

2010 Broccoli Variety Trail

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Varieties: The 2010 Broccoli Variety Trail consisted of 27 entries from 7 seed companies (table 2). Industry standards included Diplomat, Gypsy, Green Magic, Imperial and Windsor. Two varieties, Major and Bl 10, were included to evaluate heat tolerance.

Field Information and Experimental Design: Plants were seeded in the greenhouse on April 13, May, 13 and June 7 to produce plug transplants, which were planted into the field on May 19, June 17, and July 15, respectively. The trial was hosted by Greg Rush in Waterport, NY, Orleans County and was arranged as a complete randomized block design with three replications. Each replicate consisted of a single row of 10 plants with 36 inch row spacing and 18 inch plant spacing for the first planting and 15 inch plant spacing for second and third plantings.

Table 1. 2010 Weather data, taken from NEWA, Waterport.

	June	July	August	Sept
Average temperature (°F)	67.6	75.3	72.1	62.4
Maximum temperature (°F)	86.9	99.7	97.1	91.7
Minimum temperature (°F)	49.4	50.5	51.8	43.5
Rainfall (inches)	4.24	5.79	3.73	2.79
No. of days >90°F	0	8	7	3
	<i>1st planting</i>			
		<i>2nd planting</i>		
			<i>3rd planting</i>	

Fertility and Pests Pressure: The trial was located in sandy loam soil and fertility and pest management was maintained by the grower cooperator. Prior to planting, 300 lbs/A of 10-20-20 NPK was broadcast and incorporated. An additional 100 lbs of 32% Nitrogen, as ammonium nitrate, was side-dressed 3 to 4 weeks after transplanting. For weed control, Treflan was applied pre-plant and incorporated. For insect control of worm pests, Warrior was applied every 10 days. Fungicides for disease control and irrigation were not necessary and not applied.

Harvest Evaluation: Harvest took place upon maturity, every 3-4 days for approximately 3 weeks, per planting. There were 7 harvest dates for each planting date. The goal was to harvest each head at optimum maturity. All maturity, canopy height (ground to highest leaf) and head height (ground to top of head within canopy) and head diameter were measured. Harvested heads were trimmed and the both the head and trim was weighed individually. The color of each head (green, yellow, blue, mosaic, etc.), bead size (fine, medium, coarse, uneven), head firmness (loose, soft, medium, firm), heat stress (brown beading, inner leaves, yellow eye, disjointed

heads, riciness, etc.) were rated based on visual observations. Incidence of hollow cores was also recorded. Re-growth potential was rated on a scale of 0 to 3 (0 = none; 1 = 1-2 shoots with 1 cm heads; 2 = 3-4 shoots with 2 cm heads; 3 = >5 shoots with 3 cm or bigger heads). At harvest, heads were cut approximately 6 inches from the top.

Results:

Table 2. 2010 Broccoli variety entries, in order of approximate maturity as occurred in our trial. Varieties planted on each of the three planting dates, and their relative performance. Purple boxes with x's performed okay, yellow boxes with 'FAIL' indicate that that variety did not perform well for that planting date, and red boxes with '?' indicate that we did not have enough information to determine their success.

Entry - Days to maturity from transplant	Seed Company	Planting 1 Planted: May 19 Harvest: Jul 7 to 26	Planting 2 Planted: Jun 17 Harvest: Aug 8 to 27	Planting 3 Planted: Jul 15 Harvest: Sept 7 to 27
Blue Wind -49	Johnny's	X		
Major - 53	Seedway	X		
Windsor (std) – 55-90	Johnny's	X	?	X
Green Magic (std) - 57-75	Sakata	X	FAIL	X
Emerald Crown - 62	Sakata	X	FAIL	FAIL
Gypsy (std) – 59-97	Sakata	X	FAIL	X
Bay Meadows - 63	Seedway	X	X	
Emerald Pride – 62-95	Sakata	X	X	X
Imperial (std) – 68-102	Sakata	X	FAIL	X
Batavia	Bejo	X	FAIL	X
TBR-402 – 60-75	American Takii			X
Lucky	Bejo	FAIL	FAIL	X
Diplomat (std) – 65-100	Sakata	X	X	X
BI 10 – 60-75	Syngenta	FAIL	X	X
XBC 9512	Sakata		FAIL	X
Belstar - 66	Bejo	FAIL	FAIL	X
Coronado - ??	Bejo		X	X
Emerald Isle - ??	Sakata	X	X	X
Spirit - 75	Harris Moran		FAIL	X
Fiesta - ??	Bejo		FAIL	X
Beaumont - ??	Bejo		FAIL	X

