

# Beet Variety Evaluation

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Twenty-three beet varieties were evaluated in a replicated trial for their performance under Kentucky conditions. These included red, golden, and one white beet variety.

## Materials and Methods

Varieties were seeded in the field on May 29 at the Horticulture Research Farm in Lexington. One hundred seeds (beet balls) were planted in each 20-foot long plot. Rows were 22 inches apart. Each treatment was replicated four times in a randomized complete block design. Fifty pounds per acre of nitrogen as ammonium nitrate was applied to the plot. No fungicides, insecticides, or herbicides were used in this trial. Ten beets from each replication were evaluated for uniformity of size, uniformity of shape, and exterior appearance. One beet from each replication was evaluated for soluble solids content and for flavor (raw) by two evaluators. Soluble solids were measured with a refractometer on a ¼-inch diameter core taken with a cork borer horizontally through the midsection of the beet. Juice was extracted using a garlic press. Raw beet flavor was determined from a slice at the center of each beet. Foliage disease evaluations were made on August 19.

### ***Cooking Process — Roots***

Beet roots were roasted for 45 minutes in a 400°F convection oven. Cooled beets were peeled and sliced for sampling. Attempts were made to select beet roots that were similar in size. Beet roots were evaluated by four to five evaluators for appearance and flavor.

### ***Cooking Process — Greens***

Beet greens (leaves from each beet) were sautéed in ½ teaspoon of canola oil over medium heat (5 on a scale of 1-9) until wilted. One half-cup of water was added to the greens and covered. Greens were simmered until tender. The leaves of the beets varied in volume of greens produced, leaf texture, and stalk size. Because of the variations, cooking time varied for each variety. The greens with larger stalks would have been more appealing if prepared as Swiss Chard (dice stalks and sauté before adding leaves). Beet greens were evaluated while warm. Two evaluators rated the cooked greens for appearance and flavor. Those greens receiving a score of 2 were considered bitter and the rating was not based on the stem texture.

## Results and Discussion

The 2009 growing season was cool and abnormally wet. Beets were harvested at diameters of 1.5 to 3 inches. Harvest and evaluation data for the replicated trial are in Table 1 and data for whole plant appearance and cooked beets and greens are in Table 2. Merlin, Red Ace, Kestrel, and Detroit Supreme had high rankings and were the best red beets in terms of cooked appearance and flavor for both roots and greens. Excalibur and Red Titan were notable for beet root roasted flavor. Solo, the highest ranked variety in the trial, and Touchstone Gold had high ratings for cooked greens appearance and flavor. Solo, Excalibur, Merlin, Red Ace, Kestrel, and Red Cloud had some of the best raw taste evaluations (Table 1). Raw beets are used in salads and should not be bitter. Taunus was the best cylindrical shaped beet. The cylindrical beets were noted to cook more evenly than globe shaped beets and provided a uniform size and shape when sliced.

Uniformity is desirable in beets that are sliced for canning. Touchstone Gold was the best golden beet. Golden beets are notable for having poor germination percentages and Touchstone Gold tended to have a higher germination rating than the other two golden varieties. Chioggia is an older variety that is notable for its red and white zoning and Blankoma was the one white beet in the trial.

The wet season contributed to the development of the *Cercospora* foliage disease (Table 1). The golden beets, Blankoma, Bulls Blood, Chioggia, Detroit Supreme, Taunus, Cylindra, and Early Wonder had some of the lowest *Cercospora* ratings. However, the white, golden beets, Chioggia, Taunus, and Moneta all were observed to have higher levels of *Pseudomonas* bacterial leaf spot, which is not shown in the tables.

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**Table 1.** Beet variety ranking, germination, disease rating and root characteristics.

