

CARROT (*Daucus carota* subsp. *sativus*)
Alternaria Leaf Blight; *Alternaria dauci*
Cercospora Leaf Blight; *Cercospora carotae*

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Evaluation of carrot cultivars and breeding selections to identify resistance to foliar blights - Lewiston, 2003

A field experiment was established in a commercial grower's field at Gumz Muck Farms LLC near Lewiston, in south-central WI, on 12 May to evaluate 41 carrot cultivars and breeding selections for resistance to *Alternaria* and *Cercospora* leaf blights. The field was selected because of substantial carrot cropping history and presence of natural leaf blight inoculum. Seeds were planted using a cone seeder with seeding rate adjusted according to carrot type (slicing and cut-and-peel, approximately 24 seeds/ft; dicing type, approximately 12 seeds/ ft). Each plot consisted of two 12-ft-long rows planted 1 ft apart in the center portion of a 6-ft-wide raised bed. A randomized complete block design with three replications was used. To minimize interplot interference and provide a uniform source of inoculum throughout the trial, a row of Heritage, susceptible to both pathogens, was machine-planted by the grower on each side of each test plot. Test plots were separated within the bed by 3-ft-long open buffer spaces. Soil type was Houghton muck with pH of 5.2 and organic matter content of 55.5 %. No fungicide was applied to the test plots at any time. Fertilizer, herbicide and insecticide applications were done according to standard grower practices. Disease severity was rated on four sections of each plot from 13 Jul to 23 Sep using the Horsfall-Barratt (0-11) rating system. A 5-ft-long section of each of the two test rows (total of 10 ft of row) was hand dug from each plot on 10 Oct and the yield was graded by hand into five size categories (based on diam) and culls. The size categories were then grouped appropriately to conform to standards for slicing and dicing carrots. Yield values were calculated for each treatment based on typical processing contracts. Rainfall totals were (in.): May, 0.36; Jun, 2.97; Jul, 5.42; Aug, 3.14; Sep, 3.80; Oct, 0.75. No additional irrigation was applied during the growing season.

Leaf blight symptoms caused by *Alternaria* and *Cercospora* were first recorded in the susceptible Heritage guard rows on 8 Jul. Disease pressure was mild throughout the growing season. The majority of early symptoms (Jul) were caused by *Cercospora carotae* and only later in the season (Aug) were symptoms of *Alternaria dauci* observed. High variability existed in the disease reactions of the test lines and significant differences were observed in the rate and severity of disease development. Disease severity exceeded 60% by the final rating date on the most susceptible cultivars and breeding lines, suggesting sufficient pressure for screening breeding lines. Susceptible check Lucky B had an AUDPC (relative area under the disease progress curve) of 0.26 and by the final rating had surpassed 64% severity. Industry standard cultivars Gold King and Heritage had AUDPC's of 0.21 and 0.18 respectively, representing moderate to high levels of susceptibility to leaf blights. Bolero and Carson, with some resistance to foliar blights had a final severity rating less than 11% and an AUDPC less than 0.05. Several test lines had AUDPC's significantly less than Gold King and Heritage, including SXC 8502, SBC K15, TriplePlay 58, XCR-9840, Spearhead, Columbia, Arrowhead, Sirocco, Cupar and Bejo 2588. Among these lines, Spearhead, Sirocco, SBC K15, Arrowhead, TriplePlay 58 and Cupar yielded in excess of 30 t/A and had AUDPC's significantly lower than Gold King or Heritage. It is possible that these lines could be grown commercially without fungicide or with limited fungicide applications. Gross value of all test lines was calculated based upon typical processing contracts for slicing and dicing cultivars. Several lines with the lowest AUDPC's and yields greater than 30 t/A, were also among those with the highest crop value.

Table 1. Processing type and source of seed for cultivars and breeding lines used in this trial.

| Cultivar or line | Source | Type | Cultivar or line | Source | Type | Cultivar or line | Source | Type |
|-------------------------|----------|-------------|------------------|----------|-------------|------------------|---------------------------|-----------|
| Slicer Standards | | | Noveno | Bejo | S | PX 719116 | Seminis | D |
| Bolero | Vilmorin | S,CP | Lucky B | Chrised | S | PS 80494 | Seminis | D |
| Prospector | Seminis | S | Cupar | Bejo | D | Canada | Bejo | D |
| Enterprise | Seminis | S | Sirocco VAC30 | Vilmorin | S | Early Gold | Seminis | D |
| Dicer Standards | | | Arrowhead | Sakata | D | Heritage | Gumz | S |
| Carson | Bejo | D | Columbia | Sakata | S,CP | Danvers 126 | Harris-Moran | D |
| Gold King | Seminis | D | Spearhead | Sakata | CP | 5280 X 6366 X | P. Simon- USDA/UW Hort | CP |
| Test Lines | | | XCR-9840 | Sakata | CP | 5367 | P. Simon- USDA/UW Hort | CP |
| Bremen | Bejo | S | SugarSnax 54 | Sunseeds | S,CP | 6333 X 6366 X | P. Simon- USDA/UW Hort | CP |
| Florida | Bejo | S | TriplePlay 58 | Sunseeds | CP | 6526 | P. Simon- USDA/UW Hort | CP |
| Nagadir | Bejo | S | SRC 3325 | Sunseeds | S,CP | 5280 X 8378 | P. Simon- USDA/UW Hort | CP |
| Bradford | Bejo | S | SXC 8502 | Sunseeds | S | HMX 2289 | Harris-Moran | D |
| Bersky | Bejo | S | SBC K15 | Sunseeds | S,CP | FMX 619 | Harris-Moran | D |
| Bejo 2510 | Bejo | S | Recoleta | Seminis | D | HMX 2286 | Harris-Moran | S |
| Bejo 2588 | Bejo | S | Prodigy | Seminis | D | | | |
| Nikki | Bejo | S | PX 713087 | Seminis | D | | | |

D = Dice, S = Slice, CP = Cut and peel

Table 2. Severity of leaf blight on carrot cultivars and breeding selections.