Alborada - 72	Bejo	?	?	X
Premium Crop - 66	American Takii			?
Marathon – 68-80	Seedway			X
TBR 499 – 85-95	American Takii	FAIL	FAIL	?
Expo - 74	Seedway			FAIL

Variety Summaries:

Each variety was evaluated extensively at each planting that it was grown in (table 2). Below are summaries of the best performing varieties in the planting dates that they performed best in (table 3). *For complete summary of entire trial results, contact Christy Hoeping (cah59@cornell.edu; 585-798-4265 x38).*

Table 3. ‘Best of Trial’ Varieties:

Early (1 st) Planting	Mid (2 nd) Planting	Late (3 rd) Planting
Plant: May 19	Plant: June 17	Plant: July 15
Harvest: July	Harvest: August	Harvest: September
Bay Meadows Emerald Pride	Bay Meadows Emerald Pride Coronado	Green Magic Gypsy Emerald Pride TBR 402 Lucky Belstar Coronado Fiesta Beaumont

Bay Meadows (1st and 2nd planting): Seedway, 54-61 days on this trial. Blue/purple-green color in the 1st planting and blue-green in the 2nd. Medium bead size. Firmness was soft-medium in the 1st planting and medium-firm in the 2nd. Dome shaped heads that looked good, and preferred by grower cooperater. No lateral shoots. One of the most heat-tolerant varieties in the trial; some inner leaves in the 2nd planting. There was a high incidence of hollow cores from the 2nd planting (66.7%) and 16.7% in the 1st. Very uniform harvest maturity from the 2nd planting (70% on harvest 2 and 30% on harvest 3). Head diameter 5.75”, head weight 0.96 lbs, trim weight 0.61 lbs, poor re-growth potential (0.32 out of 3.0), canopy height 24.8”, head height 15.1”.



Beaumont (3rd planting): Bejo; 70 days in this trial. Green to purple-green color. Medium and sometimes uneven bead size. Firm, round heads that look good late. No lateral shoots, no



hollow cores, and no heat stress in late planting. Very even to mature with 73.8% heads ready on a single harvest date. Head diameter 4.6", head weight 0.66 lbs, trim weight 0.23 lbs, low re-growth potential (0.19 out of 3.0), canopy height 26.9", head height 18.25". Tall, bushy plants with little trim and minor re-growth.

Belstar (3rd planting): bejo, 66 days in this trial. Green color with medium-fine and some uneven beads. Firm-medium, small heads that were smooth, round, and semi-domed. No lateral shoots and no heat stress in late planting (first 2 plantings failed due to heat stress). 38.9% incidence of hollow cores. 55.6% heads were mature on one date and in the end they matured quickly and were unmarketable before we were able to harvest. Head diameter 4.3", head weight 0.72 lbs, trim weight 0.45 lbs, medium re-growth potential (0.33 out of 3.0), canopy height 22.3", head height 15.9". Good re-growth potential.