Cultivar	Days Maturity	Seed Source	Ranking <sup>1</sup>	Germination (1-200) <sup>2,4</sup>	Cercospora Disease Rating (0-10) <sup>3,4</sup>	Uniformity of Size (1-5) <sup>5</sup>	Uniformity of Shape (1-10) <sup>6</sup>	Exterior Appearance (1-5) <sup>5</sup>	Sugar (%) <sup>4</sup>	Taste raw (1-5) <sup>5</sup>
Solo	49	SW	47.5	76.8 defghi	2.6 cdefg	4.1	7.0	3.7	10.2 abcde	4.3
Excalibur	60	SI	46.6	155 a	3.4 ab	3.1	7.3	3.8	10.7 abc	4.3
Merlin	55	RU	46.5	79.5 cdefgh	2.5 defg	3.6	7.3	4	10.4 abcd	4
Red Ace	53	RU	45.6	93.3 bcd	2.6 cdefg	3.5	6.3	3.6	9.7 bcdefg	4.1
Tanus	65	SW	45.4	65.8 ghij	2 ghi	3.4	8.8	4.5	8.1 ghi	3.3
Kestrel	53	RU	45.2	80.8 cdefg	2.9 bcde	3.1	7.3	4	9.7 bcdefg	4.6
Red Titan	52-54	SI	44.4	158.5 a	3.6 a	3.5	6.8	4.1	11.5 a	4.1
Red Cloud	53	SW	44.4	100.8 bc	2.8 bcdef	3.8	6.5	3.9	11.2 ab	4.2
Ruby Queen	60	RU	42.5	77.3 defghi	2.6 cdefg	3.3	7.0	3.5	9.7 abcdef	3.9
Eagle	54	ST	42.1	71.8 efghi	2.3 efgh	3.4	5.5	3.3	9.3 cdefgh	3.9
Touchstone Gold	60	SW	41.9	58.8 hij	0.4 k	3.3	6.3	3.8	7.6 hi	3
Detroit Supreme	59	ST	40.8	70.3 fghi	1.6 hig	4.0	4.0	2.5	8.5 efghi	2.6
Cylindra	60	BU	39.4	90.3 bcdef	2 ghi	3.0	6.8	3.3	8.3 ghi	3.6
Warrior	57	CF	39.3	82.8 bcdefg	3.1 abcd	4.1	6.8	3.3	10.1 abcde	3.3
Blankoma	55	JS	39.3	92.8 bcde	0.4 k	3.4	5.8	3.2	10.1 abcde	3.6
Bull's Blood	60	RU	38.8	57 ij	1 jk	2.5	5.5	2.8	7.7 hi	2.1
Chioggia	60	RU	38.6	76.8 defghi	1.5 ij	3.8	7.0	3.5	10.9 abc	2.9
Detroit Dk Red	59	BU	38.4	97.3 bcd	2.6cdefg	4.0	6.3	3.1	8.8 defghi	2.8
Early Wonder	52	RU	37.5	66.8 ghi	2 ghi	3.5	6.8	2.6	9.2 cdefgh	2.6
Burpee Golden	60	RU	36.4	30.8 k	0.5 k	2.8	6.5	3.7	7.3 i	2.6
Moneta	60	SW	36.3	30.3 k	2.1 fghi	3.9	5.3	2.9	7.8 hi	2.7
Red Heart	58	BU	35.9	102.8 b	3.3 abc	3.4	3.8	2.6	9.4 bcdefgh	3.6
Golden Beet	65	SI	34.9	45.3 jk	0.4 k	2.9	3.7	2.6	7.7 hi	2.9

<sup>1</sup>Ranking based on summation of Table 1 and 2 data. The Cercospora disease rating is subtracted from the total ranking and the germination number is not included.

<sup>2</sup>Germination based on Planting 100 beet balls, each normally containing more than one seed. Solo and Moneta are monogerm and contain one seed.

<sup>3</sup>Cercospora disease rating: 0=no disease; 10=complete blighting.

<sup>4</sup>Numbers followed by the same letter are not significantly different (Waller-Duncan multiple range test LSD P=0.05).

<sup>5</sup>Rating: 1=poor; 5=excellent.

<sup>6</sup>Rating based on number of beets out of 10 with a uniform shape.