| Cultivar or breeding selection | % Disease severity (Alternaria and Cercospora blight - combined) ¹ | | | | | | | | | | Relative AUDPC ² |
|--------------------------------|---|--------|--------|-------|--------|--------|-------|--------|--------|--------|-----------------------------|
| | 13 Jul | 22 Jul | 29 Jul | 6 Aug | 15 Aug | 22 Aug | 3 Sep | 11 Sep | 18 Sep | 23 Sep | |
| Slicer Standards | | | | | | | | | | | |
| Bolero | 0.0 | 2.0 | 2.5 | 1.8 | 3.9 | 5.9 | 7.4 | 9.0 | 7.4 | 7.4 | 0.047 |
| Prospector | 1.6 | 2.9 | 3.1 | 3.7 | 9.8 | 14.5 | 13.7 | 21.1 | 23.4 | 42.7 | 0.117 |
| Enterprise | 0.8 | 3.3 | 3.9 | 3.9 | 9.8 | 10.5 | 16.8 | 23.4 | 21.1 | 36.5 | 0.116 |
| Dicer Standards | | | | | | | | | | | |
| Carson | 1.0 | 1.2 | 1.4 | 1.8 | 3.7 | 5.5 | 5.7 | 8.6 | 8.6 | 10.9 | 0.044 |
| Gold King | 1.6 | 2.7 | 2.7 | 5.1 | 9.0 | 21.1 | 38.5 | 43.8 | 52.6 | 56.3 | 0.214 |
| Test Lines | | | | | | | | | | | |
| Arrowhead | 1.2 | 4.7 | 3.1 | 2.9 | 6.4 | 9.4 | 7.8 | 9.4 | 9.0 | 21.9 | 0.068 |
| Bejo 2510 | 0.6 | 2.7 | 2.5 | 3.1 | 6.8 | 9.4 | 14.8 | 17.2 | 21.6 | 44.3 | 0.102 |
| Bejo 2588 | 0.8 | 2.7 | 2.0 | 2.1 | 3.9 | 6.6 | 8.2 | 12.5 | 13.3 | 34.4 | 0.069 |
| Bersky | 1.6 | 1.8 | 2.5 | 4.7 | 9.4 | 13.7 | 21.1 | 26.6 | 34.9 | 47.9 | 0.143 |
| Bradford | 2.1 | 3.9 | 5.3 | 10.5 | 22.7 | 44.3 | 52.6 | 64.1 | 62.5 | 59.9 | 0.320 |
| Bremen | 1.0 | 3.1 | 2.9 | 4.5 | 7.4 | 10.7 | 16.8 | 23.2 | 20.1 | 39.1 | 0.113 |
| Canada | 0.8 | 2.7 | 2.5 | 2.3 | 5.3 | 16.0 | 20.4 | 22.4 | 27.1 | 43.8 | 0.126 |
| Columbia | 2.7 | 3.9 | 2.9 | 3.9 | 9.0 | 11.7 | 12.9 | 15.6 | 12.9 | 27.9 | 0.094 |
| Cupar | 1.6 | 2.3 | 1.8 | 2.1 | 3.7 | 10.2 | 15.6 | 21.9 | 26.6 | 25.3 | 0.101 |
| Danvers 126 | 2.0 | 3.1 | 3.7 | 3.1 | 10.3 | 25.8 | 30.7 | 42.7 | 53.6 | 65.1 | 0.213 |
| Early Gold | 1.2 | 2.9 | 2.9 | 3.7 | 9.8 | 33.3 | 42.2 | 56.3 | 63.5 | 65.6 | 0.260 |
| Florida | 2.0 | 3.1 | 2.3 | 5.7 | 7.4 | 14.1 | 28.9 | 31.0 | 38.5 | 32.8 | 0.157 |
| FMX 619 | 1.4 | 4.9 | 1.8 | 3.3 | 6.6 | 16.4 | 21.9 | 33.3 | 39.1 | 55.7 | 0.159 |
| Heritage | 2.1 | 3.3 | 3.1 | 6.2 | 8.2 | 14.1 | 27.3 | 39.1 | 45.8 | 62.0 | 0.183 |
| HMX 2286 | 0.8 | 4.1 | 5.1 | 7.8 | 21.1 | 28.9 | 42.2 | 47.9 | 52.1 | 54.2 | 0.252 |
| HMX 2289 | 1.2 | 2.3 | 2.9 | 3.1 | 7.0 | 19.5 | 38.5 | 54.2 | 59.9 | 63.5 | 0.227 |
| Lucky B | 1.0 | 3.1 | 2.7 | 4.1 | 10.2 | 36.5 | 50.0 | 47.9 | 55.7 | 64.1 | 0.260 |
| Nagadir | 1.6 | 2.9 | 3.3 | 4.9 | 8.4 | 14.1 | 25.8 | 34.9 | 38.5 | 52.1 | 0.164 |
| Nikki | 2.1 | 5.3 | 6.0 | 6.0 | 21.9 | 45.8 | 51.6 | 59.9 | 61.5 | 65.6 | 0.313 |
| Noveno | 1.2 | 3.1 | 2.5 | 3.7 | 8.6 | 13.7 | 33.3 | 44.3 | 38.5 | 50.0 | 0.182 |
| Prodigy | 2.1 | 2.5 | 3.1 | 4.9 | 7.8 | 22.4 | 29.4 | 37.0 | 41.7 | 44.0 | 0.181 |
| PS 80494 | 0.8 | 2.1 | 2.5 | 3.3 | 9.0 | 16.4 | 26.3 | 35.4 | 42.7 | 37.0 | 0.163 |
| PX 713087 | 0.4 | 2.1 | 2.5 | 3.7 | 10.5 | 34.9 | 31.0 | 45.8 | 54.2 | 44.3 | 0.219 |
| PX 719116 | 1.0 | 4.9 | 4.5 | 7.2 | 18.7 | 34.6 | 47.9 | 57.8 | 61.5 | 63.5 | 0.286 |
| Recoleta | 1.8 | 1.6 | 1.8 | 2.7 | 9.0 | 20.3 | 21.6 | 29.9 | 32.3 | 53.6 | 0.151 |
| SBC K15 | 1.4 | 3.1 | 2.0 | 4.1 | 5.9 | 11.7 | 13.7 | 18.0 | 18.0 | 30.7 | 0.097 |
| Sirocco VAC30 | 1.4 | 2.0 | 2.0 | 3.1 | 6.2 | 7.0 | 14.8 | 22.7 | 30.2 | 44.3 | 0.110 |
| Spearhead | 2.1 | 3.3 | 2.3 | 4.3 | 7.0 | 9.4 | 11.3 | 15.2 | 12.5 | 19.5 | 0.081 |
| SRC 3325 | 1.2 | 2.9 | 2.5 | 4.7 | 6.2 | 14.1 | 19.5 | 21.1 | 21.9 | 35.4 | 0.117 |
| SugarSnax 54 | 1.6 | 1.6 | 2.3 | 2.7 | 4.1 | 11.3 | 12.9 | 16.4 | 16.4 | 37.0 | 0.090 |
| SXC 8502 | 1.2 | 3.7 | 2.9 | 2.9 | 5.5 | 9.8 | 15.6 | 15.2 | 19.3 | 33.3 | 0.096 |
| TriplePlay 58 | 1.8 | 2.7 | 2.3 | 3.3 | 4.9 | 8.6 | 10.5 | 14.1 | 24.7 | 28.9 | 0.087 |
| XCR-9840 | 0.6 | 2.9 | 1.8 | 2.7 | 4.7 | 7.4 | 9.0 | 18.0 | 14.8 | 24.2 | 0.076 |
| 5280 X 6366 X 5367 | 1.2 | 4.5 | 3.5 | 4.5 | 8.0 | 19.5 | 18.7 | 21.9 | 25.0 | 32.3 | 0.130 |
| 5280 X 8378 | 2.0 | 6.2 | 3.7 | 3.9 | 5.5 | 16.4 | 20.7 | 29.4 | 27.9 | 35.9 | 0.140 |
| 6333 X 6366 X 6526 | 1.8 | 4.5 | 3.3 | 4.5 | 11.7 | 25.8 | 36.5 | 43.8 | 45.8 | 55.7 | 0.216 |
| Pr>F³ | 0.05 | <0.01 | 0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| LSD³ | 1.3 | 1.9 | 2.1 | 2.6 | 5.7 | 11.1 | 14.4 | 14.6 | 14.0 | 16.3 | 0.057 |

- Severity of leaf blight symptoms was rated on a Horsfall-Barratt scale of 0 (no infection) to 11 (all foliage dead). No attempt was made to evaluate symptoms of Alternaria and Cercospora blights separately. Ratings were converted to percentages.
- Relative area under the disease progress curve. Data for each date were plotted on a graph and the area under the line was calculated for each treatment providing a measure of the relative severity of disease throughout the season. A disease rating of 100% severity for the entire season would produce a value of 1.0. All relative AUDPC values are expressed as a proportion of this value. Either decreased disease severity or later disease development will contribute to lower relative areas under the disease progress curve.
- Analysis of variance was performed on data, and Fisher's protected least significant difference (LSD) was calculated (alpha=0.05). NS = not significant at $P = 0.10$ (* indicates significant at $P = 0.10$ but not at $P = 0.05$).