Coronado (2nd and 3rd planting): Bejo, 61-66 days in this trial. One of the best varieties in the 3rd planting. Color ranged from green-purple (2nd planting) to green and some green-blue (3rd planting). Bead size was coarse-medium (2nd planting) and medium-course (3rd planting). Head firmness was medium with some soft (2nd planting) and firm-medium (3rd planting). Heads were high dome, round, and pretty. Looked good in both plantings. Lateral shoots, especially in the 2nd planting. Heat stress consisted of minor brown beads and some inner leaves in the 2nd



planting and yellow eye in the 3rd. There were no hollow cores in the 2nd planting and 40.3% in the 3rd. Harvest maturity was fairly even in the 3rd planting (43% and 40.3%), however matured quickly in the end and some heads were unmarketable. Head diameter 4.6", head weight 0.60 lbs, little trim weight 0.22 lbs, re-growth potential (0.31 out of 3.0), canopy height 23.6", head height 18.4".

Emerald Pride (1st, 2nd, 3rd planting): Sakata, 55 days in this trial. One of the best early varieties and only variety that looked good all season long. Blue-green to green-blue color. There was variable bead size and head firmness; coarse beads with soft heads (1st), medium-

coarse, some uneven and soft-medium heads (2nd) and medium beads with soft-medium to firm (3rd). Some lumpy heads and thin stems and no lateral shoots. Generally tolerant for heat stress with minor yellow eye in 2nd planting. Low incidence of hollow cores (0%, 6.7% and 5.6%). Range in harvest maturity, generally with one moderate harvest and several smaller ones. Head diameter 5.57", head weight 0.67 lbs, trim weight 0.28 lbs, Very good re-growth potential (0.21 out of 3.0), canopy height 22.2", head height 16.0".



Fiesta (3rd planting): Bejo, 70 days. Looked good late. Green with some blue/purple head color. Bead size was medium-fine and heads were firm-medium with a round, small done. No lateral shoots. Showed minor heat stress in the form of brown, uneven beading. There were



30% hollow cores. Fairly even maturity (31.1% and 54.1% on two consecutive harvest dates). Head diameter 3.9", head weight 0.61 lbs, high trim weight 0.32 lbs, little re-growth potential (0.70 out of 3.0), canopy height 23.9", head height 16.4". Bushy plants with lots of leaves and lots of trim.

Green Magic (3rd planting): Sakata, 54 days to maturity in this trial. Green-blue to blue green color with medium bead size, sometimes fine. Head firmness was firm-medium to medium-firm. Heads were domed to smooth and looked attractive late. There were some lateral shoots and 30% hollow cores. Harvest maturity was fairly uniform over all harvest dates, with 60% ready on one date in the 3rd planting. Head diameter 5", head weight 0.85 lbs, trim weight 0.31 lbs, excellent re-growth potential (1.3 out of 3.0), canopy height 23.6", head height 15.0".



Gypsy (3rd planting): Sakata, 54 days to maturity in this trial. Green-blue to green-purple color with fine to medium bead size, sometimes uneven. Head firmness was medium-firm and especially firm in the center of the head. Heads were dome shaped, somewhat lumpy, looked the best in later harvests of the 3rd planting.

There were no lateral shoots and minor heat stress. Very high incidence of hollow cores, with 60.3% in the 3rd planting. Uneven maturity, 51.4% on first date, then spread out over four other harvests. Head diameter 5", head weight 0.64 lbs, trim weight 0.29 lbs, some re-growth potential (0.19 out of 3.0), canopy height 25.2", head height 17.2".



Gypsy: September 23, 2010

Lucky (3rd planting): Bejo, 58 days in this trial. Early plantings failed but it looked very attractive in the 3rd planting. Green color with medium-fine bead size and firm heads. Heads are really nice, smooth, with a high dome and thick stem. No lateral shoots and no heat stress.



Lucky: September 11, 2010

11.1% incidence of hollow cores. Uneven harvest maturity with 48.9% at one date and continuing over four others harvest days. Head diameter 5.5", head weight 0.92 lbs, trim weight 0.37 lbs. Big bushy plants with good re-growth potential (1.4 out of 3.0), canopy height 22.65", head height 15.2".

