URI 2019 Carrot Variety Trials – Early Carrots

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Entries
Five early carrot varieties were compared. ‘Mokum’, ‘Yaya’ and ‘Napoli’ are Bejo varieties, provided as pelleted seed by Johnny’s Selected Seeds. ‘Caravel’ and ‘Calibra’ were developed by Carosem in Germany and were provided as raw seed by Osborne Seeds. All varieties are orange Nantes type.

Trial Conditions
The 2019 carrot trial was seeded May 26 and 27 using a Jang J-1 push seeder set to 1 inch spacing within row. Each 10 foot long plot contained 3 rows spaced 12 inches apart; plots were on 5 foot centers. Trial design was a randomized complete block with three replications. Prior to seeding the field was amended with Nature’s Turf 8-1-9 organic fertilizer to provide 50 lbs N/acre and lime at 435 lbs per acre to ensure adequate calcium levels. Treflan herbicide was incorporated into the top 3 inches of soil for weed control. Overhead irrigation was provided as needed. The herbicide provided only partial control of weeds, and weed pressure was considerable, with significant differences between blocks, despite repeated cultivation and hand weeding. Five weeks after seeding carrots were side-dressed with 12-0-12 to provide an additional 50 lbs N/acre. The center 5 feet of each plot was harvested August 2, 70 days after planting.

After harvest carrots were graded into marketable and cull, with marketable carrots sub-divided into roots which met USDA standards for length, diameter, and straightness and ones which did not but would be acceptable in local direct retail outlets. Counts and weights were recorded for each category. Five carrots randomly selected from those meeting USDA standards were used to measure root length and width and then juiced to determine sugar content. Data were analyzed using mixed models ANOVA and post-hoc comparison of least squares means.

Results
There were no significant differences among varieties for canopy height, which averaged 11.6 inches. Shoulders remained below the soil for all varieties. No bolting was observed, and carrots were harvested prior to development of Alternaria leafspot.

Figure 1. West end of early carrot trial on July 19.
Yields
There were no significant differences among varieties for the distribution of yield across grades. The average across all varieties was 50% marketable yield by count, and 63% by weight. Culls were mostly too small, not straight, or had forked roots; the high cull rate was likely a result of weed pressure and heavy soil. ‘Yaya’ had the highest yields, averaging 172 total carrots and 89 marketable carrots per plot.

‘Mokum’ ranked second with 122 total carrots and 64 marketable carrots per plot. Total weight per plot for ‘Yaya’ averaged 8.5 pounds, significantly higher than all other entries. Marketable weight averaged 5.4 pounds, significantly more than ‘Calibra’ and ‘Caravel’. ‘Mokum’ ranked second for weight as for count.

Root Characteristics
‘Calibra’ had the longest roots, with the marketable roots averaging 6.4 inches. ‘Caravel’ averaged only 4.8 inches, below the minimum length for USDA standards. ‘Calibra’ was significantly longer than all other entries, ‘Caravel’ was significantly shorter than all other entries, and the other three entries were similar to each other. ‘Napoli’ had significantly fatter roots than the other entries, while ‘Calibra’ roots were significantly thinner than all entries except ‘Mokum’. Root length was the characteristic most strongly affected by competition from weeds, with roots getting shorter as weed populations increased across the field. ‘Napoli’ had the heaviest roots, averaging 10 carrots per pound.
Flavor

‘Napoli’ and ‘Yaya’ were the sweetest varieties, averaging 8.1 and 7.9% Brix respectively. ‘Mokum, ‘Caravel’ and ‘Calibra’ were similar to each other but significantly less sweet than ‘Napoli’ and ‘Yaya’. The flavor of ‘Napoli’ was sweet with a sour finish, while ‘Yaya’ was bland. The other three entries had a typical caroity flavor, with slight bitterness mixed with sweetness.

Conclusions

‘Yaya’ appears to be the best choice as an early carrot for Rhode Island. It was the top yielding variety, and tied with ‘Napoli’ for sweetness. However, sugar levels in ‘Yaya’ appear to be very sensitive to stress. Brix values ranged from 8.6% at the east end of the field to 7.2% at the west end. In contrast, ‘Napoli’ ranged from 8.4% to 8%, and ‘Mokum’ was a consistent 7.2% across the entire field. ‘Calibra’ is listed as an early carrot by Carosem, but should probably be grouped with ‘Baltimore’ and ‘Goldfinger’ as an early main season variety under New England conditions, as it was less mature than the other varieties at harvest.

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