Table 3. Yield, size distribution and gross value for carrot cultivars and breeding selections.

| Cultivar or breeding selection | Total yield (t/A) ¹ | Percentage of yield for carrot diameter (inches) | | | | | % culls | Yield graded as slicers ² | | | | | Yield graded as dicers ² | | | | |
|--------------------------------|--------------------------------|--|-------------|---------------|-----------|------|---------|--------------------------------------|----------|-----------|---------------|---------------------------|-------------------------------------|------|-----------|---------------|---------------------------|
| | | < 3/4 | 3/4 - 1 1/4 | 1 1/4 - 1 5/8 | 1 5/8 - 2 | > 2 | | Percentage of yield | | | Price/ t (\$) | Gross value of yield (\$) | Percentage of yield | | | Price/ t (\$) | Gross value of yield (\$) |
| | | | | | | | | 3/4 - 1 5/8" | > 1 5/8" | Dis-cards | | | 1 1/4 - 2" | > 2" | Dis-cards | | |
| Slicer Standards | | | | | | | | | | | | | | | | | |
| Bolero | 35.0 | 9.9 | 66.4 | 17.5 | 3.8 | 0 | 2.4 | 83.8 | 3.8 | 12.3 | 54.7 | 1675.9 | 21.3 | 0 | 78.7 | 34.3 | 254.5 |
| Prospector | 30.3 | 35.7 | 52.6 | 9.3 | 0.7 | 0 | 1.8 | 61.9 | 0.7 | 37.4 | 54.7 | 1051.1 | 10 | 0 | 90 | 34.3 | 112.7 |
| Enterprise | 29.4 | 29.4 | 60.8 | 7.2 | 0 | 0 | 2.7 | 68.0 | 0 | 32.0 | 54.7 | 1097.4 | 7.2 | 0 | 92.8 | 34.3 | 73.8 |
| Dicer Standards | | | | | | | | | | | | | | | | | |
| Carson | 44.0 | 0.2 | 3.2 | 15.3 | 48.0 | 32.7 | 0.6 | 18.5 | 80.7 | 0.8 | 43.6 | 1903.4 | 63.3 | 32.7 | 3.9 | 34.3 | 1448.0 |
| Gold King | 32.2 | 0.9 | 14.3 | 25.5 | 33.6 | 20.8 | 4.9 | 39.8 | 54.4 | 5.8 | 43.6 | 1308.4 | 59.1 | 20.8 | 20.1 | 34.3 | 878.6 |
| Test Lines | | | | | | | | | | | | | | | | | |
| Arrowhead | 32.8 | 9.3 | 39.0 | 31.5 | 11.9 | 0 | 8.3 | 70.4 | 11.9 | 17.6 | 53.9 | 1463.6 | 43.4 | 0 | 56.6 | 34.3 | 484.1 |
| Bejo 2510 | 39.9 | 13.9 | 62.3 | 19.8 | 2.3 | 0 | 1.8 | 82.1 | 2.3 | 15.6 | 54.7 | 1840 | 22.1 | 0 | 77.9 | 34.3 | 300 |
| Bejo 2588 | 26.8 | 11.5 | 56.2 | 24.7 | 3.8 | 0 | 3.7 | 80.9 | 3.8 | 15.2 | 54.7 | 1239.0 | 28.5 | 0 | 71.5 | 34.3 | 260.3 |
| Bersky | 34.5 | 5.9 | 61.2 | 27.1 | 3.9 | 0 | 1.9 | 88.3 | 3.9 | 7.7 | 54.7 | 1740.7 | 31.0 | 0 | 69.0 | 34.3 | 368.0 |
| Bradford | 26.3 | 10.7 | 60.8 | 23.1 | 5.3 | 0 | 0.1 | 83.9 | 5.3 | 10.8 | 54.7 | 1292.0 | 28.4 | 0 | 71.6 | 34.3 | 276.8 |
| Bremen | 30.1 | 17.9 | 45.1 | 32.1 | 2.3 | 0 | 2.6 | 77.2 | 2.3 | 20.5 | 54.7 | 1322.4 | 34.4 | 0 | 65.6 | 34.3 | 342.3 |
| Canada | 33.0 | 0.8 | 11.0 | 32.4 | 46.9 | 5.9 | 2.9 | 43.4 | 52.9 | 3.7 | 43.6 | 1408.9 | 79.4 | 5.9 | 14.7 | 34.3 | 963.1 |
| Columbia | 23.2 | 55.6 | 39.1 | 1.4 | 0 | 0 | 4.0 | 40.5 | 0 | 59.5 | 54.7 | 521.6 | 1.4 | 0 | 98.6 | 34.3 | 11.6 |
| Cupar | 46.6 | 0.4 | 4.4 | 17.0 | 43.2 | 33.1 | 1.8 | 21.4 | 76.4 | 2.3 | 43.6 | 1984.7 | 60.2 | 33.1 | 6.7 | 34.3 | 1490.3 |
| Danvers 126 | 32.5 | 0.7 | 10.5 | 27.1 | 40.6 | 19.5 | 1.6 | 37.6 | 60 | 2.4 | 43.6 | 1381.2 | 67.6 | 19.5 | 12.9 | 34.3 | 965.6 |
| Early Gold | 28.2 | 1.4 | 18.4 | 32.2 | 29.5 | 14.1 | 4.4 | 50.6 | 43.6 | 5.8 | 46.5 | 1259.6 | 61.8 | 14.1 | 24.2 | 34.3 | 738.5 |
| Florida | 27.5 | 6.4 | 52.1 | 33.8 | 5.4 | 1.1 | 1.3 | 85.8 | 6.5 | 7.7 | 54.7 | 1380.7 | 39.1 | 1.1 | 59.8 | 34.3 | 377.1 |
| FMX 619 | 35.8 | 0.4 | 14.3 | 39.0 | 32.9 | 11.0 | 2.4 | 53.4 | 43.9 | 2.7 | 46.5 | 1653.7 | 71.9 | 11.0 | 17.1 | 34.3 | 1017.8 |
| Heritage | 28.1 | 12.7 | 57.0 | 21.5 | 4.2 | 0 | 4.6 | 78.5 | 4.2 | 17.3 | 54.7 | 1273.4 | 25.8 | 0 | 74.2 | 34.3 | 254.5 |
| HMX 2286 | 23.6 | 10.6 | 52.4 | 20.6 | 13.2 | 0 | 3.2 | 73.0 | 13.2 | 13.8 | 52.4 | 1076.5 | 33.8 | 0 | 66.2 | 34.3 | 305.0 |
| HMX 2289 | 32.8 | 1.0 | 22.6 | 37.9 | 23.4 | 10.7 | 4.4 | 60.5 | 34.1 | 5.4 | 49.4 | 1528.1 | 61.3 | 10.7 | 28.0 | 34.3 | 810.6 |
| Lucky B | 23.6 | 8.8 | 57.0 | 29.4 | 3.1 | 0 | 1.7 | 86.4 | 3.1 | 10.5 | 54.7 | 1158.3 | 32.5 | 0 | 67.5 | 34.3 | 264.4 |
| Nagadir | 28.2 | 18.6 | 65.3 | 12.6 | 0.4 | 0 | 3.1 | 77.9 | 0.4 | 21.7 | 54.7 | 1202.0 | 13.0 | 0 | 87.0 | 34.3 | 126.0 |
| Nikki | 23.6 | 17.8 | 67.9 | 13.4 | 0 | 0 | 0.8 | 81.3 | 0 | 18.7 | 54.7 | 1093.4 | 13.4 | 0 | 86.6 | 34.3 | 121.8 |
| Noveno | 30.2 | 12.2 | 76.2 | 10 | 1.1 | 0 | 0.5 | 86.2 | 1.1 | 12.7 | 54.7 | 1444.2 | 11.1 | 0 | 88.9 | 34.3 | 115.2 |
| Prodigy | 29.1 | 1.6 | 20.6 | 37.5 | 31.0 | 5.4 | 3.8 | 58.1 | 36.4 | 5.4 | 49.4 | 1372.0 | 68.5 | 5.4 | 26.1 | 34.3 | 733.5 |
| PS 80494 | 33.5 | 1.3 | 21.4 | 38.8 | 30.9 | 6.5 | 1.2 | 60.2 | 37.3 | 2.5 | 49.4 | 1552.3 | 69.6 | 6.5 | 23.9 | 34.3 | 870.3 |
| PX 713087 | 37.0 | 1.5 | 12.2 | 28.3 | 40.2 | 14.9 | 2.9 | 40.5 | 55.1 | 4.4 | 43.6 | 1539.4 | 68.4 | 14.9 | 16.6 | 34.3 | 1055.1 |
| PX 719116 | 25.4 | 1.9 | 27.1 | 42.6 | 25.4 | 2.8 | 0.2 | 69.7 | 28.2 | 2.1 | 52.4 | 1283.4 | 68.0 | 2.8 | 29.2 | 34.3 | 625.0 |
| Recoleta | 31.2 | 2.8 | 31.1 | 39.1 | 22.1 | 1.5 | 3.3 | 70.3 | 23.6 | 6.1 | 52.4 | 1520.5 | 61.2 | 1.5 | 37.3 | 34.3 | 669.7 |
| SBC K15 | 33.5 | 36.8 | 50.8 | 8.9 | 0 | 0 | 3.5 | 59.7 | 0 | 40.3 | 54.7 | 1081.5 | 8.9 | 0 | 91.1 | 34.3 | 99.5 |
| Sirocco VAC30 | 32.4 | 12.9 | 66.5 | 16.7 | 2.1 | 0 | 1.8 | 83.2 | 2.1 | 14.7 | 54.7 | 1503.8 | 18.8 | 0 | 81.2 | 34.3 | 208.9 |
| Spearhead | 31.9 | 37.8 | 49.5 | 6.0 | 0 | 0 | 6.7 | 55.5 | 0 | 44.5 | 54.7 | 978.2 | 6.0 | 0 | 94.0 | 34.3 | 63.0 |
| SRC 3325 | 32.6 | 18.1 | 56.6 | 15.8 | 3.3 | 0 | 6.2 | 72.5 | 3.3 | 24.3 | 54.7 | 1354.2 | 19.1 | 0 | 80.9 | 34.3 | 214.7 |
| SugarSnax 54 | 35.5 | 14.0 | 52.3 | 23.7 | 3.9 | 0.9 | 5.3 | 76.0 | 4.8 | 19.2 | 54.4 | 1569.3 | 27.6 | 0.9 | 71.6 | 34.3 | 348.1 |
| SXC 8502 | 26.2 | 31.8 | 51.6 | 11.4 | 0.7 | 0 | 4.6 | 63.0 | 0.7 | 36.4 | 54.7 | 916.0 | 12.0 | 0 | 88.0 | 34.3 | 108.6 |
| TriplePlay 58 | 34.0 | 14.0 | 54.8 | 25.4 | 2.8 | 0 | 3.0 | 80.2 | 2.8 | 17.0 | 54.7 | 1539.5 | 28.3 | 0 | 71.7 | 34.3 | 326.6 |