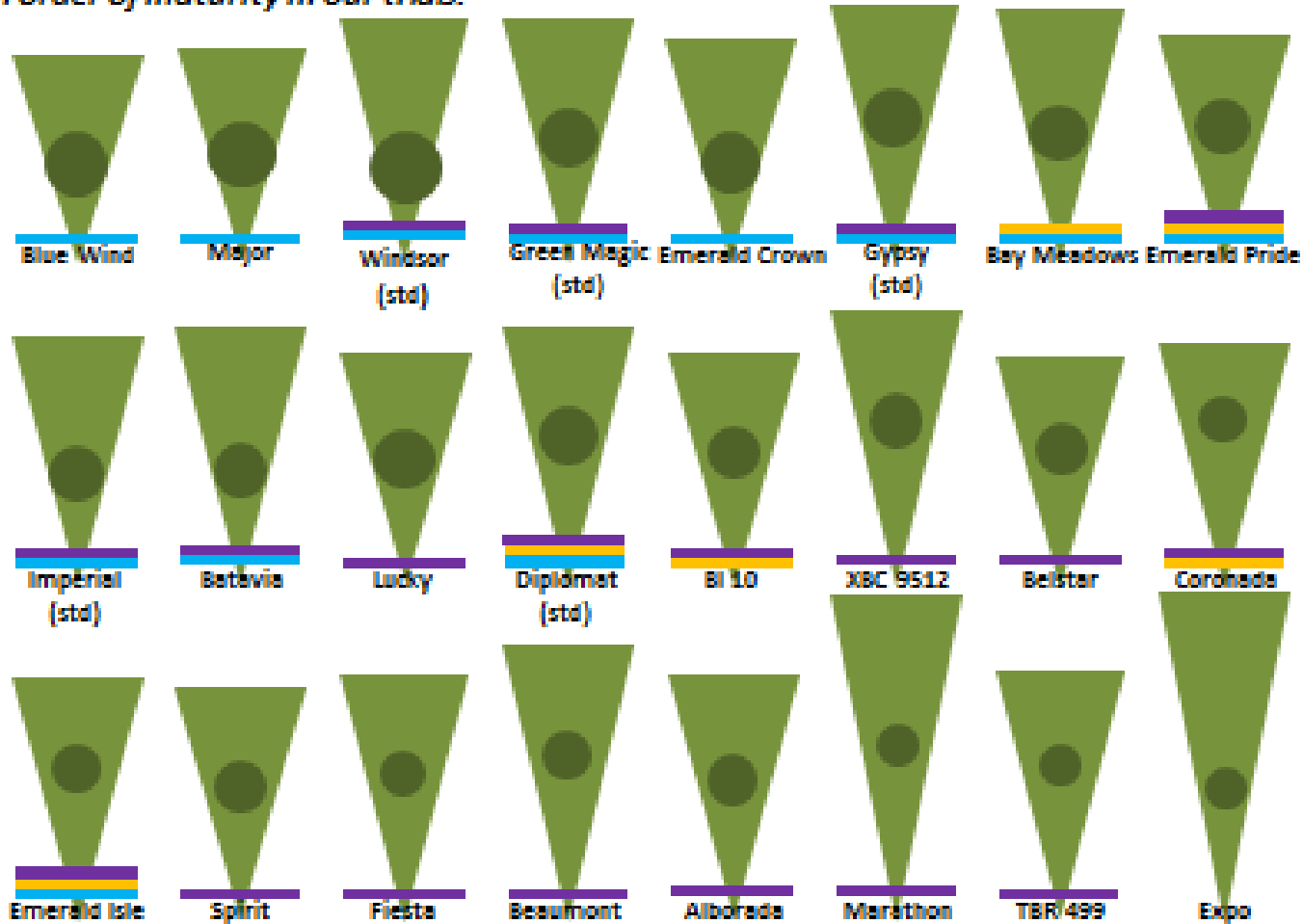
TBR-402 (3rd planting): American Takii, 58 days in this trial. Green-yellow color with fine-medium bead size and firm, semi-dome heads that were bit lumpy. Minor lateral shoots and some heat stress showed up as yellow beads. No hollow cores. Uneven maturity with 23% on first harvest, 60% on second harvest. Head diameter 4.7", head weight 0.75 lbs, trim weight 0.24 lbs, excellent re-growth potential (1.04 out of 3.0). Very short plants.



