2011 RESEARCH REPORT

SAGINAW VALLEY

RESEARCH & EXTENSION CENTER
and
RELATED BEAN - BEET RESEARCH

MICHIGAN STATE UNIVERSITY

AgBioRESEARCH

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SAGINAW VALLEY RESEARCH AND EXTENSION CENTER REPORT

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INTRODUCTION

The Michigan sugar beet grower cooperative, Michigan Sugar Company, and the Michigan dry bean growers and industry represented by the Michigan Bean Commission and Michigan Bean Shippers Association, donated the proceeds of the 120 acre Saginaw Valley Bean and Beet Research Farm, located in Saginaw County for 38 years, to Michigan State University in 2009. The Michigan State University Office of Land Management purchased a 250 acre farm near Richville Michigan in Denmark Township. An additional 60 acres was purchased in 2010. The site is being established as an AgBioResearch research center. The main site, 120 acres was tiled at 17 foot average spacing, a machinery storage building was built in 2009 with the shop/office completed in May 2010. The contiguous 60 acres was tiled in the fall of 2010 with an average tile spacing of 20 foot. The site is located on the southeast corner of Reese and Krueger Roads, address of 3775 South Reese Road, Frankenmuth, Michigan 48734.

Field research was initiated in 2009 and the 2011 season was the third season of research at the site. This research report is primarily a compilation of research conducted at the site in 2011. Most of the work represents one year's results, and even though multi-season results are included, **this work should be considered a progress report.**

Soil – The soil type on the farm is classified as a Tappan-Londo loam, these are very similar soil types separated by subsoil drainage classifications, the Tappan not being as naturally well drained as the Londo. The site was soil tested in spring 2009 at 2.5 acre increments. The soil pH averages 7.9, soil test phosphorus averages 56 pounds P/acre, soil test Potassium averages 294 pounds K/acre. The main site, 120 acres, was re-tested in fall of 2009 at 1 acre increments. The 60 acre site was tested at one acre increments the fall of 2010.

Weather – The monthly rainfall for 2011 collected with the automated rain gauge is given in Table 1. The monthly totals are given at the bottom of the table. Rainfall was adequate through May and August, June and July were dry, wheat yielded 95 bushels/acre, dry beans yielded fair. Corn, soybean and sugarbeet yields were fair at 160 bushels/acre, 55 bushels/acre and 25 tons/acre. The rainfall total of 26.48 was lower than average. Maximum and minimum daily temperatures along with growing degree days (base 50) are given in Table 2. The 2011 season was warm with 13 days above 90 degrees and 36 days above 85 degrees. There was 2592 growing degree days for 2011which was above average.

MONTHLY PRECIPITATION, SAGINAW VALLEY RESEARCH FARM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1978	2.26	0.34	1.27	1.43	2.18	2.03	2.27	1.71	4.52	1.13	1.77	2.08	22.99
1979	1.65	0.39	1.76	2.51	1.36	3.59	5.64	2.10	0.10	2.47	3.46	2.10	27.13
1980	1.00	0.71	1.84	3.91	2.60	4.04	5.90	2.11	4.61	3.26	0.94	2.44	33.36
1981	0.29	1.73	0.53	3.43	3.52	3.09	2.41	3.83	9.09	2.74	2.21	0.68	33.56
1982	2.37	0.46	2.26	1.27	3.32	3.09	2.65	2.55	3.02	0.76	4.01	3.26	29.02
1983	0.89	0.90	3.29	4.55	6.15	3.55	1.91	2.50	5.11	2.95	3.06	2.00	36.86
1984	0.56	0.73	3.18	3.20	3.66	3.94	2.42	3.75	3.29	3.05	2.67	2.18	32.63
1985	1.85	2.12	4.08	3.96	2.30	1.87	2.38	7.02	4.38	3.08	4.66	1.05	38.75
1986	1.34	2.24	1.62	1.87	3.10	3.48	1.38	2.76	18.05	2.64	0.75	1.38	40.61
1987	1.11	0.82	1.03	2.03	0.67	4.11	1.35	3.92	5.03	1.88	2.13	2.63	26.71
1988	1.04	1.01	1.70	3.26	0.56	0.59	3.45	3.52	2.46	3.25	4.36	1.08	26.28
1989	1.09	0.34	1.40	2.05	5.03	6.25	1.06	2.92	4.43	1.72	3.24	0.48	30.01
1990	1.23	1.21	1.17	1.54	2.81	2.07	2.53	6.94	3.74	5.87	4.51	1.45	35.12
1991	0.85	0.60	3.68	6.61	3.71	2.66	4.53	2.61	1.50	3.52	2.04	1.24	31.58
1992	1.20	1.65	1.31	4.56	1.10	2.10	4.33	2.92	4.08	2.54	4.50	2.10	32.39
1993	2.72	0.47	0.87	4.08	2.76	3.03	2.46	4.62	4.00	3.70	1.99	0.53	31.23
1994	0.55	0.66	0.91	3.58	2.04	6.99	2.57	4.44	2.19	2.24	4.40	1.03	31.60
1995	1.67	0.35	1.38	2.72	1.44	1.96	1.29	5.00	1.33	2.39	4.05	0.79	24.37
1996	0.83	0.94	0.49	3.18	5.47	5.65	2.32	1.53	3.52	3.31	1.37	2.21	30.82
1997	1.51	4.25	1.32	1.38	3.00	0.69	2.44	3.61	3.46	1.31	1.03	0.36	24.36
1998	2.66	2.05	3.17	2.14	1.87	1.56	1.02	2.01	1.41	3.18	1.79	1.32	24.18
1999	2.75	0.41	0.62	5.01	2.33	3.07	5.02	3.01	2.52	1.12	1.04	1.90	28.80
2000	0.57	1.35	0.89	2.94	5.34	2.65	3.03	3.69	3.27	0.90	2.07	1.57	28.27
2001	0.33	3.16	0.11	2.38	4.42	2.45	0.53	3.52	4.34	4.90	1.76	1.61	29.51
2002	1.02	1.49	2.47	3.49	4.46	3.15	3.00	4.50	0.50	1.87	1.19	0.97	28.11
2003	0.27	0.21	1.66	0.36	4.19	2.04	2.49	1.33	1.99	1.09	5.35	1.20	22.18
2004	1.09	0.55	2.50	1.31	7.34	2.70	2.01	2.32	0.66	2.41	3.44	1.51	27.84
2005	2.90	0.71	0.62	1.32	1.74	4.97	3.20	0.72	0.72	1.30	3.83	1.49	23.52
2006	1.91	1.57	1.59	1.87	4.17	2.03	5.72	2.61	2.53	3.77	3.05	2.81	33.63
2007	1.11	0.35	1.27	3.02	2..20	1.06	2.59	4.80	2.64	2.86	0.89	1.93	22.52
2008	1.76	2.59	1.23	1.99	1.13	3.88	3.94	2.10	5.61	1.70	1.36	1.21	28.50
*2009	0.01	2.12	1.84	4.69	1.23	4.81	2.73	3.48	0.82	3.61	0.47	1.88	27.69
2010	0.14	0.20	0.40	2.15	3.36	2.71	0.89	1.27	3.11	1.94	1.97	0.42	18.56
2011	0.48	0.24	1.82	4.96	3.86	1.51	1.34	2.98	2.28	2.85	2.74	1.42	26.48
AVG.	1.30	1.18	1.68	2.99	3.10	3.13	2.81	3.29	3.65	2.65	2.67	1.59	30.03

**Station moved from Saginaw, MI to Richville, MI*

PRECIPITATION - SAGINAW VALLEY RESEARCH & EXTENSION CENTER- 2011

Day:	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	0.19									0.10		
2							0.02	0.08	0.01			0.11
3				0.54			0.01	0.09	0.54		0.06	0.02
4			0.33	0.26					0.06			0.24
5			0.38									
6				0.18	0.04			0.02				
7								0.56				
8											0.09	
9	0.03		0.19			0.04		0.83			0.36	
10			0.10		0.01		0.01				0.01	
11			0.02				0.04					
12					0.08				0.01			
13	0.02	0.01			0.02			0.14	0.01		0.33	
14					1.04			0.50		0.02		0.29
15			0.07		0.61			0.01		0.04		0.02
16			0.07	0.29		0.28						
17				0.04	0.11							
18	0.17		0.01	0.03	0.01		0.59					0.01
19				0.44	0.28				0.56	1.26		
20			0.31	0.76				0.42	0.01	0.8		
21			0.18		0.01	0.38		0.05	0.03			0.04
22			0.02	0.02	0.04	0.41					0.24	0.01
23		0.02		0.29	0.10	0.16		0.03	0.08			
24		0.02	0.14			0.13		0.25	0.01	0.17		0.01
25		0.01			0.33					0.37		
26	0.01	0.02		0.24	0.66				0.15	0.01		
27		0.14		0.55		0.1	0.01			0.05		0.34
28		0.02		1.22		0.01	0.47		0.17		0.46	
29				0.10	0.19		0.19		0.13	0.01		0.03
30	0.06								0.51	0.01	0.9	0.29
31					0.33					0.01	0.29	0.01
TOTAL	0.48	0.24	1.82	4.96	3.86	1.51	1.34	2.98	2.28	2.85	2.74	1.42

Rainfall is measured in inches

2011 YEAR END TOTAL: 26.48 INCHES

MAXIMUM-MINIMUM AIR TEMPERATURES (F)
SAGINAW VALLEY RESEARCH & EXTENSION CENTER - 2011

	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	53	20	19	13	36	11	46	25	72	52	75	59
2	24	17	20	0	33	7	45	28	58	41	69	48
3	31	21	22	-1	26	4	39	29	43	38	75	49
4	32	15	27	9	38	21	56	36	60	37	90	59
5	22	7	26	5	32	24	45	32	65	38	82	57
6	25	15	30	24	24	12	42	31	63	48	87	56
7	19	9	28	16	31	10	50	32	61	41	94	69
8	21	3	16	-6	41	24	52	35	68	38	95	74
9	27	0	17	0	37	31	56	29	70	38	82	54
10	21	-2	16	-4	37	28	82	44	68	50	60	47
11	26	15	22	0	40	28	74	42	76	51	73	53
12	25	2	28	19	40	29	52	32	85	55	68	50
13	22	16	42	18	36	29	64	27	81	61	77	47
14	24	8	41	16	41	24	48	31	61	46	77	49
15	26	10	35	8	45	27	48	29	49	69	75	49
16	14	0	44	30	54	33	59	34	50	36	74	60
17	28	6	51	36	66	39	39	31	53	40	80	58
18	33	18	52	32	61	35	39	28	66	47	81	57
19	19	3	32	21	38	26	41	30	67	51	82	55
20	21	0	33	20	42	27	42	24	71	51	81	60
21	16	-1	25	10	48	38	48	32	79	51	84	65
22	13	-4	21	-2	40	28	48	36	86	60	83	64
23	9	-11	31	-3	29	24	58	41	79	62	71	62
24	26	-8	34	23	34	8	47	41	67	51	65	60
25	29	25	30	16	27	2	47	45	56	47	79	57
26	28	25	27	14	26	2	70	45	49	42	79	54
27	26	21	35	23	32	4	67	52	53	43	77	55
28	28	18	33	14	33	8	54	40	67	51	70	57
29	24	6			38	15	59	36	76	55	77	49
30	31	-9			37	17	61	37	87	57	83	52
31	15	-12			42	22			90	66		

Growing Degree Days

Base 50 (max + min / 2 - 50)

	Apr	May	Jun	Jul	Aug	Sep	Oct	**Total**
2009	50.5	190.0	432.0	458.5	517.5	345.0	27.0	2020.5
2010	89.0	385.0	528.5	729.0	697.5	311.5	95.0	2835.5
2011	38.0	273.0	515.0	758.5	576.5	308.5	122.5	2592.0

MAXIMUM-MINIMUM AIR TEMPERATURES (F)
SAGINAW VALLEY RESEARCH & EXTENSION CENTER - 2011 cont.

	JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER	
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
1	87	57	89	68	88	59	52	38	59	32	38	22
2	92	68	83	65	92	68	62	34	67	43	32	13
3	85	64	81	68	84	67	64	43	51	32	41	14
4	84	58	81	64	75	57	73	39	51	27	49	40
5	87	62	85	63	58	51	73	41	55	25	40	31
6	86	64	81	66	66	46	79	42	63	31	32	29
7	78	57	83	67	68	46	80	48	59	47	35	26
8	86	54	80	64	68	56	81	47	51	45	37	24
9	88	58	79	61	77	54	82	52	61	38	31	14
10	90	70	73	57	79	49	78	47	43	31	27	11
11	82	68	79	51	80	54	80	46	42	30	38	19
12	87	66	80	55	82	57	70	50	60	32	42	25
13	76	55	79	62	72	47	68	51	61	50	41	29
14	80	49	68	57	67	43	58	47	52	38	51	34
15	85	61	78	54	60	36	56	44	57	34	55	31
16	90	56	82	52	58	32	59	45	49	28	32	27
17	92	66	80	55	67	44	59	43	35	24	29	23
18	91	70	82	60	68	39	55	35	47	22	36	28
19	90	70	85	53	67	51	48	45	52	38	44	30
20	91	70	77	60	71	45	46	42	55	34	34	27
21	95	69	75	52	77	49	46	41	42	24	38	33
22	81	62	73	47	68	49	58	31	37	24	38	27
23	87	67	81	52	58	50	64	35	47	31	28	16
24	86	66	85	65	68	44	58	39	44	34	34	19
25	85	69	71	58	75	47	47	37	60	36	40	30
26	81	61	78	50	72	53	49	41	59	45	44	32
27	79	54	81	56	71	44	44	33	54	33	37	24
28	82	69	73	53	65	53	50	27	36	32	24	14
29	86	66	77	50	63	49	47	30	37	30	35	17
30	87	63	78	52	51	40	50	27	34	23	36	32
31	88	64	79	60			56	36			36	32

GROWING DEGREE DAYS - SAGINAW VALLEY RESEARCH FARM

Base 50 (max + min / 2 - 50)

	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	TOTAL
1975	30.50	307.00	445.00	543.50	491.50	168.50		1986.00
1976	113.00	151.50	537.50	596.00	500.50	276.50	72.00	2247.00
1977	140.50	398.00	389.00	675.00	485.00	344.00	43.00	2474.50
1978	4.00	316.50	474.50	571.50	588.50	393.50	75.00	2423.50
1979	47.50	228.50	458.50	577.50	479.00	330.00	116.00	2237.00
1980	34.00	281.50	369.00	617.50	606.00	317.50	33.50	2259.00
1981	55.50	187.00	491.00	579.50	312.00	265.00	13.50	1903.50
1982	54.50	428.50	365.50	626.00	476.00	298.00	156.00	2404.50
1983	16.00	118.50	491.00	716.00	645.00	369.50	97.00	2453.00
1984	67.50	164.50	506.00	558.50	627.00	282.00	114.50	2320.00
1985	183.50	306.00	388.00	603.50	523.00	394.50	100.00	2498.50
1986	124.50	310.00	435.00	664.00	459.50	370.00	96.50	2459.50
1987	84.00	336.50	566.50	725.50	537.50	334.00	19.50	2603.50
1988	35.50	290.50	544.50	739.50	667.50	283.00	48.00	2608.50
1989	21.50	202.00	456.50	648.00	535.00	315.00	167.00	2345.00
1990	165.50	146.00	493.50	587.50	553.50	332.50	100.50	2379.00
1991	144.00	423.50	541.00	641.00	567.50	289.50	114.00	2720.50
1992	56.00	241.50	367.00	446.50	403.50	257.50	41.50	1813.50
1993	23.50	208.00	430.00	642.00	613.50	184.50	25.00	2126.50
1994	95.50	227.50	526.50	613.50	501.50	380.00	115.00	2459.50
1995	3.00	221.00	536.00	698.50	745.00	225.00	125.50	2554.00
1996	41.00	157.00	486.00	572.00	611.00	357.50	91.50	2316.00
1997	27.00	48.00	534.00	596.50	443.00	299.50	134.50	2082.50
1998	46.00	267.00	505.50	623.50	648.00	456.00	114.00	2660.00
1999	49.50	299.00	578.50	684.50	500.00	339.00	67.50	2518.00
2000	17.00	284.00	474.50	509.50	544.50	289.00	157.00	2275.50
2001	78.00	289.50	504.00	649.50	654.00	282.00	114.00	2571.00
2002	123.00	141.50	535.00	710.00	575.00	443.00	99.00	2626.50
2003	66.50	147.50	410.00	606.00	608.00	312.50	82.00	2232.50
2004	89.00	240.50	429.50	561.00	450.50	421.50	69.00	2261.00
2005	58.00	145.00	623.00	647.50	611.50	429.00	130.00	2644.00
2006	79.00	283.50	470.50	661.00	555.50	260.00	38.50	2348.00
2007	53.50	277.00	534.00	564.00	594.00	393.00	231.00	2646.50
2008	110.00	116.50	512.00	620.00	532.50	343.00	56.50	2290.50
*2009	50.50	190.00	432.00	458.50	517.50	345.00	27.00	2020.50
2010	89.00	368.50	528.50	729.00	697.50	311.50	95.00	2819.00
2011	38.00	273.00	515.00	758.50	576.50	308.50	122.50	2592.00
AVERAGE	67.96	243.82	483.34	622.20	552.34	324.32	91.72	2385.71

* Station moved to from Saginaw, MI to Richville, MI

Saginaw Valley Research Farm Report, 2011 Field season
PI: Chris DiFonzo, Department of Entomology

Soybean aphid suction trap
The Farm has one of the traps in the Northcentral Regional Aphid Suction Trap Network, which has over 40 sites in the Midwest. The suction trap is a 24-foot tall pipe that draws air as well as migrating aphids into a collection jar. Trap catches are sent to University of Illinois for identification. A summary of species (% of the overall trap catch) collected in 2011 is below.

Grain aphids	**Polyphagous aphids**	**Other**
bird cherry-oat aphid (40%)	black legume aphid (2%)	spotted alfalfa aphid (28%)
corn leaf aphid (6%)	cotton-melon aphid (1%)	pea aphid (4%)
English grain aphid (1%)	spirea (1%)	soybean aphid (2%)
greenbug(1%)	potato aphid (1%)	buckthorn aphid (1%)
rice root aphid (1%)	green peach aphid (1%)	turnip aphid (10%)

Grain aphid made up half of the total trapped, and spotted alfalfa aphid (on both alfalfa and leguminous weeds) another 30%. Only 5 soybean aphids total were collected in the suction trap. No aphid eggs were found on buckthorn in October. This suggests a low overwintering population heading into 2012.

Western bean cutworm in dry beans
Several western bean cutworm different studies were done at the SVREC because there is a low natural infestation in the area. This allows us to infest plots with egg masses at a known level to conduct research on larval biology and damage.

Larval feeding - location
Objective: Determine where WBC larvae feed on dry bean, depending on their age
In 2011, WBC egg masses were pinned to individual plants.Egg masses were checked daily until hatch and then recovered to determine percent hatch (98%, with an average 65 eggs per mass.) A subset of the infested and surrounding plants was sacrificed at 1, 3, 5, 10, 14, 21, and 28 days after hatch (DAH) to recover larvae and assess pod feeding. From 1 DAH to 10 DAH, small larvae were found on the leaves or feeding in blossoms. After 10 (2011) DAH, no larvae were recovered and none were obvious on the soil surface. However, pod feeding increased through 28 DAH, indicating larvae were still present, probably just below the soil surface. This is typical cutworm behavior. This study demonstrated the difficulty of scouting for WBC larvae in dry beans. It also revealed that blossom damage may be an unexpected contributor to yield loss.

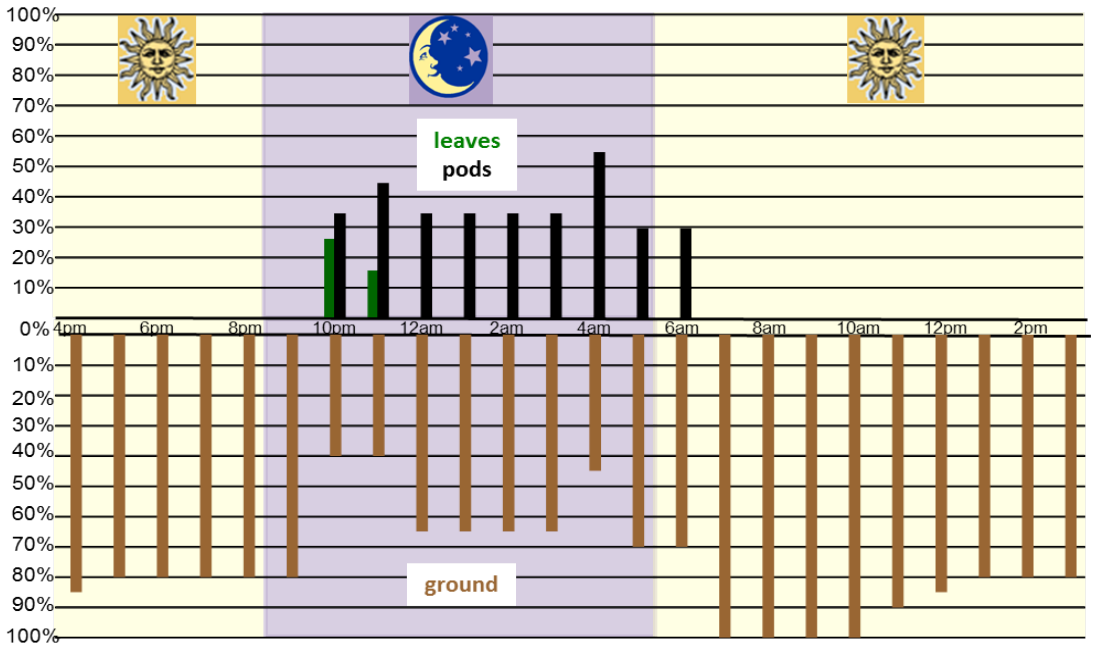
	2011 - Days after Hatch						
Location	**1**	**3**	**5**	**10**	**14**	**21**	**28**
Leaves	71%	80%	33%	75%	-	-	-
Blossoms	29%	20%	67%	25%	-	-	-
Pods	-	-	-	-	-	-	-
Ground	-	-	-	-	-	-	-
%damaged pods/ft	0	0	0	0	39%	30%	36%

Larval feeding - timing

Objective: Determine when WBC larval feed on dry beans.

Scouting for WBC larvae on plants has proven to be impossible in dry beans, even when it is clear that larvae are present. Many other cutworm species feed in the evening.To determine when WBC fed on plants, 24 hour observation studies were done by placing 20 large larvae on 4 dry bean plants in replicated arenas. The larvae were checked every hour for 24 hours, and their location (leaves, pods, or ground) noted. An attempt was made to find each larva during each hourly observation. A barrier was sunk around the plants to eliminate larval escape.

The graphic below shows the percentage of larvae found on the plant (green bars), the ground (brown bars) and on the pods (black bars) during the daytime (yellow background) versus nighttime (purple background). Larvae were found on the pods overnight and most were found on the ground during the day. This explains why larvae are so difficult to scout for in dry beans during the day.



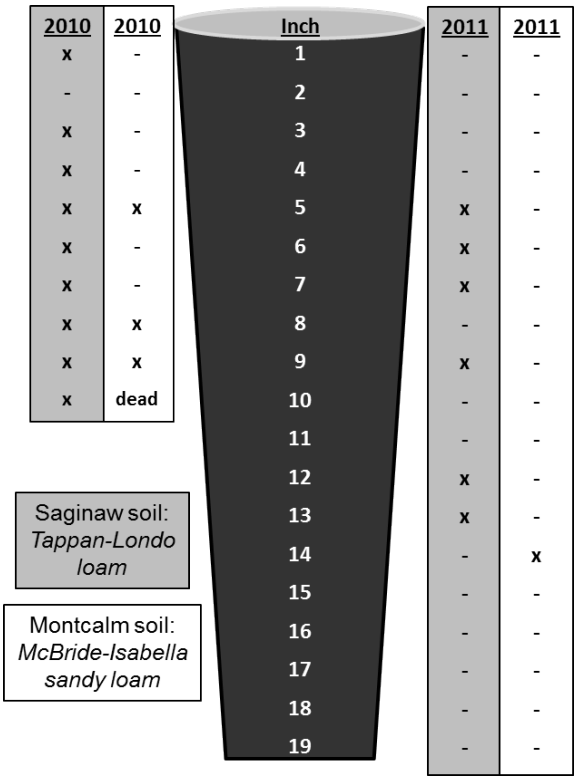
Overwintering success

Objective: Determine if larvae overwinter deeper, and survive better, in sandier soils

WBC hot spots in Michigan (NW and SW counties, counties along Lake Michigan, and Montcalm and surrounding counties) tend to overlap areas with sandy soils. Some of the worst WBC damage we've encountered has been in sandy areas. We hypothesized that larvae burrowed deeper in sandier soils, and thus overwintering survival was better. In the winter of 2010-11, we did a preliminary study using buckets of soil where larvae were placed. The buckets were dug back up in the winter and spring of 2011, and the soil sorted to find overwintering insects. The data suggested that larvae did go deeper in the sandy soil (larvae were recovered at the depths marked with an 'x' in the figure below).

In preparation for the winter of 2012, in July 2011 we filled long (19-inch deep) plastic buckets with a sandy soil from Montcalm County (Isabella/McBride sandy loam) which is a WBC hotspot, and a heavier soil from Saginaw County (Tappan Londo loam) where WBC moths and damage are uncommon. Pots were pre-marked by inch, and drain holes were made in the bottom. Pots were then sunk into the ground in deep holes made with a tractor-mounted auger. The pots were in place all summer to develop a soil profile. In late August, 10 last-stage WBC larvae were added to each pot; they crawled into the soil to overwinter.

The first set of pots (4 replicates, 40 larvae) were pulled up in December and soil was carefully removed to determine larvae survival and overwintering depth. Ten larvae were recovered from the loam soil, at depths of 5 to 13 inches. Only one larva was recovered from pots filled with sandy soil, but it was at 14 inches. Three more sets of pots remain to be dug.



