

2015 Baby Carrot Cultivar Trial

The project was conducted by the Vegetable Crops Research Program at the University of Saskatchewan in co-operation with the Sask-Fresh Initiative.

The objective of the project was to assess the quality of the “baby” carrot cultivars available to local growers. The cultivars tested were limited to types identified as being suited for the production of “baby” carrots in the seed catalogues/websites consulted.

The cultivars tested were: **Babette (Renee’s Garden), Coreless Amsterdam (Stokes), Little Fingers (West Coasts Seeds), Mokum (Johnny’s and Norseco), Nantes Coreless (West Coast Seeds), Mignon (West Coast seeds) and Texto (Vilmorin)**

The 2015 baby carrot trial was conducted on a sandy loam field provided by the Animal Science Dept. at the U of S. For the past decade this field has been planted to barley which is cut mid-season as green silage. The fields have been heavily manured – resulting in very high levels of available P and K – as well as a huge reservoir of weed seeds. The site has no wind breaks. Irrigation is provided by a wheel move system.

Timeline for the 2015 Carrot Crop

Mid-May – N levels in the field area were raised to 175 # N/a by broadcasting 46-0-0. The fertilizer was incorporated by double disking. However the discer only penetrated to 15 cm – and there was a definite hard-pan below the disced layer

2nd week of May – raised beds were created to provide a deeper root zone. The beds were spaced 1m apart. Each bed was ca 40 cm wide at the base and 20 cm wide at the top. The top of the bed was leveled and packed as part of the bed-forming step.

2nd week of May – in order to capitalize on available soil moisture, the plot area was seeded the day after the beds were formed. A push-type Jang seeder was used. Seeding went well. Each cultivar was seeded in twin 4 m long rows – with the twin rows spaced ca. 15 cm apart on the top of each bed. Each cultivar was planted in three replicated blocks.

3rd week May – hot, dry and windy. Beds were drying out.

4th week May – Soil is v. dry. Zero crop emergence. Some weeds emerging.

1st week June – Soil is v. dry. Zero crop emergence. Some weeds emerging. Sprayed the carrot plot with Lorox herbicide. A heavy rate was used as weed pressure was high.

2nd week June – Zero crop emergence. Beds were still v. dry – so started irrigating. Irrigation continues from this point through to the end of the season – with a total of 20 cm of water applied. The Lorox trmt has provided good control of most broadleaf weeds.

3rd week June – crop is starting to emerge. Barley and green foxtail are becoming problematic.

4th week June – crop is still v. slowly emerging. Irrigating more frequently but with less water to try to encourage emergence without washing out the beds.

2nd week of July – sprayed the trial again with Lorox – as RRPW and foxtail are getting bad. Carrot plants are still growing v. slowly. Stand poor in most cvs.

3rd week July – sprayed with Poast to try to control well-established green foxtail and barnyard grass = unlikely to succeed.

4th week July – Poast appeared to have no effect – so hand weeded the plot – fortunately the green foxtail was easy to remove. Carrot stand is still pathetic.

2nd week Aug - Crop is starting to fill in gaps – at least in the best cvs.

4th week Aug – Did a small harvest from all cvs to check size and quality

2nd week Sept – Harvested another round of cvs.
1st week Oct – did the final harvest.

Crop Health

Aside from the problems with emergence, the 2015 carrot crop was very healthy. Few problems with disease were observed. Between 1-5 % of the plants showed signs of Aster yellows. This level of infections is about typical in SK carrot fields. Some wireworm damage was also observed, especially at the latest harvest date.

Yields

Because of problems with stand establishment it was not possible to generate any useful yield information from this trial.

At each harvest date, lengths and widths (cm) were measured on 10 randomly selected carrots for each cultivar. The variability in the lengths and widths of the carrots was calculated as the coefficient of variance (standard deviation of the mean/mean). A low CV% indicates that the roots were uniform in length or width.

Table 1. Root lengths and widths for “Baby-type” carrots harvested at three dates in 2015.