| Cultivar or breeding selection | Total yield (t/A) ¹ | Percentage of yield for carrot diameter (inches) | | | | | % culls | Yield graded as slicers ² | | | | | Yield graded as dicers ² | | | | |
|--------------------------------|--------------------------------|--|-------------|---------------|-----------|-------|---------|--------------------------------------|---------|-----------|---------------|---------------------------|-------------------------------------|-------|-----------|---------------|---------------------------|
| | | < 3/4 | 3/4 - 1 1/4 | 1 1/4 - 1 5/8 | 1 5/8 - 2 | > 2 | | Percentage of yield | | | Price/ t (\$) | Gross value of yield (\$) | Percentage of yield | | | Price/ t (\$) | Gross value of yield (\$) |
| | | | | | | | | 3/4 - 1 5/8 | > 1 5/8 | Dis-cards | | | 1 1/4 - 2" | > 2" | Dis-cards | | |
| XCR-9840 | 35.9 | 24.9 | 54.6 | 8.9 | 3.5 | 0 | 8.0 | 63.5 | 3.5 | 33.0 | 54.7 | 1319.8 | 12.4 | 0 | 87.6 | 34.3 | 155.8 |
| 5280 X 6366 X 5367 | 18.6 | 9.4 | 28.2 | 33.7 | 15.0 | 0 | 13.6 | 62.0 | 15.0 | 23.0 | 53.9 | 777.3 | 48.7 | 0 | 51.3 | 34.3 | 295.9 |
| 5280 X 8378 | 17.3 | 5.2 | 27.3 | 29.6 | 22.9 | 0 | 15.1 | 56.9 | 22.9 | 20.2 | 52.4 | 719.1 | 52.5 | 0 | 47.5 | 34.3 | 313.3 |
| 6333 X 6366 X 6526 | 17.1 | 25.6 | 52.5 | 18.4 | 1.9 | 0 | 1.6 | 70.9 | 1.9 | 27.2 | 54.7 | 680.4 | 20.3 | 0 | 79.7 | 34.3 | 121.0 |
| Pr > F ³ | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | -- | <0.01 | <0.01 | <0.01 | <0.01 | -- | <0.01 |
| LSD ³ | 6.9 | 9.5 | 14.5 | 11.0 | 9.9 | 7.4 | 5.5 | 13.2 | 9.2 | 10.5 | -- | 366.4 | 15.4 | 7.4 | 14.5 | -- | 200.3 |

