

## Strawberry Variety Performance in New England

David T. Handley, Mark G. Hutton and James F. Dill

University of Maine Cooperative Extension, P.O. Box 179, Monmouth, ME 04259, USA

Strawberry production in northern New England is limited by a relatively short growing season, severe winter conditions, and red stele root rot (*Phytophthora fragariae*). The market for strawberries is almost exclusively local and, because nearly all of the fruit is being sold fresh as either “pick-your-own” or at nearby farm markets, excellent fresh quality is essential. Demand for fresh fruit is strongest near concentrated population centers. However, suitable land for strawberry production is often very limited in such areas, requiring plantings to be high yielding in order to both meet demand and be profitable. There are presently no strawberry breeding programs in the northern New England region. Thus introductions from breeding programs in other regions must be tested in order to evaluate their adaptability and performance under northern New England growing conditions and cultural practices.

The trial was established at Highmoor Farm, part of the Maine Agricultural and Forestry Experiment Station, in Monmouth, Maine. Twenty-one strawberry cultivars were planted from dormant crowns on May 17-18, 2006 (Table 1). The site had a silt loam soil, previously planted to mixed vegetables. It was amended with 10-10-10 fertilizer at a rate of 500 lbs./acre prior to planting. The plots were established as narrow matted rows atop 8 inch high, 18 inch wide raised beds with a single drip irrigation line buried approximately 2 ½ inches deep in the beds. Crowns were planted 12 inches apart in rows four feet apart. Each plot was 18 feet long. Each cultivar was replicated three times in a randomized complete block design. Flowers were removed during the planting year, and runner plants were allowed to root to fill out the rows to a width of 0.5 m. Straw mulch was applied over the planting for winter protection on in the late fall of 2006 and 2007. The mulch was raked off of the plants in late April of each harvest year. Calcium nitrate was applied over the plants at a rate of 85 lbs. /acre on approximately three weeks after mulch removal. The planting was sprayed three times with a combination of recommended fungicides and insecticides during the bloom period to control fruit rots, tarnished plant bug and strawberry bud weevil. Harvest began on in late June of 2007 and 2008, and continued twice weekly through late July. Fruit was harvested from each plot, graded, counted and weighed.

Excessive rain following planting in 2006 flooded most of the plots in the planting. Despite this, the plants generally showed good growth and vigor during the summer months. The exceptions to this were ‘L’Amour’ and ‘St. Laurent’, which showed symptoms of red stele root rot by the fall and during the following spring, and produced poor yields during both seasons. The cultivars ‘Mesabi’, ‘Sable’, ‘Cavendish’, ‘Mira’ and ‘Jewel’ produced the highest yields of marketable fruit in this trial (Table 1). ‘Wendy’, ‘Brunswick’, ‘Cabot’, ‘Seneca’ and ‘Darselect’ also produced acceptable yields (Figure 1). ‘L’Amour’, ‘St. Laurent’, ‘Canoga’, ‘Clancy’, ‘Evangeline’, ‘Orleans’ and ‘Allstar’ produced relatively low yields. Itasca performed very well in the first year of harvest, but yielded very poorly in the second. Alternatively, ‘Wendy’ yielded very well in the second season, but had moderate yields during the first season. ‘Cabot’ produced the largest fruit in the trial, followed by ‘Clancy’, and ‘Ovation’. ‘Evangeline’ produced the smallest fruit in the trial. Fruiting patterns showed a range of peak harvest dates and harvest durations among cultivars (Figure 1). Of the top five yielding varieties, ‘Sable’ showed the

earliest harvest peak, followed by 'Cavendish' and 'Mesabi'. 'Jewel' and 'Mira' had the latest harvest peaks of the top five varieties, with 'Jewel' having the shortest harvest period. Based on these data, 'Mesabi', 'Sable', 'Cavendish', 'Mira' and 'Jewel' appear to be cultivars with the highest potential for northern New England, producing very good yields and having good fruit quality characteristics. Of the newest cultivars trialed, 'Wendy', 'Brunswick', 'Cabot' and 'Darselect' appear to be worthy of further trial in this region. The harvest patterns of the top yielding cultivars indicate a need for both very early and late maturing cultivars that produce large fruit and higher yields in order to extend the harvest season. Future breeding efforts for this region should also consider incorporation of resistance to the prevalent races of *Phytophthora fragariae*.

Table 1. University of Maine Strawberry Variety Trial: Narrow matted row, raised bed System, Highmoor Farm, Monmouth, Maine, 2006-2008.