	Sept 1		Sept 15		Oct 1		AVERAGE	
	Length (cm) and CV%	Width (cm) and CV%	Length (cm) and CV%	Width (cm) and CV%	Length (cm) and CV%	Width (cm) and CV %	Length (cm) and CV%	Width (cm) and CV %
Babette	14.5 (8%)	2.1 (21%)	15.6 (17%)	2.8 (19%)	-	-	15.0 (12%)	2.5 (20%)
Coreless Amsterdam	18.4 (-)	2.3 (-)	16.7 (14%)	2.7 (9%)	19.6 (15%)	3.1 (14%)	18.2 (14%)	2.7 (11%)
Little Fingers	15.6 (33%)	2.5 (7%)	22.2 (12%)	2.8 (14%)	23.9 (16%)	3.4 13%	20.6 (20%)	2.9 (11%)
Mignon	12.2 (21%)	2.2 (10%)	13.1 (11%)	2.4 (10%)	12.9 (19%)	2.6 (14%)	12.7 (17%)	2.4 (11%)
Mokum	16.6 (13%)	2.2 (25%)	21.7 (9%)	3.9 (12%)	20.6 (11%)	3.6 (19%)	19.6 (11%)	3.2 (19%)
Nantes Coreless	11.6 (15%)	1.9 (21%)	17.7 (15%)	3.1 (22%)	18.8 (13%)	4.6 (10%)	16.0 (14%)	3.2 (18%)
Texto	16.1 (13%)	2.2 (25%)	18.2 (12%)	3.3 (11%)	19.7 (11%)	3.5 (22%)	18.0 (13%)	3.0 (19%)
Average	15.0	2.2	17.9	3.0	19.2	3.5		

As expected the carrots increased in length and diameter through the progressive harvests (Table 1). Mignon was the shortest cultivar tested. Mignon and Coreless Amsterdam stayed quite thin even through to the latest harvest – this may be desirable as thin carrots more closely adhere to the consumers’ expectation of a “baby” product. Conversely, Coreless Nantes got very thick by the time of the final harvest. Coreless Amsterdam was slightly more uniform in length and width than the other cultivars.

Quality

The sugar content of a sample of each cultivar was assessed at each harvest using a refractometer. The flavor and overall quality for carrots from the 2nd harvest was rated by a panel of 10 judges.

Table 2. Sugar content (°Brix) for “Baby-type” carrots harvested at three dates in 2015.

	Sugar Content (° Brix)				Flavor and quality
	Sept 1	Sept 15	Oct 1	Average	
Store Bought			8.9		Above average texture and sweetness. Limited flavor
Babette	8.4	6.2	6.2	6.9	Best combined flavor and texture. Nice and crunchy
Coreless Amsterdam	6.7	7.3	8.0	7.3	Below average flavor
Little Fingers	7.7	7.8	8.6	8.0	Poor texture, dry
Mignon	7.4	7.6	7.6	7.5	Mild flavor. Sweet
Mokum	6.9	8.1	8.4	7.8	Good strong flavor
Nantes Coreless	6.8	7.6	8.4	7.6	Poor flavor. Not sweet
Texto	11.2	9.3	9.2	9.9	Good flavor. Firm texture
Average	7.9	7.7	8.0		

There was little difference in the sugar content from harvests conducted in early Sept through early Oct. This was unexpected – as sugar content is usually expected to rise as cold weather slows growth of the roots leading to the accumulation of sugars. Unusually warm weather through October of 2015 could have slowed the expected accumulation of sugars. Carrots could easily have been left to grow for

another month in 2015 without risk of frost damage. At all harvest dates the cv. Texto had a higher sugar content than the other cultivars tested.

Flavor assessments are highly subjective – and the results from the taste panels varied widely from person to person. The panelists agreed that the differences in flavor and texture of the carrots sampled were relatively small – and they considered all of the samples to have met market standards for flavor and texture. The “Store Bought” sample (Dole Products) was rated as having good texture and sweetness but little flavor. The cv. **Babette** (Renee’s Garden) was the overall favorite of the taste panel – it combined good texture, sweetness and flavor. It is interesting to note that based on the Brix data, Babette was not the sweetest cultivar tested – indicating that factors other than sweetness are important in consumers’ assessment of carrot quality.



cv. **Babette** Baby carrot