- 1 A 5-ft section of row was hand dug from each of the 2 rows in each plot and yield was converted to t/A. Hand digging is likely to result in a higher apparent yield as fewer carrots are lost than when mechanically dug. Carrots were graded into five size classes and culls (misshapen or rotted). The size classes were then grouped appropriately to conform to standards for dicing or slicing carrots.
- 2 Values are calculated based on typical 2003(dicer) or 2002 (slicer) processing contracts for uncrowned carrots.
 - Slicing carrot contract: Minimum size accepted is 3/4 inch diameter; discard class includes culls and carrots below the minimum diameter. Slicing base price per ton is: < 10% over 1 3/4" diameter - \$54.70; 10-19% > 1 3/4" - \$53.90; 20-29% > 1 3/4" - \$52.40; 30-39% > 1 3/4" - \$49.40; 40-49% > 1 3/4" - \$46.45; >49% > 1 3/4" - \$43.60.
 - Dicing carrot contract: Minimum size accepted is 1 1/4 inch; discard class includes culls and carrots below the minimum diameter. Dicing base price per ton is: >90% of crop over 2" diameter - \$44.65; 81-90% > 2" - \$41.80; 71-80% > 2" - \$38.15; 61-70% > 2" - \$36.60; 51-60% > 2" - \$35.40; < 51% > 2" - \$34.25.
- 3 Analysis of variance was performed on data, and Fisher's protected least significant difference (LSD) was calculated (alpha=0.05). NS = not significant at P = 0.10, * indicates significant at P = 0.10 but not at P = 0.05.

Table 4. Data ranked according to disease and yield measurements (see footnotes on p. 90).

Sorted by % Foliage Infection 9/11 (increasing)

| Cultivar or Breeding Selection | Disease Severity (%) 9/11 ¹ | Relative AUDPC ² | Total Yield (t/A) ³ | Gross Value of Yield (\$) | | Cultivar or Breeding Selection | Disease Severity (%) 9/11 ¹ | Relative AUDPC ² | Total Yield (t/A) ³ | Gross Value of Yield (\$) | |
|--------------------------------|--|-----------------------------|--------------------------------|---------------------------|---------------------|--------------------------------|--|-----------------------------|--------------------------------|---------------------------|---------------------|
| | | | | Slicers ⁴ | Dicers ⁴ | | | | | Slicers ⁴ | Dicers ⁴ |
| Carson | 8.6 | 0.044 | 44.0 | 1903.4 | 1448.0 | Florida | 31.0 | 0.157 | 27.5 | 1380.7 | 377.1 |
| Bolero | 9.0 | 0.047 | 35.0 | 1675.9 | 254.5 | FMX 619 | 33.3 | 0.159 | 35.8 | 1653.7 | 1017.8 |
| Arrowhead | 9.4 | 0.068 | 32.8 | 1463.6 | 484.1 | Nagadir | 34.9 | 0.164 | 28.2 | 1202.0 | 126.0 |
| Bejo 2588 | 12.5 | 0.069 | 26.8 | 1239.0 | 260.3 | PS 80494 | 35.4 | 0.163 | 33.5 | 1552.3 | 870.3 |
| TriplePlay 58 | 14.1 | 0.087 | 34.0 | 1539.5 | 326.6 | Prodigy | 37.0 | 0.181 | 29.1 | 1372.0 | 733.5 |
| Spearhead | 15.2 | 0.081 | 31.9 | 978.2 | 63.0 | Heritage | 39.1 | 0.183 | 28.1 | 1273.4 | 254.5 |
| SXC 8502 | 15.2 | 0.096 | 26.2 | 916.0 | 108.6 | Danvers 126 | 42.7 | 0.213 | 32.5 | 1381.2 | 965.6 |
| Columbia | 15.6 | 0.094 | 23.2 | 521.6 | 11.6 | Gold King | 43.8 | 0.214 | 32.2 | 1308.4 | 878.6 |
| SugarSnax 54 | 16.4 | 0.090 | 35.5 | 1569.3 | 348.1 | 6333 X 6366 X 6526 | 43.8 | 0.216 | 17.1 | 680.4 | 121.0 |
| Bejo 2510 | 17.2 | 0.102 | 39.9 | 1840 | 300 | Noveno | 44.3 | 0.182 | 30.2 | 1444.2 | 115.2 |
| XCR-9840 | 18.0 | 0.076 | 35.9 | 1319.8 | 155.8 | PX 713087 | 45.8 | 0.219 | 37.0 | 1539.4 | 1055.1 |
| SBC K15 | 18.0 | 0.097 | 33.5 | 1081.5 | 99.5 | Lucky B | 47.9 | 0.260 | 23.6 | 1158.3 | 264.4 |
| Prospector | 21.1 | 0.117 | 30.3 | 1051.1 | 112.7 | HMX 2286 | 47.9 | 0.252 | 23.6 | 1076.5 | 305.0 |
| SRC 3325 | 21.1 | 0.117 | 32.6 | 1354.2 | 214.7 | HMX 2289 | 54.2 | 0.227 | 32.8 | 1528.1 | 810.6 |
| Cupar | 21.9 | 0.101 | 46.6 | 1984.7 | 1490.3 | Early Gold | 56.3 | 0.260 | 28.2 | 1259.6 | 738.5 |
| 5280 X 6366 X 5367 | 21.9 | 0.130 | 18.6 | 777.3 | 295.9 | PX 719116 | 57.8 | 0.286 | 25.4 | 1283.4 | 625.0 |
| Canada | 22.4 | 0.126 | 33.0 | 1408.9 | 963.1 | Nikki | 59.9 | 0.313 | 23.6 | 1093.4 | 121.8 |
| Sirocco | 22.7 | 0.110 | 32.4 | 1503.8 | 208.9 | Bradford | 64.0 | 0.320 | 26.3 | 1292.0 | 276.8 |
| Bremen | 23.2 | 0.113 | 30.1 | 1322.4 | 342.3 | Pr>F ⁵ | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Enterprise | 23.4 | 0.116 | 29.4 | 1097.4 | 73.8 | LSD ⁵ | 14.6 | 0.057 | 6.9 | 366.4 | 200.3 |
| Bersky | 26.6 | 0.143 | 34.5 | 1740.7 | 368.0 | | | | | | |
| 5280 X 8378 | 29.4 | 0.140 | 17.3 | 719.1 | 313.3 | | | | | | |
| Recoleta | 30.0 | 0.151 | 31.2 | 1520.5 | 669.7 | | | | | | |