Control of Rhizoctonia crown and root rot in sugarbeet with fungicides, 2011

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Sugar beet cv. ACH RR-827 was PAT-treated and planted at the Michigan State University Bean and Beet Farm, Richville, MI on 4 May. Seed was planted at 1" depth into four-row by 50-ft plots (ca. 4.375 in. between plants to give a target population of 275 plants/100ft. row) with 30" between rows replicated four times in a randomized complete block design. Fertilizer was drilled into plots immediately before planting, formulated according to results of soil tests (125 lb 46-0-0/A). No additional nitrogen was applied. All fungicides were applied with a hand held R&D spray boom delivering 10 gal/A (50 p.s.i.) and using one XR8003 nozzle per row in a 6" band at planting or at GS 4-6 and 6-8. Applications were made at planting (A); and banded applications on 8 and 20 Jun at GS 4-6 (B) and 6-8 (C), respectively. Cercospora leaf spot was controlled with an application of Eminent 125SL (13 fl oz) on 13 Jul. Weeds were controlled by cultivation and with Roundup Original Max 2.0 pt/A applied at GS2-4 and GS 6-8. Insects were controlled as necessary. Plant stand was rated 8, 13, 27 and 35 days after planting (DAP) and relative rate of emergence was calculated as the Relative Area Under the Emergence Progress Curve [RAUEPC from 0 – 35 DAP, maximum value = 100]. Plots were inoculated on 1 Jun [28 days after planting (DAP)] by spreading *R. solani* Anastemoses Group 2.2 (IIIB) infested millet across all plants in each plot. Samples of 50 beets per plot were harvested 135 DAP (10 ft from start of each plot from two center rows) and assessed for crown and root rot (*R. solani*) incidence (%) and severity. Severity of crown and root rot was measured as an index calculated by counting the number of roots (n = 20) falling in class 0 = 0%; 1 = 1 - 5%; 2 = 6 -10%; 3 = 11 – 15%; 4 =15 - 25%; 5 = 25 – 50%; 6 = 50 – 100% surface area of root affected by lesions; and 7 = dead and/or extensively decayed root. The number in each class is multiplied by the class number and summed. The sum is multiplied by a constant to express as a percentage. Increasing index values indicated the degree of severity. The number of beets falling into classes 0 – 2 was summed and a percentage calculated as marketable beets. The trial was not harvested due to the high incidence and severity of crown and root rot. Meteorological variables were measured with a Campbell weather station located at the farm, latitude 43.3995 and longitude -83.6980 deg. Maximum, minimum and average daily air temperature (^{o}F) from 1 Apr were 82.6, 25.9 and 44.5 (Apr), 90.2, 36.9 and 57.9 (May), 95.5, 47.9 and 66.5 and 3-d with maximum temperature >90^{o}F (Jun), 95.4, 49.6 and 74.9 and 7-d with maximum temperature >90^{o}F (Jul), 89.3, 47.4 and 69.1 (Aug) and 92.6, 32.8 and 59.3 and 1-d with maximum temperature >90^{o}F (Sep). Maximum, minimum and average daily soil temperatures (^{o}F) over the same period were 60.9, 34.3 and 45.8 (Apr), 77.1, 45.2 and 58.2 (May), 90.8, 58.1 and 72.3 (Jun), 96.9, 68.8 and 82.1 (Jul), 89.5, 60.8 and 72.8 (Aug) and 83.5, 51.1 and 64.7 (Sep). Maximum, minimum and average daily relative humidity (%) over the same period was 93.7, 14.9 and 67.7 (Apr), 94.6, 18.4 and 67.2 (May), 93.7, 21.3 and 63.3 (Jun), 94.0, 26.1 and 64.0 (Jul), 94.8, 30.6 and 68.7 (Aug) and 94.8, 27.7 and 71.3 (Sep). Maximum, minimum and average daily soil moisture (% of field capacity at 4" depth) was 58.0, 44.1 and 47.2 (Apr); 56.4, 37.0 and 46.7 (May); 56.8, 49.9 and 52.6 (Jun); 55.8, 52.7 and 54.4 (Jul), 60.8, 51.4 and 55.0 (Aug) and 52.7, 45.9 and 49.2 (Sep). Precipitation was 4.96-in. (Apr), 3.86-in. (May), 1.51-in. (Jun), 1.34-in. (Jul), 2.98-in. (Aug) and 2.28-in. (to 14 Sep).

No treatments were significantly different from the untreated checks in terms of plant stand different or RAUEPC however there was a transient difference noted 25 DAP when Moncut significantly increased the percentage of plants emerged in comparison to the untreated control. Soil temperature and moisture conditions enhanced development of crown and root rot. All treatments had a lower severity index of crown and root rot on the beetroots and were significantly different to the untreated control (99.6%). There was background crown and root to in the trial and although at low levels in the not inoculated check treatments with less than 35.5% severity index of crown and root rot on the beetroots were not significantly different from the not inoculated check (20.3%). In terms of marketable beetroots, treatments with a percentage of marketable greater than 22.5% were significantly different to the untreated control (0%). No treatments were significantly different from the not inoculated check (100% marketable) and the next best group had between 37.5 to 65.5% marketable. No phytotoxicity was observed from any treatments.

	Plant stand[z] DAP[y] (%)								Crown and root rot			
Treatment and rate/1000 ft. row	13		27		35		RAUEPC[x] 0 – 31 DAP		Severity[w]		Marketable beets (%)[v]	
Vertisan 1.67EC 1.6 fl oz (A[u])…..	33.5	b[t]	52.4	bc	54.4	ab	34.5	b	56.4	b-e	38.0	b-f
Vertisan 1.67EC 1.6 fl oz (B)…….									35.5	efg	64.0	b
YT669 2.08SC 1.3 fl oz (A)……..	33.6	b	55.5	abc	55.4	ab	35.6	ab	55.6	b-e	41.0	b-e
YT669 2.08SC 1.3 fl oz (B)……..									72.5	bc	14.5	efg
Vertisan 1.67EC 1.6 fl oz (A); YT669 2.08SC 1.3 fl oz (B)……..									53.4	c-f	33.0	c-f
YT669 2.08SC 1.3 fl oz (A); Vertisan 1.67EC 1.6 fl oz (B)…….	33.3	b	58.2	ab	54.3	ab	36.2	ab	58.0	bcd	38.5	b-f
Quadris 2.08FL 0.6 fl oz (A)…..…	39.9	ab	52.5	bc	55.0	ab	37.2	ab	60.3	bcd	33.5	c-f
Quadris 2.08FL 0.6 fl oz (B)…..…									53.8	c-f	37.5	b-f
Actinogrow 0.0371WP 0.34 oz (A)	36.7	ab	56.5	abc	56.2	ab	37.3	ab	51.6	c-f	39.0	b-f
Actinogrow 0.0371WP 0.52 oz (A)	40.5	ab	56.9	abc	56.7	ab	39.0	ab	76.3	b	12.5	fg
Actinogrow 0.0371WP 0.69 oz (A)	36.1	ab	56.8	abc	56.9	ab	37.2	ab	51.0	c-f	33.5	c-f
Actinogrow 0.0371WP 0.52 oz (A) Quadris 2.08FL 0.6 fl oz (B)……..	39.4	ab	56.2	abc	54.4	ab	38.1	ab	58.3	bcd	29.0	def
Headline 2.09SC 0.69 fl oz (A)..…	43.2	a	57.5	abc	58.4	a	40.4	a	67.1	bcd	22.0	d-g
Topsin-M 70WP 1.84 oz (B)…..…									60.1	bcd	22.5	d-g
Proline 480SC 0.33 fl oz + Induce 0.125% (B)……..…									56.1	b-e	31.5	def
Proline 480SC 0.33 fl oz + Induce 0.125% (C)……..…									46.0	def	44.0	bcd
Quadris 2.08FL 0.6 oz (A); Proline 480SC 0.33 fl oz (B)……..	36.5	ab	59.3	ab	56.9	ab	38.1	ab	33.4	fg	65.5	b
Moncut 70DF 0.98 oz (A); Proline 480SC 0.33 fl oz (B)…….	36.1	ab	61.0	a	57.5	ab	38.5	ab	35.4	efg	61.0	bc
Untreated Inoculated check……	38.5	ab	53.5	bc	52.9	ab	36.8	ab	99.6	a	0.0	g
Untreated Not-Inoculated check….	36.0	ab	50.7	c	53.6	ab	35.0	b	20.3	g	100.0	a

[z] Plant stand expressed as a percentage of the target population of 275 plants/100ft. row from a sample of 2 x 50 ft rows per plot

[y] DAP = days after planting on 4 May

[x] Relative area under the emergence progress curve from planting to 35 days after planting

[w] Severity of crown and root rot was measured as an index calculated as described in the text

[v] The number of beets falling into disease severity classes 0 – 2 (as described in text) was summed and a percentage calculated as marketable beets

[u] Application dates; A= 4 May; B= 8 Jun May; C= 20 Jun

[t] Means followed by same letter are not significantly different at P = 0.05 (Fishers LSD)

Efficacy of application of foliar fungicides for control of Cercospora leaf spot in sugarbeet, 2011

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Sugar beet cv. ACH RR-827 was PAT-treated and planted at the Michigan State University Bean and Beet Farm, Richville, MI on 4 Apr. Seed was planted at 1" depth into four-row by 50-ft plots (ca. 4.375 in. between plants to give a target population of 275 plants/100ft. row) with 30" between rows replicated four times in a randomized complete block design. Fertilizer was drilled into plots immediately before planting, formulated according to results of soil tests (125 lb 46-0-0/A). No additional nitrogen was applied to the growing crop. Plots were inoculated by spreading sugarbeet foliar residue collected the previous season on 16 Jun across all plots. The Actinogrow pre-planting treatment was applied immediately prior to planting on 4 Apr with a hand held R&D spray boom delivering 10 gal/A (50 p.s.i.) and using one XR8003 nozzle per row in a 6" band. Fungicides were applied starting after the 55 Beetcast disease severity values were recorded in the area (Ontario Weather Network, Ridgetown, ON, Canada), starting on 18 Jul and three applications were made. Fungicides were applied with a hand-held R&D spray boom delivering 25 gal/A (80 p.s.i.) and using three XR11003VS nozzles per row. Induce 480XL 0.125 % v/v was applied where indicated as "Induce" on the results table unless a different rate was indicated. Weeds were controlled by cultivation and with Roundup Original Max 2.0 pt/A applied at GS2-4 and GS 6-8. Insects were controlled as necessary. Foliar leaf spot severity (%) was measured on 24 Aug and 5 Sep using a 1 – 10 scale. Foliar leaf spot severity was measured using a 1 - 10 scale; 1 = 1 - 5, 0.1%; 2 = 6 -12, 0.35%; 3 = 13 - 25, 0.75%; 4 = 26 - 50, 1.5%; 5 = 51 - 75, 2.5%; spots/leaf or severity %; respectively; 6 = 3% (proven economic damage); 7 = 6%; 8 = 12%; 9 = 25%; and 10 $\geq$ 50% severity. Beet roots were machine-harvested on 13 Sep and individual treatments were weighed. Sugar content was measured at the Michigan Sugar Company analytical service laboratory. Meteorological variables were measured with a Campbell weather station located at the farm, latitude 43.3995 and longitude -83.6980 deg. Maximum, minimum and average daily air temperature (^{o}F) from 1 Apr were 82.6, 25.9 and 44.5 (Apr), 90.2, 36.9 and 57.9 (May), 95.5, 47.9 and 66.5 and 3-d with maximum temperature >90^{o}F (Jun), 95.4, 49.6 and 74.9 and 7-d with maximum temperature >90^{o}F (Jul), 89.3, 47.4 and 69.1 (Aug) and 92.6, 32.8 and 59.3 and 1-d with maximum temperature >90^{o}F (Sep). Maximum, minimum and average daily soil temperatures (^{o}F) over the same period were 60.9, 34.3 and 45.8 (Apr), 77.1, 45.2 and 58.2 (May), 90.8, 58.1 and 72.3 (Jun), 96.9, 68.8 and 82.1 (Jul), 89.5, 60.8 and 72.8 (Aug) and 83.5, 51.1 and 64.7 (Sep). Maximum, minimum and average daily relative humidity (%) over the same period was 93.7, 14.9 and 67.7 (Apr), 94.6, 18.4 and 67.2 (May), 93.7, 21.3 and 63.3 (Jun), 94.0, 26.1 and 64.0 (Jul), 94.8, 30.6 and 68.7 (Aug) and 94.8, 27.7 and 71.3 (Sep). Maximum, minimum and average daily soil moisture (% of field capacity at 4" depth) was 58.0, 44.1 and 47.2 (Apr); 56.4, 37.0 and 46.7 (May); 56.8, 49.9 and 52.6 (Jun); 55.8, 52.7 and 54.4 (Jul), 60.8, 51.4 and 55.0 (Aug) and 52.7, 45.9 and 49.2 (Sep). Precipitation was 4.96-in. (Apr), 3.86-in. (May), 1.51-in. (Jun), 1.34-in. (Jul), 2.98-in. (Aug) and 2.28-in. (to 14 Sep). There were 182 Beetcast DSV values accumulated in the Saginaw area from 1 May to 15 Sep at Richville.

Weather conditions during the growing season were very conducive for the development of Cercospora leaf spot and of note were the hot and humid conditions during Jul and Aug. Cercospora leaf spot (CLS) reached an index of about 10 in the untreated control by 8 Aug. Treatments with CLS indices less than 7.5 had significantly less Cercospora leaf spot than the untreated control by 8 Aug. Several treatments had substantial disease development [CLS indices >6 (proven economic impact)] by 8 Aug. All treatments had substantial disease development (CLS indices >6) by 25 Aug. Treatments with CLS

indices less than 8.3 had significantly less Cercospora leaf spot than the untreated control by 25 Aug. Treatments with CLS indices less than 8.8 had significantly less Cercospora leaf spot than the untreated control by 31 Aug. Treatments with yield greater than 22.3 t/A had significantly greater yield per acre than the untreated control. Treatments with recoverable white sucrose per acre greater than 4504 lb/A had significantly greater yield per acre than the untreated control. No phytotoxicity was observed from any treatments.