Variety	2007 kg/plot	2008 kg/plot	2007 Berry Wt. (g)	2008 Berry Wt. (g)	2007 %Cull Wt.	2008 %Cull Wt.	Two Year Yield Rank/Comments
Allstar	10.03	11.55	11.04	10.31	15.05	32.52	16. Weak, variable plants; light-colored fruit, rough, firm, mild flavor; late
Annapolis	10.11	17.03	11.89	11.68	16.35	24.71	11. Vigorous plant; somewhat light color, dull, good flavor, somewhat soft; PM
Brunswick	18.57	16.56	13.48	11.35	14.31	29.03	7. Vigorous plant, fruit dark, variable, musky-sweet, a bit soft, picks well
Cavendish	20.04	21.55	13.58	14.04	18.32	33.75	3. Vigorous plant; good color, very sweet, firm, mildew; early-mid
Cabot	18.68	13.27	21.52	15.97	21.85	36.76	8. Vigorous plant; very large, rough fruit, light red, good, mild flavor, a bit soft
Clancy	10.36	7.599	19.23	10.44	25.45	24.05	19. Vigorous plant, fruit slightly dark, firm, nice appearance, flavor a bit flat, PM
Canoga	10.46	4.87	12.73	9.23	20.30	34.51	20. Short plant; fruit dark, glossy, very firm, sweet, mildew; mid-late
Darselect	16.65	11.70	13.11	9.77	19.71	28.07	10. Vigorous, rank plant; light color, sweet, "melon" flavor, attractive, leaf scorch
Evangeline	10.06	9.47	9.67	7.59	11.29	31.06	18. Weak, short plant; fruit dark, somewhat soft with good flavor; PM; early
Honoeye	15.43	11.29	10.94	7.67	20.32	27.06	12. Plant vigorous, variable; fruit glossy, tart, flat, firm; early-mid
Itasca	20.47	2.08	11.43	7.91	18.96	47.10	13. Compact plant; fruit hidden, good color but dull, bland, a bit soft, leaf spot
Jewel	21.17	16.96	11.10	10.63	15.66	25.47	5. Vigorous but uneven plant; fruit good color, firm, attractive, flavor a bit flat
L'Amour	4.67	2.10	12.26	10.70	20.48	32.69	22. Weak, spreading plant; fruit good color, firm, attractive, good flavor; red stele?
Ovation	10.43	11.50	16.22	12.21	35.24	32.21	15. Vigorous, spreading plant; light color with mild, sweet flavor, firm, attractive
Seneca	16.40	13.55	13.93	10.49	17.69	27.76	9. Vigorous, upright plant; fruit somewhat dark, tart, firm. Late-midseason
Mesabi	27.63	17.12	10.80	10.88	18.12	37.97	1. Low, spreading plant; fruit good color, firm, tart, hard to pick, some leaf spot
Mira	18.40	21.14	11.06	10.75	15.01	27.36	4. Vigorous, upright plant; fruit light colored, slightly tart, firm, attractive
Orleans	14.53	6.40	12.53	9.88	18.75	25.22	17. Plant vigorous, rank; fruit dark, glossy, sweet-musky, soft, attractive; mid-late
Sable	20.73	21.07	10.46	10.33	13.23	31.27	2. Plant thin; med. size fruit, good color, flavor, slightly soft, leaf spot; early-mid
Yamaska	12.36	14.00	15.64	9.35	27.02	20.68	14. Vigorous but small plants; dark, glossy fruit, firm and tart; late
St. Laurent	9.45	4.22	12.30	9.68	25.06	37.67	21. Weak, spreading plant; fruit glossy, good flavor, soft; PM, red stele?
Wendy	14.40	22.33	13.09	12.77	11.68	29.09	6. Vigorous plant, attractive fruit, sweet, lacks acid; good color and firmness
KRS-10	10.87	8.39	17.34	13.11	24.62	32.17	Late, vigorous, upright plant; fruit large, glossy, sweet w/ acid, firm, skin tender.
K93-20	15.36	17.81	11.16	11.73	16.59	26.43	Vigorous, spreading plant; fruit dark, firm mild and sweet; mid-late
LSD 0.05 <sup>1</sup>	7.64	5.70	3.10	1.737	8.35	9.754	Differences between means within a column must be this great for significance

<sup>1</sup> Data within a column must differ by this much to be considered statistically different according to the test for Least Significant Difference (95% confidence level). Plots 20' long x 1.5' wide raised bed matted rows, planted 2006.