Sorted by: Relative AUDPC (increasing)

| Cultivar or Breeding Selection | Disease Severity (%) ¹ 9/11 | Relative AUDPC ² | Total Yield (t/A) ³ | Gross Value of Yield (\$) | | Cultivar or Breeding Selection | Disease Severity (%) ¹ 9/11 | Relative AUDPC ² | Total Yield (t/A) ³ | Gross Value of Yield (\$) | |
|--------------------------------|--|-----------------------------|--------------------------------|---------------------------|---------------------|--------------------------------|--|-----------------------------|--------------------------------|---------------------------|---------------------|
| | | | | Slicers ⁴ | Dicers ⁴ | | | | | Slicers ⁴ | Dicers ⁴ |
| Carson | 8.6 | 0.044 | 44.0 | 1903.4 | 1448.0 | Recoleta | 30.0 | 0.151 | 31.2 | 1520.5 | 669.7 |
| Bolero | 9.0 | 0.047 | 35.0 | 1675.9 | 254.5 | Florida | 31.0 | 0.157 | 27.5 | 1380.7 | 377.1 |
| Arrowhead | 9.4 | 0.068 | 32.8 | 1463.6 | 484.1 | FMX 619 | 33.3 | 0.159 | 35.8 | 1653.7 | 1017.8 |
| Bejo 2588 | 12.5 | 0.069 | 26.8 | 1239.0 | 260.3 | PS 80494 | 35.4 | 0.163 | 33.5 | 1552.3 | 870.3 |
| XCR-9840 | 18.0 | 0.076 | 35.9 | 1319.8 | 155.8 | Nagadir | 34.9 | 0.164 | 28.2 | 1202.0 | 126.0 |
| Spearhead | 15.2 | 0.081 | 31.9 | 978.2 | 63.0 | Prodigy | 37.0 | 0.181 | 29.1 | 1372.0 | 733.5 |
| TriplePlay 58 | 14.1 | 0.087 | 34.0 | 1539.5 | 326.6 | Noveno | 44.3 | 0.182 | 30.2 | 1444.2 | 115.2 |
| SugarSnax 54 | 16.4 | 0.090 | 35.5 | 1569.3 | 348.1 | Heritage | 39.1 | 0.183 | 28.1 | 1273.4 | 254.5 |
| Columbia | 15.6 | 0.094 | 23.2 | 521.6 | 11.6 | Danvers 126 | 42.7 | 0.213 | 32.5 | 1381.2 | 965.6 |
| SXC 8502 | 15.2 | 0.096 | 26.2 | 916.0 | 108.6 | Gold King | 43.8 | 0.214 | 32.2 | 1308.4 | 878.6 |
| SBC K15 | 18.0 | 0.097 | 33.5 | 1081.5 | 99.5 | 6333 X 6366 X | | | | | |
| Cupar | 21.9 | 0.101 | 46.6 | 1984.7 | 1490.3 | 6526 | 43.8 | 0.216 | 17.1 | 680.4 | 121.0 |
| Bejo 2510 | 17.2 | 0.102 | 39.9 | 1840 | 300 | PX 713087 | 45.8 | 0.219 | 37.0 | 1539.4 | 1055.1 |
| Sirocco | 22.7 | 0.110 | 32.4 | 1503.8 | 208.9 | HMX 2289 | 54.2 | 0.227 | 32.8 | 1528.1 | 810.6 |
| Bremen | 23.2 | 0.113 | 30.1 | 1322.4 | 342.3 | HMX 2286 | 47.9 | 0.252 | 23.6 | 1076.5 | 305.0 |
| Enterprise | 23.4 | 0.116 | 29.4 | 1097.4 | 73.8 | Lucky B | 47.9 | 0.260 | 23.6 | 1158.3 | 264.4 |
| Prospector | 21.1 | 0.117 | 30.3 | 1051.1 | 112.7 | Early Gold | 56.3 | 0.260 | 28.2 | 1259.6 | 738.5 |
| SRC 3325 | 21.1 | 0.117 | 32.6 | 1354.2 | 214.7 | PX 719116 | 57.8 | 0.286 | 25.4 | 1283.4 | 625.0 |
| Canada | 22.4 | 0.126 | 33.0 | 1408.9 | 963.1 | Nikki | 59.9 | 0.313 | 23.6 | 1093.4 | 121.8 |
| 5280 X 6366 X | | | | | | Bradford | 64.0 | 0.320 | 26.3 | 1292.0 | 276.8 |
| 5367 | 21.9 | 0.130 | 18.6 | 777.3 | 295.9 | Pr>F ⁵ | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| 5280 X 8378 | 29.4 | 0.140 | 17.3 | 719.1 | 313.3 | LSD ⁵ | 14.6 | 0.057 | 6.9 | 366.4 | 200.3 |
| Bersky | 26.6 | 0.143 | 34.5 | 1740.7 | 368.0 | | | | | | |

Sorted by: Total Yield (t/A) (decreasing)

| Cultivar or Breeding Selection | Disease Severity (%) ¹ 9/11 | Relative AUDPC ² | Total Yield (t/A) ³ | Gross Value of Yield (\$) | | Cultivar or Breeding Selection | Disease Severity (%) ¹ 9/11 | Relative AUDPC ² | Total Yield (t/A) ³ | Gross Value of Yield (\$) | |
|--------------------------------|--|-----------------------------|--------------------------------|---------------------------|---------------------|--------------------------------|--|-----------------------------|--------------------------------|---------------------------|---------------------|
| | | | | Slicers ⁴ | Dicers ⁴ | | | | | Slicers ⁴ | Dicers ⁴ |
| Cupar | 21.9 | 0.101 | 46.6 | 1984.7 | 1490.3 | Bremen | 23.2 | 0.113 | 30.1 | 1322.4 | 342.3 |
| Carson | 8.6 | 0.044 | 44.0 | 1903.4 | 1448.0 | Enterprise | 23.4 | 0.116 | 29.4 | 1097.4 | 73.8 |
| Bejo 2510 | 17.2 | 0.102 | 39.9 | 1840.0 | 300.0 | Prodigy | 37.0 | 0.181 | 29.1 | 1372.0 | 733.5 |
| PX 713087 | 45.8 | 0.219 | 37.0 | 1539.4 | 1055.1 | Nagadir | 34.9 | 0.164 | 28.2 | 1202.0 | 126.0 |
| XCR-9840 | 18.0 | 0.076 | 35.9 | 1319.8 | 155.8 | Early Gold | 56.3 | 0.260 | 28.2 | 1259.6 | 738.5 |
| FMX 619 | 33.3 | 0.159 | 35.8 | 1653.7 | 1017.8 | Heritage | 39.1 | 0.183 | 28.1 | 1273.4 | 254.5 |
| SugarSnax 54 | 16.4 | 0.090 | 35.5 | 1569.3 | 348.1 | Florida | 31.0 | 0.157 | 27.5 | 1380.7 | 377.1 |
| Bolero | 9.0 | 0.047 | 35.0 | 1675.9 | 254.5 | Bejo 2588 | 12.5 | 0.069 | 26.8 | 1239.0 | 260.3 |
| Bersky | 26.6 | 0.143 | 34.5 | 1740.7 | 368.0 | Bradford | 64.0 | 0.320 | 26.3 | 1292.0 | 276.8 |
| TriplePlay 58 | 14.1 | 0.087 | 34.0 | 1539.5 | 326.6 | SXC 8502 | 15.2 | 0.096 | 26.2 | 916.0 | 108.6 |
| SBC K15 | 18.0 | 0.097 | 33.5 | 1081.5 | 99.5 | PX 719116 | 57.8 | 0.286 | 25.4 | 1283.4 | 625.0 |
| PS 80494 | 35.4 | 0.163 | 33.5 | 1552.3 | 870.3 | Lucky B | 47.9 | 0.260 | 23.6 | 1158.3 | 264.4 |
| Canada | 22.4 | 0.126 | 33.0 | 1408.9 | 963.1 | HMX 2286 | 47.9 | 0.252 | 23.6 | 1076.5 | 305.0 |
| Arrowhead | 9.4 | 0.068 | 32.8 | 1463.6 | 484.1 | Nikki | 59.9 | 0.313 | 23.6 | 1093.4 | 121.8 |
| HMX 2289 | 54.2 | 0.227 | 32.8 | 1528.1 | 810.6 | Columbia | 15.6 | 0.094 | 23.2 | 521.6 | 11.6 |
| SRC 3325 | 21.1 | 0.117 | 32.6 | 1354.2 | 214.7 | 5280 X 6366 X | | | | | |
| Danvers 126 | 42.7 | 0.213 | 32.5 | 1381.2 | 965.6 | 5367 | 21.9 | 0.130 | 18.6 | 777.3 | 295.9 |
| Sirocco | 22.7 | 0.110 | 32.4 | 1503.8 | 208.9 | 5280 X 8378 | 29.4 | 0.140 | 17.3 | 719.1 | 313.3 |
| Gold King | 43.8 | 0.214 | 32.2 | 1308.4 | 878.6 | 6333 X 6366 X | | | | | |
| Spearhead | 15.2 | 0.081 | 31.9 | 978.2 | 63.0 | 6526 | 43.8 | 0.216 | 17.1 | 680.4 | 121.0 |
| Recoleta | 30.0 | 0.151 | 31.2 | 1520.5 | 669.7 | Pr>F ⁵ | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Prospector | 21.1 | 0.117 | 30.3 | 1051.1 | 112.7 | LSD ⁵ | 14.6 | 0.057 | 6.9 | 366.4 | 200.3 |
| Noveno | 44.3 | 0.182 | 30.2 | 1444.2 | 115.2 | | | | | | |