	Cercospora leaf spot[z] (1-10 scale)									
Treatment and rate/acre	8 Aug		25 Aug		31 Aug		Yield (t/A)		RWSA[y] (lb)	
Eminent 125SL 13 fl oz + Induce[x] (A[w]); Headline 2.09SC 9 fl oz + Induce (B); Inspire XT 2.08EC 7 fl oz (C)……..	4.3	efg[v]	8.0	bc	9.0	abc	22.6	d-h	5534	def
Gem 500SC 3.5 fl oz (A); Proline 480SC 5 fl oz + Induce (B)……..…….	8.3	abc	10.0	a	10.0	a	22.3	e-i	5152	e-h
Proline 480SC 5 fl oz + Induce (A); Gem 500SC 3.5 fl oz (B)……...……..	6.5	cd	9.0	ab	9.8	ab	23.5	c-h	5149	e-h
Proline 480SC 5 fl oz + Induce (A); Headline 2.09SC 9 fl oz (B)…….	6.3	cde	8.8	ab	9.8	ab	22.6	d-h	5005	e-h
Gem 500SC 3.5 fl oz (A); Inspire XT 2.08EC 7 fl oz (B)…….	8.3	abc	9.8	ab	10.0	a	22.1	e-i	4960	e-h
Topguard 1.04SC 10 fl oz + CHA-047 75DF 1.5 lb NIS 0.25% v/v (A,B,C)…..	1.8	hi	4.8	ef	5.5	f	26.6	abc	7087	b
Topguard 1.04SC 14 fl oz + CHA-047 75DF 1.5 lb (A,B,C)……	1.0	i	4.0	ef	4.8	f	25.6	b-e	6880	b
Topguard 1.04SC 14 fl oz + Super Tin 4L 8 fl oz (A,B,C)……..……..	1.8	hi	4.0	ef	4.8	f	30.2	a	8031	a
Topguard 1.04SC 14 fl oz (A,B,C)……..	3.3	gh	5.8	de	6.0	ef	27.9	ab	7140	ab
Topguard 1.04SC 10 fl oz (A); Super Tin 4L 8 fl oz (B); Headline 2.09EC 9 fl oz (C)…...…….	7.3	bcd	8.8	ab	8.8	abc	26.0	bcd	6499	bc
CHA-047 75DF 1.5 lb (A,B,C)……	8.8	ab	9.8	ab	10.0	a	21.2	ghi	4679	f-i
Eminent 125SL 7.5 fl oz (A,B,C).……...	4.0	fg	8.0	bc	9.0	abc	25.4	b-f	6331	bcd
Eminent 125SL 13 fl oz + Induce (A); Headline 2.09EC 9 fl oz (B); Super Tin 4L 8 fl oz (C)……...	3.3	gh	6.8	cd	8.5	bc	22.3	e-i	5587	c-f
Actinogrow 0.0371WP 0.63 oz 1000 row ft (A[w]); Eminent 125SL 13 fl oz + Induce 0.125% v/v (A); Headline 2.09EC 9 fl oz (B); Super Tin 4L 8 fl oz (C)……...	1.0	i	3.3	f	7.0	de	21.9	f-i	5369	efg
YT669 2.08SC 6 fl oz + Induce 0.25% v/v (A,B,C);……..…….....	8.0	abc	9.3	ab	9.5	abc	20.1	hij	4398	hij
YT669 2.08SC 9 fl oz + Induce 0.25% v/v (A,B,C);…….….....	9.8	a	10.0	a	10.0	a	17.6	j	3689	j
YT669 2.08SC 12 fl oz + Induce 0.25% v/v (A,B,C);…….....	10.0	a	10.0	a	10.0	a	20.1	hij	3908	ij
Headline 2.09SC 9 fl oz + Induce (A,B,C)……..	7.5	bcd	9.8	ab	10.0	a	20.4	g-j	4504	g-j
Untreated Check……	10.0	a	10.0	a	10.0	a	18.8	ij	3660	j

[z] Foliar leaf spot severity; 1 - 10 scale; 1 = 1 - 5, 0.1%; 2 = 6 -12, 0.35%; 3 = 13 - 25, 0.75%; 4 = 26 - 50, 1.5%; 5 = 51 - 75, 2.5%; spots/leaf or severity%; respectively; 6 = 3% (proven economic damage); 7 = 6%; 8 = 12%; 9 = 25%; and 10 $\geq$ 50% severity

[y] RWSA = Recoverable White Sucrose per Acre (Ton/A* Recoverable White Sucrose per Ton of sugarbeet)

[x] Induce applied at 0.125% v/v

[w] Application dates: A= 4 Apr at planting in-furrow application rate per 1000 row ft; A= 18 Jul; B= 4 Aug; C= 15 Aug

[u] Means followed by same letter are not significantly different at P = 0.05 (Fishers LSD)

Michigan Sugar Company Research

Official Variety Trial: This trial was planted at eight locations and four were usable for the variety approval process.

Purpose: To evaluate the production differences in varieties. Tons per acre, sugar content, and purity are measured and used to figure Recoverable Sugar per Ton (RWST) and Sugar per Acre (RWSA).

Results:

Results were good from the locations we used. All varieties tested were resistant to glyphosate. This RR trait in sugarbeets is still relatively new and most varieties do not have a desired level of all other traits. The main differences are many varieties with the best RWST lack tolerance to diseases and the varieties with the better disease tolerance package have lower RWST and RWSA. The Official Variety Trials and the nurseries evaluate these differences. The results from our trials provide the information needed to approve the best varieties to be sold and give the growers the information they need to select the best varieties for their farm.

Rhizoctonia Nursery: We planted three locations and one was usable giving good results.

Purpose: The Rhizoctonia Nursery is conducted to evaluate resistance in the varieties. The test is inoculated. Knowledge of varietal differences is important to help the growers select the best varieties for their conditions.

Results: There are a few varieties containing a level of tolerance to Rhizoctonia and many that have very little or no tolerance to the disease.

Cercospora Leafspot Nursery:

This nursery was planted at four locations and two gave us good results.

Purpose: The Cercospora Leafspot nursery is conducted to evaluate resistance in the varieties. These are two row plots with a susceptible variety planted every third row which helps to spread the disease evenly. The entire plot area is inoculated with Cercospora.

Results: The results of this nursery indicates which varieties have a level of resistance that is acceptable in our growing region. The most tolerant variety had a rating of 3.0 and the most susceptible variety had a rating of 5.2 on a scale of 0-9.

Michigan Sugar Company
Official Variety Trials
Average of 4 Locations - 2011

Variety	$/Acre	RWSA	RWST		Yield		Sugar		CJP	
			Actual	Rank	T/A	Rank	%	Rank	%	Rank
SX-1212 RR	$2,151	8928	252	13	35.4	2	17.3	16	94.4	6
B-11RR9N	$2,104	8675	243	34	35.7	1	16.8	35	94.1	26
B-18RR4N	$2,090	8730	251	17	34.7	6	17.2	22	94.6	3
B-19RR1N	$2,085	8684	253	11	34.3	7	17.3	19	94.7	1
C-RR827	$2,084	8751	265	1	33.1	13	18.2	1	94.3	12
SX-1215 RR	$2,071	8648	254	8	34.0	9	17.5	10	94.4	7
B-17RR32	$2,070	8539	243	33	35.1	4	16.9	33	94.0	27
SX-1213N RR	$2,038	8504	251	18	33.8	11	17.2	21	94.5	4
C-RR179	$2,034	8246	238	38	34.7	5	16.5	40	94.1	21
HM-9316RR	$2,025	8394	246	28	34.1	8	17.1	28	93.9	31
C-RR824	$2,021	8463	252	16	33.6	12	17.4	14	94.2	18
B-11RR20	$2,019	8367	247	25	33.8	10	17.2	24	93.9	28
C-RR644NT	$2,002	8071	228	41	35.3	3	16.1	41	93.4	39
C-RR059	$1,992	8359	256	6	32.6	17	17.6	5	94.2	13
SX-1211N RR	$1,980	8162	250	19	32.7	16	17.2	20	94.2	16
HM-173RR	$1,961	8041	245	31	32.9	15	17.1	29	93.8	33
C-RR074NT	$1,953	8098	252	14	32.2	19	17.4	12	94.2	19
B-19RR90	$1,953	8144	255	7	32.0	20	17.6	7	94.1	25
C-RR086	$1,943	8082	259	2	31.3	25	17.8	2	94.3	10
SX-1260 RR	$1,940	8017	246	27	32.5	18	17.0	31	94.2	14
B-10RR34	$1,938	8106	258	3	31.4	22	17.6	4	94.6	2
HM-28RR	$1,929	7931	241	35	32.9	14	16.7	38	94.1	23
SX-1291RR	$1,898	7935	253	12	31.4	23	17.4	11	94.2	15
C-RR388	$1,894	7948	257	4	30.8	31	17.7	3	94.4	8
SX-1281RR	$1,884	7816	249	22	31.4	24	17.3	18	93.9	29
HM-131RR	$1,870	7798	254	9	30.8	32	17.6	6	93.9	30
M-113	$1,863	7633	245	30	31.2	27	17.2	25	93.5	37
SX-1214 RR	$1,857	7721	249	21	30.9	29	17.1	26	94.4	9
M-116	$1,856	7596	248	23	30.7	33	17.3	15	93.6	34
HM-9318RR	$1,855	7682	244	32	31.5	21	16.9	32	94.2	20
HM-133RR	$1,853	7722	253	10	30.5	36	17.6	8	93.8	32
HM-27RR	$1,847	7640	247	24	30.9	30	17.1	27	94.2	17
HM-50RR	$1,846	7720	252	15	30.6	35	17.4	13	94.1	22
C-RR295	$1,845	7663	250	20	30.6	34	17.3	17	94.1	24
B-11RR44	$1,841	7691	256	5	30.0	39	17.6	9	94.4	5
HM-9315RR	$1,825	7443	246	29	30.4	38	17.2	23	93.6	35
M-114	$1,818	7369	236	39	31.2	26	16.7	36	93.0	40
M-115	$1,810	7511	246	26	30.4	37	17.0	30	94.3	11
HM-9314RR	$1,799	7284	234	40	31.1	28	16.7	37	92.7	41
HM-9317RR	$1,745	7129	240	36	29.7	40	16.9	34	93.5	38
HM-9313RR	$1,709	7013	238	37	29.4	41	16.7	39	93.6	36
Average	1934	8006	248		32.2		17.2		94.0	
LSD (5%)	116.1	451.3	6.6		1.5		0.4		0.4	
CV %	4.3	4.0	1.9		3.4		1.5		0.3	

$/A: Gross dollars per acre assuming $60 payment

Use of these varieties is subject to them being lawful to purchase, receive, distribute and plant

Michigan Sugar Company
Cercospora Leafspot Nursery
Pigeon and Richville, MI - 2011
Average of 2 Trials

Trial Quality: Very Good

Planting Dates: Richville - May 10, Pigeon - June 1.
Inoculation Dates: Richville - July 18 and Aug 16, Pigeon July 27 and Aug 16
Evaluation Period: Richville - Aug 23 to Sep 21 and Pigeon - Sep 9 to Oct 13

Variety	% of Check	CLS rate 0-9
HM-173RR	84.9	3.0
HM-133RR	85.5	3.0
HM-131RR	85.6	3.0
SX-1215RR	86.2	3.0
B-10RR34	87.6	3.1
SX-1281RR	87.7	3.1
HM-50RR	88.0	3.1
SX-1211N RR	90.1	3.2
SX-1291RR	90.5	3.2
SX-1214RR	90.8	3.2
B-11RR44	91.2	3.2
C-RR086	92.1	3.3
HM-28RR	92.6	3.3
HM-9313RR	93.9	3.3
SX-1260RR	96.6	3.4
HM-27RR	96.9	3.4
B-19RR90	99.0	3.5
SX-1212RR	101.5	3.6
M-116	108.7	3.8
M-113	108.8	3.8
C-RR059	108.8	3.8
C-RR074NT	108.9	3.8
B-11RR20	111.3	3.9
M-115	111.5	3.9
HM-9315RR	111.7	3.9
SX-1213N RR	112.9	4.0
C-RR644NT	113.1	4.0
HM-9318RR	115.3	4.1
C-RR179	118.4	4.2
C-RR295	119.9	4.2
HM-9317RR	120.1	4.2
B-17RR32	122.8	4.3
B-19RR1N	123.3	4.4
C-RR824	124.9	4.4
B-18RR4N	127.4	4.5
B-11RR9N	134.5	4.7
C-RR388	138.7	4.9
M-114	141.4	5.0
HM-9314RR	142.9	5.0
C-RR827	143.0	5.1
HM-9316RR	145.9	5.2
Average	108.7	3.8
LSD (5%)	7.9	0.3
CV %	5.8	5.8