TBR 402: September 11, 2010

Canopy Height, Head Height, & Head Diameter To Scale

In order of maturity in our trials:

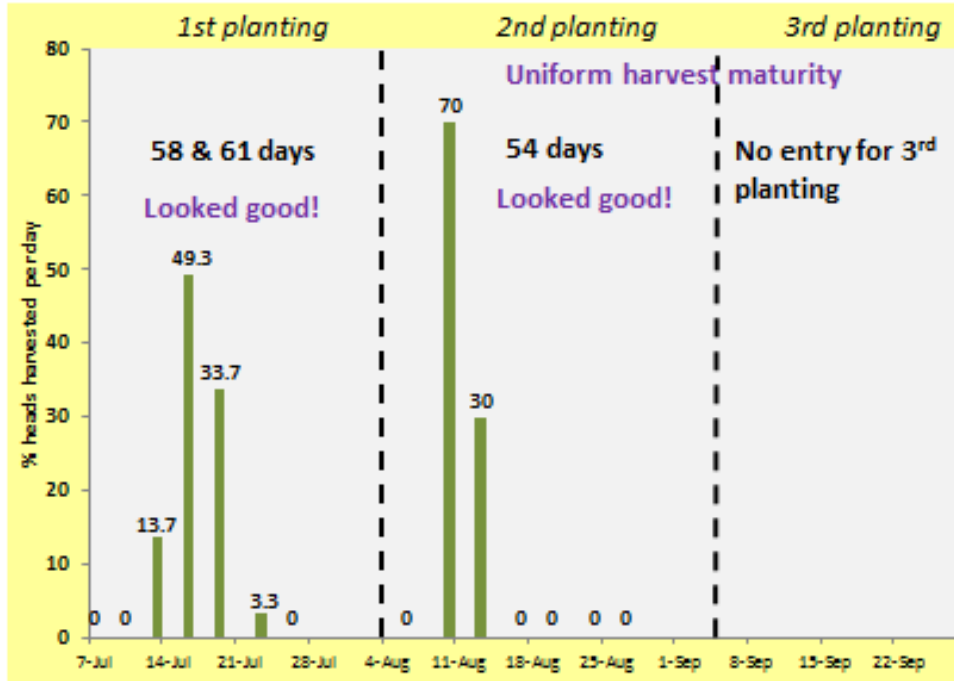


Varieties marketable during these plantings:



Example of details in full report (Bay Meadows):

Bay Meadows: Harvest Maturity



Bay Meadows : Head characteristics

- **Color:** blue/purple-green (1st), blue-green (2nd)
- **Bead size:** medium
- **Firmness:** soft-medium (1st), medium-firm (2nd)
- **Heads:** dome, looks good, grower liked
- **Lateral shoots:** none
- **Heat stress:** fairly tolerant, some inner leaves (2nd)

- **Hollow cores:**

- 1st: 16.7%
- 2nd: 66.7%
- 3rd: --

Seedway
63 days

- High incidence hollow cores in 2nd harvest



Bay Meadows : Head Size & Plant Characteristics

Planting:	1st	2nd	3rd
Head diameter (inch)	5.4	6.1	--
Head wt (lbs)	0.92	1.00	--
Trim weight (lbs)	0.65	0.56	--
Re-growth potential (scale: 0-3)	0.41	0.22	--
Canopy height (inch)	24.8		--
Head height (inch)	15.1		--

Poor re-growth potential