Sorted by: Gross Value of Yield Graded as Slicers (decreasing)

| Cultivar or Breeding Selection | Disease Severity (%) 9/11 | Relative AUDPC | Total Yield (t/A) ¹ | Gross Value of Yield (\$) | | Cultivar or Breeding Selection | Disease Severity (%) 9/11 | Relative AUDPC | Total Yield (t/A) ¹ | Gross Value of Yield (\$) | |
|--------------------------------|---------------------------|----------------|--------------------------------|---------------------------|---------------------|--------------------------------|---------------------------|----------------|--------------------------------|---------------------------|---------------------|
| | | | | Slicers ² | Dicers ² | | | | | Slicers ² | Dicers ² |
| Cupar | 21.9 | 0.101 | 46.6 | 1984.7 | 1490.3 | SugarSnax 54 | 16.4 | 0.090 | 35.5 | 1569.3 | 348.1 |
| Carson | 8.6 | 0.044 | 44.0 | 1903.4 | 1448.0 | PS 80494 | 35.4 | 0.163 | 33.5 | 1552.3 | 870.3 |
| Bejo 2510 | 17.2 | 0.102 | 39.9 | 1840.0 | 300.0 | TriplePlay 58 | 14.1 | 0.087 | 34.0 | 1539.5 | 326.6 |
| Bersky | 26.6 | 0.143 | 34.5 | 1740.7 | 368.0 | PX 713087 | 45.8 | 0.219 | 37.0 | 1539.4 | 1055.1 |
| Bolero | 9.0 | 0.047 | 35.0 | 1675.9 | 254.5 | HMX 2289 | 54.2 | 0.227 | 32.8 | 1528.1 | 810.6 |
| FMX 619 | 33.3 | 0.159 | 35.8 | 1653.7 | 1017.8 | Recoleta | 30.0 | 0.151 | 31.2 | 1520.5 | 669.7 |

| Cultivar or Breeding Selection | Disease Severity (%) 9/11 | Relative AUDPC | Total Yield (t/A) ¹ | Gross Value of Yield (\$) ² | | Cultivar or Breeding Selection | Disease Severity (%) 9/11 | Relative AUDPC | Total Yield (t/A) ¹ | Gross Value of Yield (\$) ² | |
|--------------------------------|---------------------------|----------------|--------------------------------|--|---------------------|--------------------------------|---------------------------|----------------|--------------------------------|--|---------------------|
| | | | | Slicers ² | Dicers ² | | | | | Slicers ² | Dicers ² |
| Sirocco | 22.7 | 0.110 | 32.4 | 1503.8 | 208.9 | Lucky B | 47.9 | 0.260 | 23.6 | 1158.3 | 264.4 |
| Arrowhead | 9.4 | 0.068 | 32.8 | 1463.6 | 484.1 | Enterprise | 23.4 | 0.116 | 29.4 | 1097.4 | 73.8 |
| Noveno | 44.3 | 0.182 | 30.2 | 1444.2 | 115.2 | Nikki | 59.9 | 0.313 | 23.6 | 1093.4 | 121.8 |
| Canada | 22.4 | 0.126 | 33.0 | 1408.9 | 963.1 | SBC K15 | 18.0 | 0.097 | 33.5 | 1081.5 | 99.5 |
| Danvers 126 | 42.7 | 0.213 | 32.5 | 1381.2 | 965.6 | HMX 2286 | 47.9 | 0.252 | 23.6 | 1076.5 | 305.0 |
| Florida | 31.0 | 0.157 | 27.5 | 1380.7 | 377.1 | Prospector | 21.1 | 0.117 | 30.3 | 1051.1 | 112.7 |
| Prodigy | 37.0 | 0.181 | 29.1 | 1372.0 | 733.5 | Spearhead | 15.2 | 0.081 | 31.9 | 978.2 | 63.0 |
| SRC 3325 | 21.1 | 0.117 | 32.6 | 1354.2 | 214.7 | SXC 8502 | 15.2 | 0.096 | 26.2 | 916.0 | 108.6 |
| Bremen | 23.2 | 0.113 | 30.1 | 1322.4 | 342.3 | 5280 X 6366 X | | | | | |
| XCR-9840 | 18.0 | 0.076 | 35.9 | 1319.8 | 155.8 | 5367 | 21.9 | 0.130 | 18.6 | 777.3 | 295.9 |
| Gold King | 43.8 | 0.214 | 32.2 | 1308.4 | 878.6 | 5280 X 8378 | 29.4 | 0.140 | 17.3 | 719.1 | 313.3 |
| Bradford | 64.0 | 0.320 | 26.3 | 1292.0 | 276.8 | 6333 X 6366 X | | | | | |
| PX 719116 | 57.8 | 0.286 | 25.4 | 1283.4 | 625.0 | 6526 | 43.8 | 0.216 | 17.1 | 680.4 | 121.0 |
| Heritage | 39.1 | 0.183 | 28.1 | 1273.4 | 254.5 | Columbia | 15.6 | 0.094 | 23.2 | 521.6 | 11.6 |
| Early Gold | 56.3 | 0.260 | 28.2 | 1259.6 | 738.5 | | | | | | |
| Bejo 2588 | 12.5 | 0.069 | 26.8 | 1239.0 | 260.3 | Pr>F ⁵ | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Nagadir | 34.9 | 0.164 | 28.2 | 1202.0 | 126.0 | LSD ⁵ | 14.56 | 0.057 | 6.9 | 366.4 | 200.3 |