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Rhizoctonia Nursery

Richville, MI - 2011

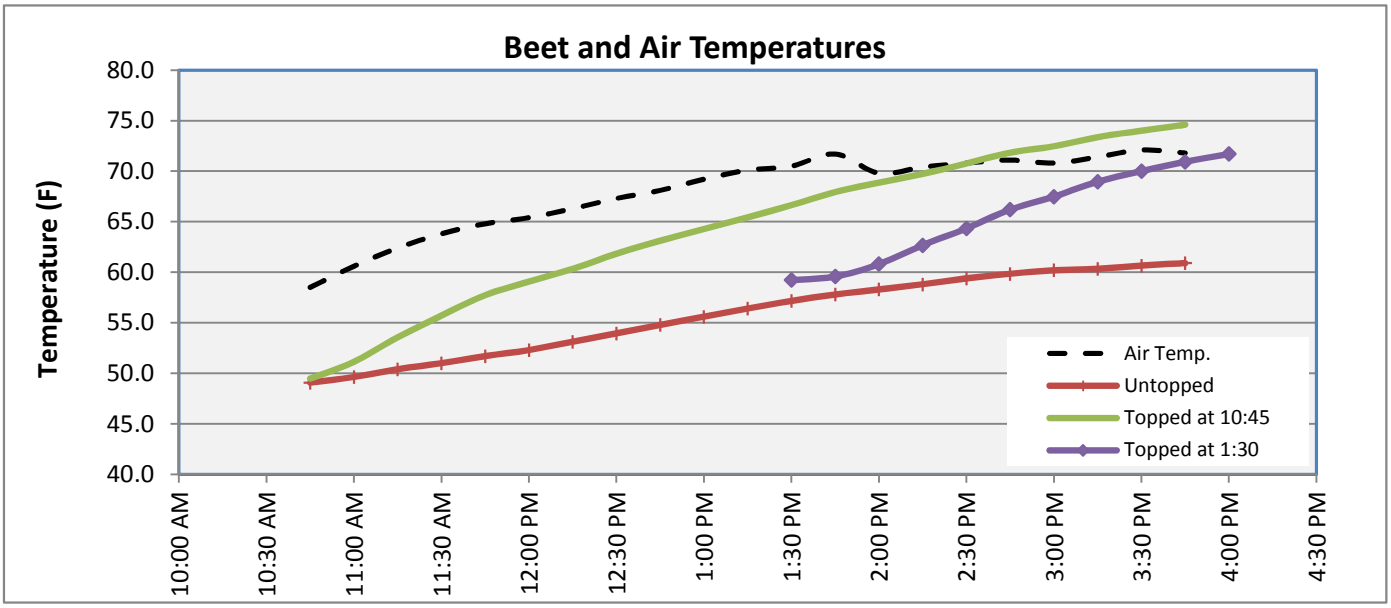
No.	Variety	Rhizoc Root Rating 0-7 Scale Sep 12	Calculated Exterior Rot % Sep 12	Canopy Symptoms		Canopy Vigor Rating 0-10 Aug 26
				Dead/Dying Beets/34 ft Sep 9	Normal Beets/34 ft Sep 9	
5	Crystal RR179	2.11	3.8	3.3	39.8	8.3
12	Crystal RR086	2.11	3.8	4.5	37.0	7.9
8	BTS 11RR20	2.17	5.0	4.7	39.7	7.8
3	HM 27RR	2.17	5.0	3.0	44.0	7.9
11	Maribo 115	2.19	5.0	4.2	42.0	7.6
9	Crystal RR059	2.21	5.0	4.5	40.0	8.4
37	HM 9318RR	2.25	5.6	7.3	38.3	7.8
22	HM 28RR	2.26	5.6	10.6	35.9	7.0
10	HM 131RR	2.30	6.3	5.3	41.2	7.8
14	BTS 10RR34	2.30	6.3	10.3	37.5	7.7
13	SX 1291RR	2.40	7.5	9.3	37.3	7.5
4	BTS 11RR44	2.44	8.0	11.2	34.0	6.9
38	Crystal RR295	2.46	8.0	9.5	35.7	7.0
23	SX 1214RR	2.49	8.8	5.3	36.3	7.7
35	HM 133RR	2.53	9.4	9.7	34.8	7.4
7	HM 9316RR	2.55	9.4	11.5	33.7	7.2
1	BTS 11RR9N	2.55	9.4	8.5	38.8	8.2
30	HM 9313RR	2.57	10.0	11.3	34.7	7.0
39	SX 1213RR	2.58	10.0	7.3	36.5	7.9
41	HM 173RR	2.61	10.0	9.2	36.8	7.4
26	SX 1260RR	2.64	10.7	10.0	39.3	7.5
33	BTS 19RR1N	2.66	10.7	6.2	36.3	7.6
15	Crystal RR644NT	2.67	11.3	10.7	35.5	7.3
18	SX 1215RR	2.69	11.3	6.5	38.3	7.6
27	Crystal RR074NT	2.72	11.3	8.2	37.2	7.1
32	Crystal RR824	2.77	11.9	12.8	30.7	7.0
19	SX 1281RR	2.77	11.9	11.3	34.7	7.1
16	HM 50RR	2.78	11.9	11.2	37.0	7.7
36	BTS 18RR4N	2.81	12.5	8.2	36.5	8.2
28	SX 1211N	2.84	12.5	9.7	35.7	7.0
40	BTS 17RR32	2.84	12.5	13.5	29.8	7.2
34	SX 1212RR	2.94	13.8	12.5	33.8	7.1
21	Maribo 116	2.94	13.8	13.0	32.7	6.7
29	Crystal RR388	2.95	15.0	10.8	32.2	6.5
17	HM 9315RR	3.03	15.0	16.7	30.3	6.4
2	Maribo 113	3.13	17.3	17.7	28.7	6.6
25	BTS 19RR90	3.21	19.5	12.8	32.3	6.5
24	HM 9314RR	3.43	24.0	13.7	26.7	5.9
20	Crystal RR827	3.45	26.3	19.5	26.5	6.9
31	HM 9317RR	4.17	42.5	20.8	25.2	5.7
6	Maribo 114	4.25	45.0	19.8	21.8	6.2
Average		2.7	12.2	10.15	35.01	7.26
LSD 5%		0.68	11.7	8.58	9.07	0.981
CV %		21.9	74.0	74.0	22.7	11.8

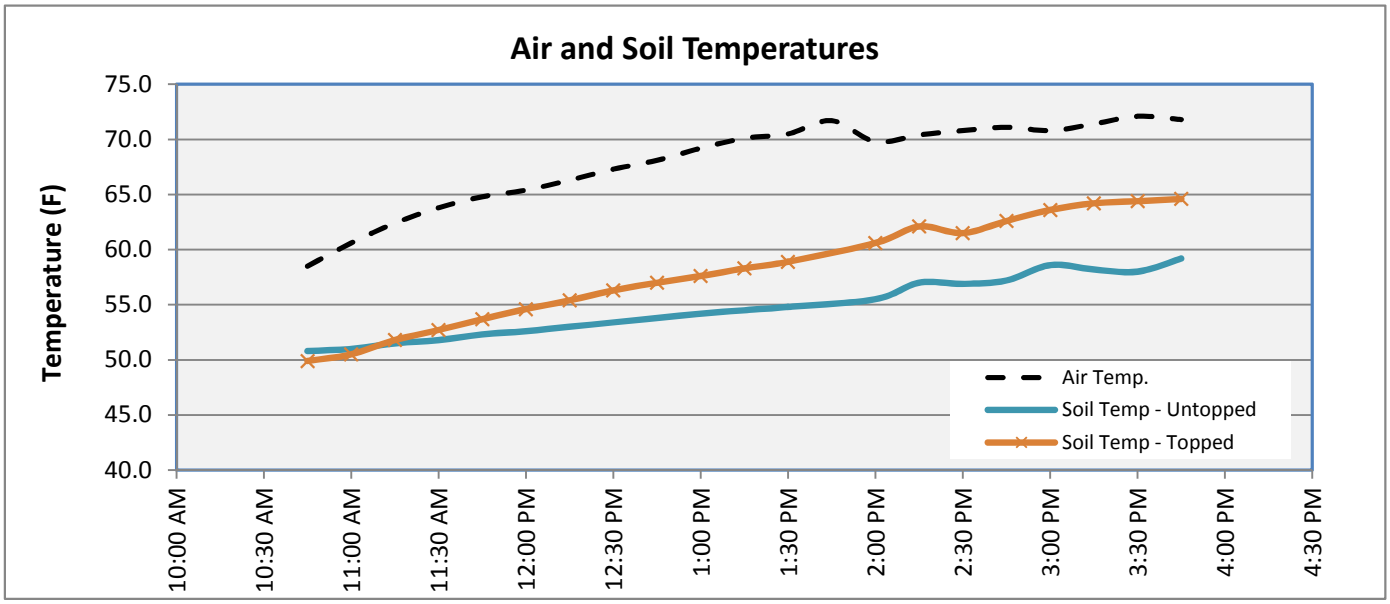
Use of these varieties is subject to them being lawful to purchase, receive, distribute and plant

Topped Beet Temperature Experiment

Saginaw Valley Research & Extension Center

This trial was conducted to compare how fast topped and untopped sugarbeets warm during the day. The trial was initiated during early season delivery on October 4, 2011. Two different topping times were compared (10:45 & 1:30) to untopped beets. Digital temperature probes were inserted 2 inches into the beet crowns and 2 inches into the soil. Temperature readings were taken every 15 minutes. The day was bright & sunny with initial air temperature at 10:45 a.m. about 57 degrees and peaked at 1:45 p.m. at 72 degrees. Sugarbeets that were not topped, gained temperature slowly compared to sugarbeets that were defoliated. Defoliated beets actually increased temperature faster than the air temperature, indicating radiant energy (sun) was also heating the crowns. By 2:30 p.m., the 2 inch beet temperature was higher than ambient air temperature. At the end of the day, the 10:45 defoliated beets were about 13.5 degrees warmer than non defoliated. Both the 10:45 and 1:30 topped beets increased the 2 inch beet temperature at a rate of 5 degrees per hour compared to about 2.4 degrees per hour for untopped beets. Since sugarbeet respiration doubles every 15 degrees it is recommended that defoliation not be more than 30 minutes



