch long.
BULK Cleaning	<p>I use an old maytag wringer/washing machine to wash carrots.</p> <p>Dump in about 70 lbs of carrots and fill with water.</p> <p>Agitate for around two minutes.</p> <p>Drain muddy water and rinse with a little clean water.</p> <p>Fill with clean water and scoop out the clean carrots by hand into an empty, unlined black crate.</p> <p>Let excess water drain off and dump the carrots into a perforated plastic lined crate.</p> <p>Stack in the cooler.</p> <p>One person can wash at least 300 lbs an hour.</p>	<p>We tip our wooden storage bins onto a concrete floor, shovel the carrots onto an inclined conveyer, which drops then onto another conveyer, which lifts them into a 3' x 8' barrel washer. The conveyers sift out a lot of loose dirt. We've replaced the wood slats on the washer with perforated stainless steel. Carrots get a final spray when they exit the washer, then are graded on a stainless tray, a one or two person job.</p>	<p>We store carrots dirty. Each week through the winter we wash the bins of carrots we need to fill the estimated orders for the week.</p> <p>All carrots are washed in a vegetable brush washer. We station a bin of dirty carrots at the entrance to the brush washer and begin by hosing dirt off the top layer of carrots using a 2" hose fitted with a self-made spray nozzle. We throw handfuls of sprayed off carrots onto the conveyor. The brushes inside the line are lowered all the way down. Mostly clean carrots emerge out the other side, where one more person sprays off any remaining mud using a garden hose and spray nozzle (5% or less of the carrots). If packing bulk carrots, the carrots dispense onto a circular sorting table where 2-3 people pack #1 carrots and brush all others into a bin to pack into cello bags later in the week. If not packing bulk #1s, the carrots go directly into a pallet bin. The pallet bins full of wet carrots go into a walk-in cooler uncovered to dry off overnight. Once dry they are covered with a plastic bag bin cover and secured with a large rubber band.</p>

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BULK Packing	Nothing special. They get bagged into plastic bags for CSA deliveries and wholesale orders	We use old-fashioned tip scales to measure 5 lb bags: 8x4x18" 1.5 or 2 mil gusseted clear not perforated. Label is a slip of paper inside the bag. Close with a 4" twist tie. Pack 10 bags/greens box for wholesale. Also sell 25 lb retail juice grade in 20x30" 2 mil poly bag, inside label printed on a 4x6 card.	Using a bin dumper, we dump bins of washed dry carrots onto a circular sorting table. From there we station up to 2 people on each side of the table packing bags. We have 1-2 scales set up with a person at each scale weighing each bag, sealing bags with tape and loading waxed cabbage boxes with packed bags.
BULK Storage	Dirty carrots in plastic lined crates go from the field directly into the cooler. Dirty carrots from the cooler are washed as needed- about one month's supply at a time. Clean carrots go back in the cooler in plastic lined crates. I perforated the bottom of the crate liners with a knife to prevent water pooling. Cooler is kept at 35 degrees.	We use farm-made 18 bu wood bins, built of plywood and 2x6's on a 40x48" hardwood skid (no bottom boards). Also 12 bu bins, made of plywood, 2x4's and 1x8's. Stored as close to 32F as possible. If stored in humid cooler, we pull a poly pallet cover over each bin. If stored in drier conditions (our reefer semi-trailer or commercial cold storage), we line each bin with a pallet cover bag and tie it tight at the top.	We store bins of dirty and clean bulk carrots at 34F covered with plastic bag bin covers, secured with rubber bands. We also store boxes of bagged carrots awaiting delivery in these same coolers.
BULK Length of Storage	7 months	We sold out of our 2015 fall harvest during the last week of April 2016.	We notice some sprouting in March, quality begins to decrease from there. We saved carrots until June to put in our first CSA boxes last year. There was a fair amount of loss by storing this long.
GREEN TOP Bunching	none	do not bunch carrots	We dig the carrots with either digging forks or with a rainflo plastic mulch lifting implement. We bunch and place bunches of dirty carrots into a pallet bin. We do this only once or twice each year exclusively for CSA shares. We shoot for 1 pound bunches.
GREEN TOP Cleaning			We take dirty carrot bunches from a pallet bin and place them onto a table, spray them off with a spray nozzle attached to a garden hose. Clean bunches go into a clean bin at the other end of the table.
GREEN TOP Packing			We pack these carrots into CSA shares packed in waxed boxes.