Sorted by: Gross Value of Yield Graded as Dicers (decreasing)

| Cultivar or Breeding Selection | Disease Severity (%) 9/11 | Relative AUDPC ² | Total Yield (t/A) ³ | Gross Value of Yield (\$) ⁴ | | Cultivar or Breeding Selection | Disease Severity (%) 9/11 | Relative AUDPC ² | Total Yield (t/A) ³ | Gross Value of Yield (\$) ⁴ | |
|--------------------------------|---------------------------|-----------------------------|--------------------------------|--|---------------------|--------------------------------|---------------------------|-----------------------------|--------------------------------|--|---------------------|
| | | | | Slicers ⁴ | Dicers ⁴ | | | | | Slicers ⁴ | Dicers ⁴ |
| Cupar | 21.9 | 0.101 | 46.6 | 1984.7 | 1490.3 | 5367 | | | | | |
| Carson | 8.6 | 0.044 | 44.0 | 1903.4 | 1448.0 | Bradford | 64.0 | 0.320 | 26.3 | 1292.0 | 276.8 |
| PX 713087 | 45.8 | 0.219 | 37.0 | 1539.4 | 1055.1 | Lucky B | 47.9 | 0.260 | 23.6 | 1158.3 | 264.4 |
| FMX 619 | 33.3 | 0.159 | 35.8 | 1653.7 | 1017.8 | Bejo 2588 | 12.5 | 0.069 | 26.8 | 1239.0 | 260.3 |
| Danvers 126 | 42.7 | 0.213 | 32.5 | 1381.2 | 965.6 | Bolero | 9.0 | 0.047 | 35.0 | 1675.9 | 254.5 |
| Canada | 22.4 | 0.126 | 33.0 | 1408.9 | 963.1 | Heritage | 39.1 | 0.183 | 28.1 | 1273.4 | 254.5 |
| Gold King | 43.8 | 0.214 | 32.2 | 1308.4 | 878.6 | SRC 3325 | 21.1 | 0.117 | 32.6 | 1354.2 | 214.7 |
| PS 80494 | 35.4 | 0.163 | 33.5 | 1552.3 | 870.3 | Sirocco VAC30 | 22.7 | 0.110 | 32.4 | 1503.8 | 208.9 |
| HMX 2289 | 54.2 | 0.227 | 32.8 | 1528.1 | 810.6 | XCR-9840 | 18.0 | 0.076 | 35.9 | 1319.8 | 155.8 |
| Early Gold | 56.3 | 0.260 | 28.2 | 1259.6 | 738.5 | Nagadir | 34.9 | 0.164 | 28.2 | 1202.0 | 126.0 |
| Prodigy | 37.0 | 0.181 | 29.1 | 1372.0 | 733.5 | Nikki | 59.9 | 0.313 | 23.6 | 1093.4 | 121.8 |
| Recoleta | 30.0 | 0.151 | 31.2 | 1520.5 | 669.7 | 6333 X 6366 X | | | | | |
| PX 719116 | 57.8 | 0.286 | 25.4 | 1283.4 | 625.0 | 6526 | 43.8 | 0.216 | 17.1 | 680.4 | 121.0 |
| Arrowhead | 9.4 | 0.068 | 32.8 | 1463.6 | 484.1 | Noveno | 44.3 | 0.182 | 30.2 | 1444.2 | 115.2 |
| Florida | 31.0 | 0.157 | 27.5 | 1380.7 | 377.1 | Prospector | 21.1 | 0.117 | 30.3 | 1051.1 | 112.7 |
| Bersky | 26.6 | 0.143 | 34.5 | 1740.7 | 368.0 | SXC 8502 | 15.2 | 0.096 | 26.2 | 916.0 | 108.6 |
| SugarSnax 54 | 16.4 | 0.090 | 35.5 | 1569.3 | 348.1 | SBC K15 | 18.0 | 0.097 | 33.5 | 1081.5 | 99.5 |
| Bremen | 23.2 | 0.113 | 30.1 | 1322.4 | 342.3 | Enterprise | 23.4 | 0.116 | 29.4 | 1097.4 | 73.8 |
| TriplePlay 58 | 14.1 | 0.087 | 34.0 | 1539.5 | 326.6 | Spearhead | 15.2 | 0.081 | 31.9 | 978.2 | 63.0 |
| 5280 X 8378 | 29.4 | 0.140 | 17.3 | 719.1 | 313.3 | Columbia | 15.6 | 0.094 | 23.2 | 521.6 | 11.6 |
| HMX 2286 | 47.9 | 0.252 | 23.6 | 1076.5 | 305.0 | Pr>F ⁵ | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Bejo 2510 | 17.2 | 0.102 | 39.9 | 1840.0 | 300.0 | LSD ⁵ | 14.6 | 0.057 | 6.9 | 366.4 | 200.3 |
| 5280 X 6366 X | 21.9 | 0.130 | 18.6 | 777.3 | 295.9 | | | | | | |

- Severity of leaf blight symptoms was rated on a Horsfall-Barratt scale of 0 (no infection) to 11 (all foliage dead). Ratings were converted to percent foliage infection.
- Relative area under the disease progress curve. Data for each date were plotted on a graph and the area under the line was calculated for each treatment providing a measure of the relative severity of disease throughout the season. A disease rating of 100% foliage infection for the entire season would produce a value of 1.0. All relative AUDPC values are expressed as a proportion of this value.
- A 5-ft section of row was hand dug from each of the 2 rows in each plot and yield was converted to t/A. Hand digging is likely to result in a higher apparent yield as fewer carrots are lost than when mechanically dug. Carrots were graded into five size classes and culls (misshapen or rotted). The size classes were then grouped appropriately to conform to standards for dicing or slicing carrots.
- Values are calculated based on typical 2003(dicer) or 2002 (slicer) processing contracts for uncrowned carrots.
 - Dicing carrot contract: Minimum size accepted is 1 1/4 inch; discard class includes culls and carrots below the minimum diameter. Price per ton is: >90% of crop over 2" diameter - \$44.65; 81-90% > 2" - \$41.80; 71-80% > 2" - \$38.15; 61-70% > 2" - \$36.60; 51-60% > 2" - \$35.40; < 51% > 2" - \$34.25.
 - Slicing carrot contract: Minimum size accepted is 3/4 inch diameter; discard class includes culls and carrots below the minimum diameter. Price per ton is: < 10% over 1 3/4" diameter - \$54.70; 10-19% > 1 3/4" - \$53.90; 20-29% > 1 3/4" - \$52.40; 30-39% > 1 3/4" - \$49.40; 40-49% > 1 3/4" - \$46.45; >49% > 1 3/4" - \$43.60.
- Analysis of variance was performed on data, and Fisher's protected least significant difference (LSD) was calculated (alpha=0.05). NS = not significant at P = 0.10 (* indicates significant at P = 0.10 but not at P = 0.05).