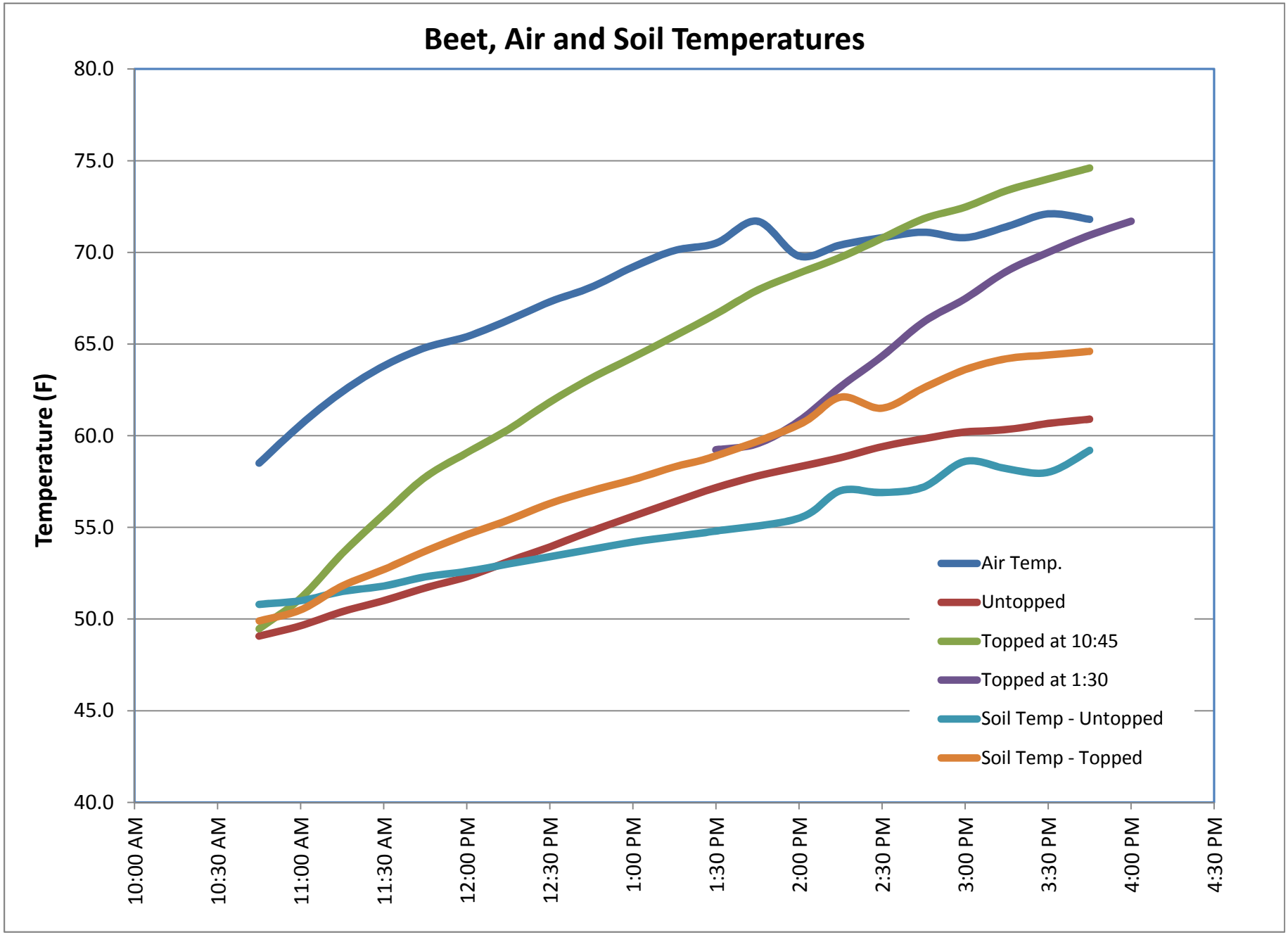


2011 Beet Temperature Rise Experiment

	Air Temp.	Untopped Beets				Untopped Avg.	Topped Beginning of Day				Topped Avg.	Topped Middle of Day Topped at 1:30			Top - Mid Avg.	Soil Temp - Non Topped	Soil Temp - Topped
		1	2	3	4		5	6	7	8		9	10	11			
10:15		Suspect															
10:30		Therm.															
10:45	58.5	47.4	48.0	49.8	49.4	49.1	51.0	48.3	49.1	48.3	49.5					50.8	49.9
11:00	60.6	48.4	48.6	50.4	49.9	49.6	52.6	50.0	50.8	49.4	51.1					51.0	50.5
11:15	62.4	50.3	49.3	51.2	50.7	50.4	55.0	52.5	53.2	51.3	53.6					51.5	51.8
11:30	63.8	51.1	49.9	51.8	51.3	51.0	57.1	54.6	55.4	53.1	55.7					51.8	52.7
11:45	64.8	51.8	50.6	52.5	52.0	51.7	59.0	56.5	57.7	54.8	57.7					52.3	53.7
12:00	65.4	53.5	51.3	53.1	52.5	52.3	59.8	58.3	59.1	56.4	59.1					52.6	54.6
12:15	66.3	52.6	52.0	54.2	53.2	53.1	61.2	59.2	60.6	58.0	60.3					53.0	55.4
12:30	67.3	55.0	52.7	55.3	53.8	53.9	62.6	60.5	62.4	59.3	61.8					53.4	56.3
12:45	68.1		53.5	56.4	54.5	54.8	63.9	61.6	63.9	60.6	63.1					53.8	57.0
1:00	69.2		54.2	57.6	55.0	55.6	65.0	62.6	65.2	61.8	64.3					54.2	57.6
1:15	70.1		54.9	58.6	55.7	56.4	66.1	63.6	66.6	63.1	65.4					54.5	58.3
1:30	70.5	58.9	55.7	59.1	56.7	57.2	67.2	64.7	68.0	64.5	66.6	59.5	59.0	59.2	59.2	54.8	58.9
1:45	71.7	59.0	56.3	59.4	57.7	57.8	68.4	65.9	69.5		67.9	60.3	59.2	59.2	59.6		
2:00	69.8	59.5	57.0	59.2	58.7	58.3	68.9	66.9	70.8		68.9	61.8	60.3	60.3	60.8	55.5	60.6
2:15	70.4	60.0	57.6	59.8	59.0	58.8	69.4	67.8	72.0		69.7	64.4	61.8	61.8	62.7	57.0	62.1
2:30	70.8	60.5	58.3	60.3	59.6	59.4	70.2	68.8	73.3		70.8	66.4	63.2	63.4	64.3	56.9	61.5
2:45	71.1	61.0	58.9	60.6	60.0	59.8	71.2	69.8	74.5		71.8	68.5	64.8	65.3	66.2	57.2	62.6
3:00	70.8	61.4	59.5	60.8	60.3	60.2	71.7	70.4	75.3		72.5	70.0	65.8	66.6	67.5	58.6	63.6
3:15	71.4	62.0	59.4	61.1	60.5	60.3	72.5	71.3	76.3		73.4	71.7	67.0	68.2	69.0	58.2	64.2
3:30	72.1	62.4	59.9	61.3	60.8	60.7	73.2	72.0	76.8		74.0	72.9	67.7	69.4	70.0	58.0	64.4
3:45	71.8	62.8	60.3	61.5	60.9	60.9	73.9	72.6	77.3		74.6	74.0	68.4	70.4	70.9	59.2	64.6
4:00												74.9	68.9	71.3	71.7		
4:15		59.0	57.6	57.6	57.3	57.5	63.4	61.2	66.4		63.7	63.7	59.6	62.0	61.8		
4:30																	

2011 Beet Temperature Rise Experiment

	Air Temp.	Untopped	Topped at 10:45	Topped at 1:30	Soil Temp - Untopped	Soil Temp - Topped
10:45 AM	58.5	49.1	49.5		50.8	49.9
11:00 AM	60.6	49.6	51.1		51.0	50.5
11:15 AM	62.4	50.4	53.6		51.5	51.8
11:30 AM	63.8	51.0	55.7		51.8	52.7
11:45 AM	64.8	51.7	57.7		52.3	53.7
12:00 PM	65.4	52.3	59.1		52.6	54.6
12:15 PM	66.3	53.1	60.3		53.0	55.4
12:30 PM	67.3	53.9	61.8		53.4	56.3
12:45 PM	68.1	54.8	63.1		53.8	57.0
1:00 PM	69.2	55.6	64.3		54.2	57.6
1:15 PM	70.1	56.4	65.4		54.5	58.3
1:30 PM	70.5	57.2	66.6	59.2	54.8	58.9
1:45 PM	71.7	57.8	67.9	59.6		
2:00 PM	69.8	58.3	68.9	60.8	55.5	60.6
2:15 PM	70.4	58.8	69.7	62.7	57.0	62.1
2:30 PM	70.8	59.4	70.8	64.3	56.9	61.5
2:45 PM	71.1	59.8	71.8	66.2	57.2	62.6
3:00 PM	70.8	60.2	72.5	67.5	58.6	63.6
3:15 PM	71.4	60.3	73.4	69.0	58.2	64.2
3:30 PM	72.1	60.7	74.0	70.0	58.0	64.4
3:45 PM	71.8	60.9	74.6	70.9	59.2	64.6
4:00 PM				71.7		
4:15 PM		57.5	63.7	61.8		


Beet, Air and Soil Temperatures
Temperature (F)
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75.0
70.0
65.0
60.0
55.0
50.0
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10:00 AM
10:30 AM
11:00 AM
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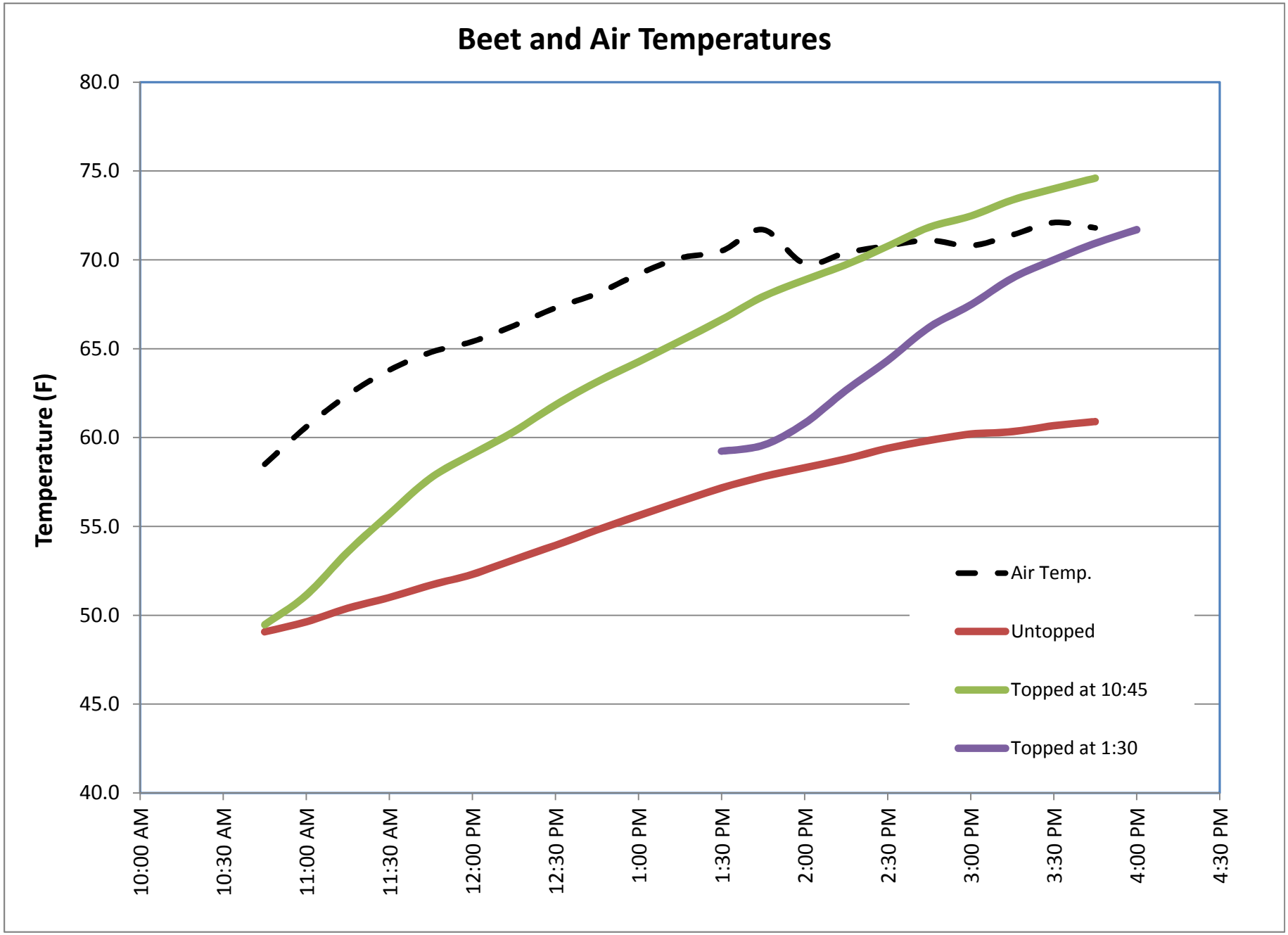
Air Temp.
Untopped
Topped at 10:45
Topped at 1:30
Soil Temp - Untopped
Soil Temp - Topped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Air Temp.
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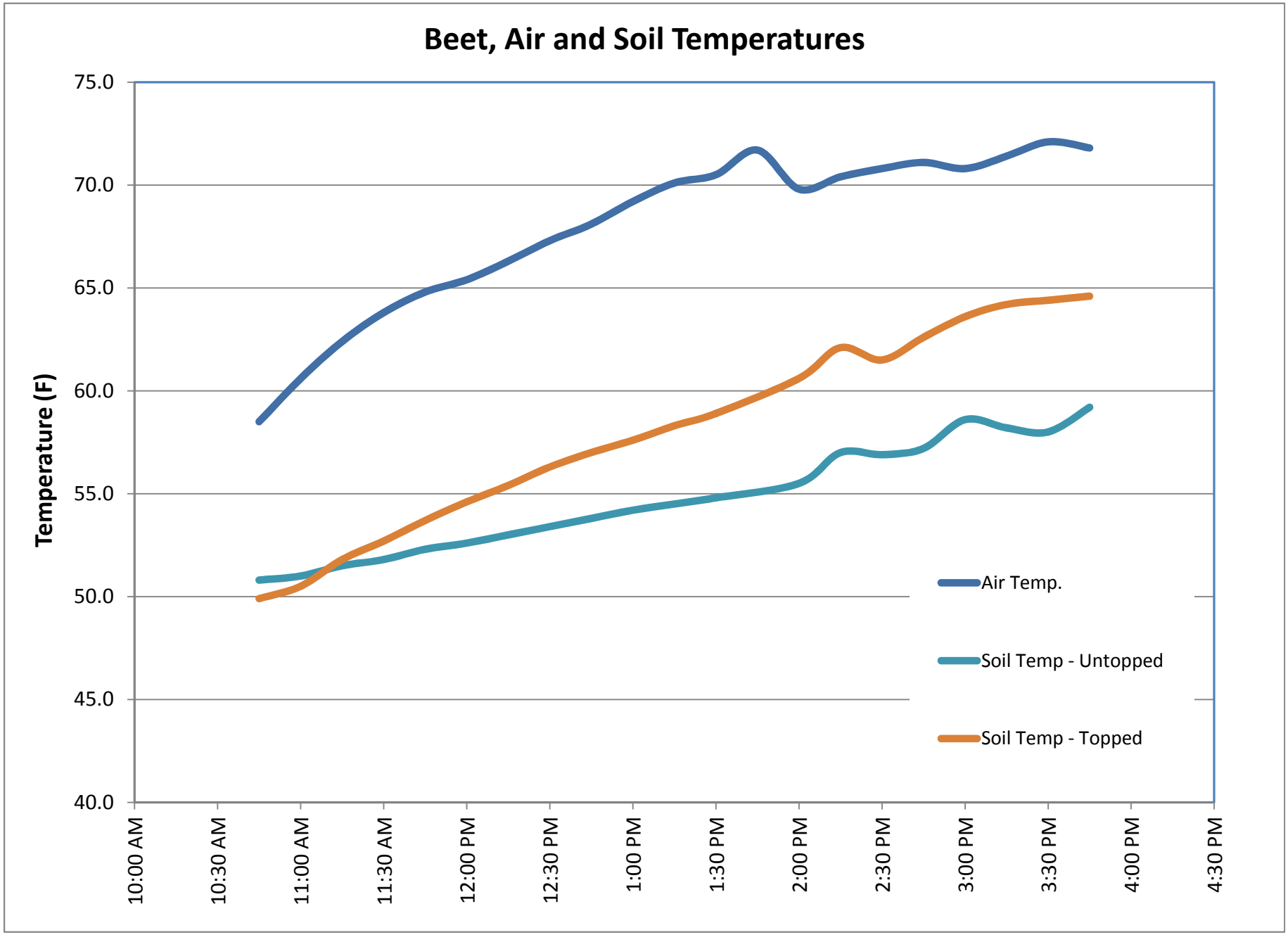
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Temperature (F)
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12:00 PM
12:30 PM
1:00 PM
1:30 PM
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3:00 PM
3:30 PM
4:00 PM
4:30 PM
Air Temp.
Soil Temp - Untopped
Soil Temp - Topped