**Table 2.** Beet appearance and cooked beet and greens evaluations.

Variety	Appearance Whole Uncooked Beets and Greens (1-5) <sup>1</sup>	Appearance Sliced Roasted (1-5) <sup>1</sup>	Flavor Roasted (1-5) <sup>1</sup>	Greens Appearance Cooked (1-5) <sup>1</sup>	Greens Flavor Cooked (1-5) <sup>1</sup>	Comments <sup>2</sup>
Solo	5	4.5	3.3	4	4	V dk interior, not bitter, early maturing, monogerm, excellent cooked greens, globe shape
Excalibur	5	4.5	4.3	3.5	3.5	OP, V firm, sweet, dk interior, uniform shape, excellent cooked, not bitter
Merlin	3	4	4.2	4	4.5	V firm dk interior, not bitter, smaller size, uniform shape, excellent cooked beets and greens
Red Ace	5	4.4	3.6	4	4	V. dark interior, not bitter, excellent cooked greens, globe shape
Taurus	5	4.3	3.5	3.5	3	OP, V dk red interior, not bitter, cylindrical shape, smooth skin
Kestrel	3	4.4	4	4	4	V sweet, dk interior, excellent roasted, not bitter, globe shape
Red Titan	4	4.5	4	3	2.5	V attractive dk interior, V sweet raw and cooked, slightly bitter, globe shape
Red Cloud	4	3.8	2.8	3.5	3.5	V dk attractive interior, round shape, not bitter
Ruby Queen	4	4.4	2.8	3.5	3	V dk interior, uniform shape, slight bitterness
Eagle	5	4	4	3	3	V dk interior, irregular shape, small size, not bitter, excellent roasted
Touchstone Gold	2	4.3	3.5	4	4.5	OP, overall best golden beet, excellent cooked greens, not bitter, round shape
Detroit Supreme	4	4.3	4.5	4	4	OP, V dk interior, irregular shape, excellent cooked beets and greens
Cylindra	2	3.8	3.6	3	4	OP, dk interior, cylindrical shape, variable size, not bitter, excellent cooked greens
Warrior	2	3.6	3.2	3	3	V firm dk interior, not bitter, maroon tops, globe shape
Blankoma	1	3.8	2.8	3	3	OP, white beet, slightly bitter, dk spots on skin, round to slightly conical
Bull's Blood	5	4	3.2	4	3	OP, dk maroon greens, flattened globe shape
Chioggia	1	3.8	2.2	3	2	OP, attractive purple and white interior zoning, some bitterness, globe shape
Detroit Dark Red	2	4	4	3	3	OP, industry standard, V dk interior, excellent flavor roasted, slight bitterness
Early Wonder	4	3.8	3	2	2	OP, some bitterness, flattened globe shape

<sup>1</sup>Appearance and flavor 1=poor, 5=excellent. Roots were rated by four or five evaluators and greens were rated by two evaluators for consumer appeal.

<sup>2</sup>Comments on bitterness refer to the raw taste evaluation in Table 1. OP refers to open pollinated varieties all others are hybrid; V= very and dk = dark.

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**Table 2** (*continued*)

Variety	Appearance Whole Uncooked Beets and Greens (1-5) <sup>1</sup>	Appearance Sliced Roasted (1-5) <sup>1</sup>	Flavor Roasted (1-5) <sup>1</sup>	Greens Appearance Cooked (1-5) <sup>1</sup>	Greens Flavor Cooked (1-5) <sup>1</sup>	Comments <sup>2</sup>
Burpee Golden	3	3.2	2.8	3	2	OP, not bitter, round shape
Moneta	3	4	2.8	3	3	OP, V dk interior, monogerm, not bitter, round shape
Red Heart	3	3.4	3	3.5	3.5	V dk interior, not bitter, elongated globe shape
Golden Beet	2	4	3.5	3	3	OP, irregular shape, not bitter, round shape

<sup>1</sup>Appearance and flavor 1=poor, 5=excellent. Roots were rated by four or five evaluators and greens were rated by two evaluators for consumer appeal.

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