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GREEN TOP Storage			We use plastic pallet bins to store these between cleaning and packing into CSA boxes. These are stored in a 34F cooler with a plastic bag bin cover.
GREEN TOP Length of Storage			We hold these for no more than two days before packing into CSA shares on a Tuesday. Once packed, the CSA shares are delivered to the customer on a Wednesday or Thursday.
Yields	1.5 lbs per row foot	For fall storage harvest we expect 1.3-1.5 lbs saleable carrots/row ft; 25-30,000 lbs/acre. Good fields can yield more. Summer harvest, maybe 1-1.3 lbs/row ft.	We get around 1.15 pounds of marketable carrots per row foot.
Notes on Harvest & Yield			We have found that a barrel washer cannot wash the volume of carrots we sell in a week.

**Equipment**

Overall Equipment	<p>homemade undercutter: \$250                  maytag washer: used \$50                  digging fork: new \$75                  wheel hoe: new \$300                  stirrup hoe: new \$70                  Kubota B3200: new \$18,000</p>		<p>Scott Vine Harvester:\$10-12,000                  Budding Baskets: \$2,000                  Kubota L245H: \$11,000                  Ford 1700: \$10,000                  Vegetable Brush Washer: \$4,000?                  Circular Sorting Table: \$900                  Bin Dumper: \$4,000                  Flame Weeder: \$3,500+                  Lely Tine weeder: \$1,800-3,200                  Rainflo 2600 Bed Shaper with Fertility Hopper: \$6,250                  Rainflo 1800 Plastic Bed Lifter: \$1,950                  We get most of our equipment from Roeter's Farm Equipment in MI</p>
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Equipment Priorities	The tractor and undercutter have the largest positive impact on the profitability of my carrot crop. I used to fork everything by hand and the labor to do so is just unreasonable.	Harvester- the largest time and effort saver. 3-row Matternach seeder- a full well-spaced stand is the beginning of a profitable crop. Enough sprinkler irrigation- essential for ensuring that full stand during July.	Scott Vine Harvester - harvests 1 bin per person hour Bin Dumper - prevents packers from bending over a bin to pack bags Vegetable Brush Washer - cleans carrots quickly and cleans enough volume Budding Basket Finisher - removes lots of weeds, minimizing hand-weeding
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**Marketing**

Markets	CSA, farmers market, direct to grocery	CSA, direct to grocery, wholesale through a distributor	CSA, direct to grocery, wholesale through a distributor
CSA	1.5 - 2 lbs of topped carrots per delivery. Once the carrots start, members get two weeks with carrots, one week without for a total of 10 deliveries.	During a 25 week season, members get 7,8, or 9 2 lb bags of carrots.	1 pound bunches 2x, 3-5 pound bags 15 times
Farmers Market Prices	\$1.75/lb for all topped carrots		
Direct to Grocery Prices	\$1.45/lb topped and bagged in 2 or 5 pound bags	Bulk #1 grade = \$1.00/lb. 5 lb bags = \$4.80 each. Retail juice grade (mostly broken pieces) = \$14.00/25 lbs. Juice bar grade (usually larger, rougher) = 86¢/lb. Scraps go to local farmers in trade for eggs, meat.	10x5# bag = \$67.50 24x2# bag = \$64.80 25 pound #1 bulk = \$35 25 pound Juicing bulk = \$17
Direct to Restaurant Prices			
Wholesale Prices to Distributor		Same price as to grocery, but we pay freight.	10x5# bag = \$54.50 24x2# bag = \$53.14 25 pound #1 bulk = \$28.70 25 pound Juicing bulk = \$13.95
Other Outlets			We will be selling up to 12,000 pounds of carrots that would otherwise be waste to a processor in Iowa for \$0.17 a pound