Sugar beet activities of the USDA-ARS East Lansing conducted in cooperation with Saginaw Research & Extension Center during 2011

Mitch McGrath, Linda Hanson, Tim Duckert, and Tom Goodwill
USDA – Agricultural Research Service, East Lansing, MI

Evaluation and rating plots were planted at the Saginaw Valley Research & Extension Center in Frankenmuth, MI in 2011 that focused on Cercospora leaf spot performance, conducted in conjunction with Beet Sugar Development Foundation and including USDA-ARS cooperators. All trials were planted, following normal fall and spring tillage operations, with a USDA-ARS modified John Deere / Almaco research plot planter utilizing global positioning with real time kinematic correction signals. Seed with the designation of EL-A0xxxxx (East Lansing material) was planted in untreated form to maximize stand and seedling vigor traits inherent in the breeding germplasm. A randomized complete-block design with one to four replications depending on the specific test was used. Internal controls included a susceptible check, variety CE (kindly provided by Syngenta Seeds), and a resistant check, ACH355 (kindly provided by ACH Seeds). All plots were 4.5 m long, with 51 cm between rows and were planted on May 5, 2011. Azoxystrobin was applied in a band in furrow at planting and again on June 15 to control Rhizoctonia damping-off and crown and root rot. The field was sprayed five times with phenmedipham, desmedipham, triflusulfuron methyl, and clopyralid (23 May, 31 May, 13 Jun, 25 Jun, and 5 Jul), once with S-metolachlor (15 Jun), and a cultivation was performed on 14 Jun to control weeds. The beet crop was thinned by hand. Bolting beets were removed throughout the season. Plots were thinned by hand by late June, and we thank Michigan Sugar for their generous assistance with this onerous task.

The nursery was inoculated on July 7 with a liquid spore suspension of *Cercospora beticola*. Visual evaluations on the plot with a disease index (DI) on a scale from where 0=no symptoms, 1=a few scattered spots, 2=spots coalescing or in large numbers on lower leaves only, 3= some dieback on lower leaves, but leaves not entirely dead, 4-8 are increasing amounts of dead and diseased tissue, 9= mostly dead with few remaining living leaves with large dead patches, and 10=all leaves dead. Evaluations were made on 10 Aug, 17 Aug, and 24 Aug, with the peak of the epidemic occurring around 24 Aug. An evaluation was attempted subsequently, but several PIs were losing leaves following production of seed stalks and others were showing new leaf growth following defoliation from Cercospora leaf spot, so later ratings were not used. One hundred and eighty commercial entries and checks were received and tested from two BSDF member companies in 2-row plots, replicated four times. In addition, 263 breeding lines were tested in one- or two-row, three-replication plots from USDA collaborators from Fargo, ND (12 breeding lines), East Lansing, MI (60, **Table 1**), and Ft. Collins, CO (161), as well as 30 Plant Introductions (PIs) from the working *Beta* germplasm collection of the National Plant Germplasm System in Pullman, WA. Additional East Lansing USDA entries included 927 (partially) inbred lines. These nurseries were only rated twice, with observation dates selected based on the results from evaluating the commercial nursery.

Cercospora Leaf Spot Evaluations of Sugar Beet Varieties and Breeding Lines from BSDF-Member Companies: The need continues within the sugarbeet industry for objective evaluations of commercial hybrids for their reaction to *Cercospora beticola*, the cause of Cercospora leaf spot in sugar beet. High night-time temperatures in the summer of 2010, combined with high humidity and low rainfall, contributed to a moderate leaf spot epidemic. The high nighttime temperatures in the summer of 2011, combined with high humidity and low rainfall, contributed to a moderate leaf spot epidemic. The Beetcast leafspot advisory daily

severity values accumulated in the Frankenmuth area from 1 May to 24 Aug was 171 DSV. Disease severity peaked by late August, after which regrowth started to outpace new disease development, so that disease ratings for several accessions remained constant or decreased after that rating, thus ratings are not given after this date. At our 24 Aug rating, means of the resistant and susceptible internal control for the entire nursery (including two additional experiments) were 3.5 and 5.9, respectively, across the nursery. At the peak of the epidemic in 2010 (19 Aug), these means were 3.2 and 5.5 respectively. Means of contributor lines in the entire nursery in 2011 ranged from 2.0 to 7.8. An analysis of variance (PROC GLM - SAS) on the disease indices (visual evaluation scores) determined that there were significant differences among entries ($P \leq 0.05$) on all dates of evaluation.

East Lansing Breeding Lines: Results from 60 East Lansing breeding lines are sorted from high to low resistance on August 24 ("Aug 24 Mean", **Table 1**), with dispersion measures given by standard deviations ("std. dev.", Table 1). "Entry #" is an identifier unique to this test and year, however the "Accession ID" is the primary identifier, e.g. this is the seedlot number and represents a physical packet of seed. All seed was produced by or for the USDA-East Lansing sugar beet program during previous years, and for various purposes relating to improvement of germplasm for growers in Michigan and worldwide. These purposes are roughly indicated in the "Description" (Table 1) as a broadly construed desired outcome. Typically, these seedlots are produced using mother roots selected in USDA East Lansing nurseries (agronomic, Cercospora, Rhizoctonia, nematode, emergence and evaluation, or special), vernalized, and roots are arranged in isolated seed productions nurseries in the greenhouse or the field according to their perceived utility and stage of development. Most often, three or four large seed production nurseries are used, each isolated by a physical barrier in the greenhouse, or by > 0.5 miles in the field. Material deemed most useful for the industry is increased in greenhouse isolation as a single entry following a last cycle of selection for type or performance. Projects listed under "Description" are geared towards the stated primary goal by starting with germplasm with demonstrated performance under that particular stress (e.g. Rhizoctonia resistance, nematode resistance, stress / salt emergence tolerance, or Cercospora resistance) and using elite smooth-root, low water, high sucrose germplasm developed at East Lansing to improve agronomic performance prior to germplasm release to BSDF member seed companies. Thus, the Cercospora nursery is used both to evaluate current germplasm for disease reaction, but more importantly as a source of selected mother roots for continued seed production and germplasm enhancement. In Table 1, germplasm with scores <4.0 would be good candidates for release solely based on Cercospora tolerance criteria, in our estimation.

Plant Introductions: 30 Plant Introductions (PIs) from the USDA-ARS National Plant Germplasm System (NPGS) (Garden Beet, Sugar Beet, Leaf Beet, Fodder Beet, and wild beet) were evaluated in single-row plots 4.5 m long, with 51 cm between rows, and these results are shown in **Table 2**. Bolting beets were removed throughout the season, after which some annual materials could not be rated as there was not sufficient remaining leaf tissue. One accession, PI546425, had average ratings that were not significantly different from the resistant control on the first and third rating dates. Only 6 accessions (PI 518352, PI 518391, PI 518419, PI 540675, PI 546397, and PI518326) and the two control varieties did not require removal of seed stalks during the course of the ratings. These data, and more information on the accessions evaluated, are available through the USDA-ARS GRIN database at http://www.ars-grin.gov/npgs.

Table 1: Open pollinated East Lansing germplasm tested for Cercospora reaction in 2011.

entry	ID	Seed parent	Pollen parent	Aug 17 mean	std. dev.	Aug 24 mean	std. dev.
CE05	EL-A021739	EL50/2 x 2007 GH 33B	IC w/ 07-33B	1.3	0.58	2.0	0.00
CE20	EL-A024956	EL50/2	OP w/ 09 31B cerc	2.0	0.00	2.7	0.58
CE06	EL-A021740	Rhizoc, rz, Trad EL, Cerc sln	IC w/ 07-33B	2.0	0.00	3.0	1.00
CE60	EL-A027158	rhizoc - SR	IC w/ 2010 RangeA - Gp2	1.3	0.58	3.0	0.00
CE04	EL-A021738	EL50 mix EL55	IC w/ 07-33B	1.7	0.58	3.3	0.58
CE19	EL-A024953	FC mix	OP w/ 09 31B cerc	2.3	0.58	3.3	0.58
CE08	EL-A021841	SR rz Rhizoc	IC w/ 07-31C	2.3	0.58	3.7	0.58
CE09	EL-A021842	SR96/sel	IC w/ 07-31C	2.3	0.58	3.7	0.58
CE10	EL-A022426	C40 high sucrose x SR & Logan (Maribo HS donor)	IC w/ 07-31B	2.3	0.58	3.7	0.58
CE11	EL-A022459	SR Suc RZM IC2	IC w/ 07 Bot East	2.3	0.58	3.7	0.58
CE22	EL-A024969	SR (elites) w/Rhiz	OP '09 Bot Irr	2.3	0.58	3.7	0.58
CE23	EL-A024974	SR w/EL	OP '09 RngA	2.3	0.58	3.7	0.58
CE40	EL-A027020	Sclerotuim rolfsii tolerant x 08-5E (nematode)	IC w/ 2010 5E / Nema salt mixer	2.7	0.58	3.7	0.58
CE56	EL-A027154	Rhizoc / rhizopus selection	IC w/ 2010 Old Bot - Gp4	2.3	0.58	3.7	0.58
CE03	EL-A021508	Best 2004 SR Ag 1 performers	OP w/ 06 Range A - 2006	2.3	0.58	4.0	1.00
CE07	EL-A021744	95HS2/sel & SR96/sel	IC w/ 07-31D	2.7	0.58	4.0	0.00
CE13	EL-A022804	(EL51 F3 ms CAPTURES) x SR & wilds	IC w /08 Bot East	3.0	0.00	4.0	0.00
CE17	EL-A022808	broad mix of good previous OP materials	IC w/ 08-5B (Cerc mix)	2.0	0.00	4.0	1.00
CE24	EL-A024975	SR (low water) w/EL	OP '09 RngA	2.7	0.58	4.0	0.00
CE27	EL-A024984	04B134 (Bvm nema / sel Bay City)	OP w/ 09 31C nema	2.3	0.58	4.0	1.00
CE33	EL-A027012	(Salinas nematode x 07-5E/24A)x08-5E (some SF mixed)	IC w/ 2010 5E / Nema salt mixer	3.0	0.00	4.0	0.00
CE52	EL-A027149	SR98	IC w/ 2010 Bot East - Gp5	3.0	0.00	4.0	0.00
CE53	EL-A027150	Nematode group	IC w/ 2010 Bot East - Gp6	2.3	1.15	4.0	0.00
CE55	EL-A027152	(Low water / HS elites) x early nema selns	IC w/ 2010 5B : Good Nema	3.0	0.00	4.0	0.00
CE58	EL-A027156	Broad SR stream - Cerc sln	IC w/ 2010 RangeA - Gp1	2.3	0.58	4.0	0.00
CE12	EL-A022776	(Salinas nematode x 07-5E/24A)x08-5E (some SF mixed)	IC w/ 08-5E (nema mix)	3.0	0.00	4.3	0.58
CE14	EL-A022805	HS elites	IC w/ 08-31B	3.0	0.00	4.3	0.58
CE15	EL-A022806	HS elites & (low water x nema)	IC w/ 08-31C	2.7	0.58	4.3	0.58
CE16	EL-A022807	low water x nema	IC w/ 08-31B	3.0	0.00	4.3	0.58
CE21	EL-A024966	SR w/ salt (elites & low water)	OP '09 Bot East (group 3)	3.3	0.58	4.3	0.58
CE26	EL-A024983	(95HS2/sel) x 07-5E	OP w/ 09 31C nema	3.0	0.00	4.3	0.58
CE28	EL-A027007	(Salinas nematode x 07-5E/24A)x08-5E (some SF mixed)	IC w/ 2010 31D / nema SR	3.3	0.58	4.3	0.58
CE30	EL-A027009	SR80 germ x salt tol.	IC w/ 2010 5A : Nema Yld Mixer	2.7	0.58	4.3	0.58
CE31	EL-A027010	low water x nema	IC w/ 2010 31D / nema SR	3.0	0.00	4.3	0.58
CE34	EL-A027013	(95HS2/sel) x 07-5E	IC w/ 2010 31D / nema SR	2.7	0.58	4.3	0.58
CE41	EL-A027136	PI 518160 germ test seln	IC w/ 2010 5E / Nema salt mixer	3.3	0.58	4.3	0.58
CE44	EL-A027140	CN927-202_5927-202_NN? x 08-5E	IC w/ 2010 5E / Nema salt mixer	3.0	0.00	4.3	0.58
CE45	EL-A027141	(Salinas nematode x 07-5E/24A)x08-5E (some SF mixed)	IC w/ 2010 5E / Nema salt mixer	3.0	0.00	4.3	0.58
CE57	EL-A027155	RngA - Aph + Rhizoc	IC w/ 2010 RangeA - Gp3	2.7	0.58	4.3	1.15
CE59	EL-A027157	yellow chards	IC w/ 2010 Tim's House	3.3	0.58	4.3	0.58
CE01	EL-A013484	C869	C869	3.0	0.00	4.7	0.58
CE02	EL-A015031	SP6822	SP6822	2.7	0.58	4.7	1.15
CE18	EL-A022809	self fertile mixer	IC w /08 Bot East	3.0	0.00	4.7	0.58
CE25	EL-A024982	06 bay city sln's	OP w/ 09 31C nema	3.7	0.58	4.7	0.58
CE32	EL-A027011	06 bay city sln's	IC w/ 2010 5A : Nema Yld Mixer	3.0	0.00	4.7	0.58
CE36	EL-A027015	(C869cms x PI562601) x 07-5A (SR lo water Rhizoc)	IC w/ 2010 33A : New Rhizoc	3.3	0.58	4.7	0.58
CE37	EL-A027017	Bay City sln x 08-5E (nematode)	IC w/ 2010 5A : Nema Yld Mixer	3.0	0.00	4.7	0.58
CE38	EL-A027018	[EL55 x 08-5E (nematode)] x 2010 5A : Nema Yld	IC w/ 2010 5A : Nema Yld Mixer	3.0	0.00	4.7	0.58
CE46	EL-A027142	M1-3	IC w/ 2010 5E / Nema salt mixer	3.3	0.58	4.7	0.58
CE48	EL-A027144	NaCl germ-high Ames 3051	IC w/ 2010 5E / Nema salt mixer	3.0	0.00	4.7	0.58
CE50	EL-A027146	PI 355963 germ test seln	IC w/ 2010 5E / Nema salt mixer	3.3	0.58	4.7	0.58
CE51	EL-A027147	PI 140360 germ test seln	IC w/ 2010 5E / Nema salt mixer	3.0	1.00	4.7	0.58
CE35	EL-A027014	M6-2	IC w/ 2010 5E / Nema salt mixer	3.3	0.58	5.0	1.00
CE39	EL-A027019	Sclerotuim rolfsii tolerant x 08-5E (nematode)	IC w/ 2010 5A : Nema Yld Mixer	3.0	0.00	5.0	0.00
CE42	EL-A027137	M1-4	IC w/ 2010 5E / Nema salt mixer	4.0	0.00	5.0	0.00
CE43	EL-A027138	PI 232889 germ test seln	IC w/ 2010 5E / Nema salt mixer	3.3	0.58	5.0	1.00
CE47	EL-A027143	06 bay city sln's 8	IC w/ 2010 5E / Nema salt mixer	3.0	0.00	5.0	0.00
CE49	EL-A027145	PI 266100 germ test seln	IC w/ 2010 5E / Nema salt mixer	3.0	0.00	5.0	0.00
CE54	EL-A027151	Salt tolerant selections group	IC w/ 2010 Bot East - Gp7	3.3	0.58	5.0	0.00
CE29	EL-A027008	PI 357361 germ test seln	IC w/ 2010 5A : Nema Yld Mixer	3.0	1.00	5.3	0.58
			Grand Mean	2.78		4.06	
			F ratio	3.40 ***		2.53 ***	
			LSD 0.05	0.79		1.43	

Table 2: USDA Plant Introduction (wild species) Cercospora leaf spot scores, 2011.

	Identification			Disease Index[z]		
Entry	Donor's ID	subsp.	Origin	Aug 10	Aug 17	Aug 24
Ames 10841	IDBBNR 9528	*maritima*	India	3.0	nd[y]	nd
PI 198348	IDBBNR 5662	*maritima*	Spain	3.3	4.0	4.7
PI 504210	WB	*maritima*	Italy	2.7	4.7	5.0
PI 504221	WB	*maritima*	Italy	3.3	4.3	5.0
PI 504278	WB	*maritima*	France	2.3	3.7	5.0
PI 504284	WB	*maritima*	France	3.7	4.7	5.0
PI 518299	IDBBNR 5793	*maritima*	United Kingdom	3.3	4.3	5.7
PI 518301	IDBBNR 5795	*maritima*	United Kingdom	3.7	4.3	5.7
PI 518326	IDBBNR 5820	*maritima*	United Kingdom	3.3	4.0	5.0
PI 518334	IDBBNR 5828	*maritima*	United Kingdom	3.7	3.7	5.0[w]
PI 518352	IDBBNR 5846	*maritima*	United Kingdom	3.7	4.0	5.0
PI 518391	IDBBNR 5885	*maritima*	Ireland	3.3	4.3	5.3
PI 518403	IDBBNR 5897	*maritima*	Ireland	3.0	3.3	4.7
PI 518419	IDBBNR 5913	*maritima*	Ireland	3.3	4.0	5.0
PI 540648	WB 902	*maritima*	France	3.7	4.3	5.3
PI 540675	WB 929	*maritima*	Denmark	2.7	3.7	4.0
PI 540679	WB 933	*maritima*	Denmark	3.3	4.3	5.3
PI 540691	WB 945	*maritima*	France	3.0	3.3	4.3
PI 546380	IDBBNR 5658	*maritima*	Spain	4.0	5.0[w]	5.0[w]
PI 546391	IDBBNR 5592	*maritima*	United States	2.7	3.3	4.3
PI 546397	IDBBNR 5596	*maritima*	Denmark	3.3	4.0	5.7
PI 546398	IDBBNR 5597	*maritima*	Israel	3.3	4.0	4.7
PI 546400	IDBBNR 5588	*maritima*	Italy	2.3	4.0	4.0
PI 546415	IDBBNR 5609	*maritima*	Greece	3.7	4.3	5.0
PI 546424	IDBBNR 5617	*maritima*	Greece	3.0	4.0	4.3
PI 546425	IDBBNR 5641	*maritima*	Italy	2.7	3.7	3.7
PI 546430	IDBBNR 5618	*maritima*	Greece	3.7	4.0	4.3
PI 546431	IDBBNR 5619	*maritima*	Greece	3.3	3.7	4.3
PI 546436	IDBBNR 5620	*maritima*	Greece	3.0	3.7	4.3
PI 546447	IDBBNR 5628	*maritima*	France	3.3	4.3	5.0
Leaf Spot Susceptible Check[y] (CE)...USA				3.3	4.7	6.0
Leaf Spot Resistant Check[x] (ACH355)...USA				1.7	2.0	3.0
			$LSD_{0.05}$	1.20	1.12	1.07
Trial Mean				3.2	4.0	4.8

[z]Disease Index is based on a scale where 0=healthy to 10=all leaves dead.
[y]nd = not done as all plants had flowered and lost the majority of leaves so could not be rated
[w]Numbers based on average from two plots as the third plot had lost all or all but one plant from flowering
[y]The Leafspot Susceptible Check is "CE".
[x]The Leafspot Resistant Check is ACH 355.

Inbred and Partially Inbred Lines: Self-fertile breeding accessions were evaluated. These materials are being used to develop recombinant inbred populations for genetic analyses of agronomic and disease resistance traits, which is difficult with the normally self-sterile breeding populations used traditionally. These materials were grown adjacent to the Cercospora nursery but were not inoculated, and Cercospora infection was not controlled.

Populations tested along with the number of accessions within each population with sufficient seed for a single row, single plot trials are listed in **Table 3**. Each of these populations was developed form a single hybrid individual derived from a cross between C869 sugar beet with each of the major *Beta vulgaris* crop types (Fodder beet, red table beet, Swiss chard, sugar beet) as well as with a wild beet accession. Only one population (MSR6) would be considered substantially inbred, and agronomic information was determined for this family (**Table 4**).

In all populations, a great deal of morphological variability was evident. Each population was scored for natural Cercospora leaf spot infection, and a wide range of variability in leaf spot reaction was also evident (**Table 3**). This is noteworthy because the genetics of Cercospora resistance are poorly understood with 2 to 10 genes thought to contribute to resistance. The wide values observed suggest that each population could be analyzed for the genetics of leaf spot, and since the origins of these populations is highly divergent on the pollen parent side, it is likely that different resistance genes are segregating between these populations.

In the MSR6 population, replications were obtained by examining five beets for root weight, sucrose content, and water content (**Table 4**). Average root weight was relatively small compared with sugar beet hybrids, and ranged from 200 grams to 1.4 kilograms (mean = 700 g, std. dev. = 250 g. Sucrose content (fresh weight) as determined via NIR ranged from 7.5% to 15.4% (mean = 12.1, std. dev. = 1.46), and water content (fresh weight) as determined via NIR ranged from 80.7 to 88.3% (mean = 84.1, std. dev. = 1.37). This population will be useful to approximate the inheritance of sucrose content in beets.

Table 3: Inbreeding populations tested at the SVREC in 2011.

Family	Generation	Lineage	# Entries	Cercospora score (Aug 24) Mean	Std. Dev.	Min	Max
MRF3	F3	C869 x Mammoth Red Fodder Beet	89	4.7	1.0	2.0	6.0
MSR6	F6	C869 x W357B Red Table Beet	184	3.2	0.9	2.0	6.0
RSC3	F3	C869 x Rhubarb Swiss Chard	13	3.6	0.7	3.0	5.0
RSC4	F4	C869 x Rhubarb Swiss Chard	31	4.5	1.0	3.0	7.0
RhA5	F5	C869 x PI 54 (Rhizoctonia resistant)	80	2.9	0.9	2.0	6.0
WGF3	F3	C869 x Wintergold Fodder Beet	102	4.6	0.5	2.0	7.0
WGF3a/b	F3	C869 x Wintergold Fodder Beet	48	4.8	0.4	3.0	7.0
739.3	F3	C869 x PI 540625 Wild Beet	30	3.4	1.1	2.0	6.0
740.4	F4	C869 x PI 540625 Wild Beet	152	4.0	1.1	2.0	7.0

Entry	ID	Pedigree	Mean beet wt (g)	std. dev.	Mean Suc. %	std. dev.	Mean Water %	std. dev.	Aug24 cerc
643	EL-A023946	MSR-92A-02-04-01-02	0.4	0.0	13.5	0.7	82.3	0.4	2
633	EL-A023922	MSR-92A-02-01-03-01	0.4	0.1	12.8	1.0	85.0	0.7	3
770	EL-A025459	MSR-92A-02-07-01-06	1.3	0.5	12.2	0.9	84.1	1.1	3
729	EL-A025168	MSR-92A-04-04-03-05	0.8	0.1	11.4	0.5	84.9	0.7	2
677	EL-A024067	MSR-92A-05-02-01-01	0.7	0.3	11.2	0.4	83.5	0.5	3
759	EL-A025394	MSR-92A-02-03-02-07	0.4	0.1	14.9	1.1	81.6	1.4	2
740	EL-A025274	MSR-92A-03-04-02-04	0.3	0.2	14.9	1.1	81.7	2.0	2
685	EL-A024103	MSR-93A-05-02-01-02	0.3	0.0	13.3	0.3	81.9	0.6	3
707	EL-A024186	MSR-95A-03-01-01-01	0.5	0.1	11.7	0.6	83.5	0.3	3
743	EL-A025296	MSR-95A-04-01-01-03	0.6	0.0	10.8	0.5	83.9	0.3	3
701	EL-A024170	MSR-95A-04-03-02-01	0.4	0.1	11.7	0.3	83.3	0.2	3
699	EL-A024168	MSR-96-05-01-01-01	0.3	0.1	9.5	0.7	84.9	1.4	3
700	EL-A024169	MSR-96-05-01-01-02	0.5	0.2	12.7	0.6	82.9	0.6	3
702	EL-A024172	MSR-96-05-04-01-01	0.9	0.2	13.3	1.4	84.2	0.6	3
623	EL-A023428	MSR-96-05-04-01-02	0.3	0.1	14.1	1.3	83.8	0.6	6
758	EL-A025391	MSR-99-01-04-01-05	0.6	0.2	14.4	1.4	82.8	0.7	3
691	EL-A024135	MSR-99-05-01-05-02	0.6	0.2	14.7	0.4	82.5	0.5	3
696	EL-A024159	MSR-99-05-04-04-02	0.8	0.8	12.8	1.1	84.8	1.1	4
741	EL-A025278	MSR-99A-01-03-01-02	0.9	0.2	14.9	1.3	83.8	0.9	4
698	EL-A024163	MSR-99A-01-03-02-02	0.9	0.2	13.0	0.6	84.5	0.2	3
788	EL-A025578	MSR-99A-02-03-01-04	0.8	0.3	13.3	0.8	82.8	0.3	4
724	EL-A025130	MSR-99A-03-02-02-05	0.8	0.2	12.0	1.3	83.6	1.2	3
681	EL-A024086	MSR-99A-04-01-02-02	0.5	0.2	11.1	1.3	84.9	0.9	2
655	EL-A023985	MSR-99A-04-02-02-01	0.6	0.1	13.4	1.7	85.0	1.0	3
771	EL-A025460	MSR-99A-04-02-03-02	1.4	0.4	10.9	0.3	84.1	0.3	3
787	EL-A025567	MSR-99A-05-03-01-04	0.4	0.1	12.7	0.6	83.2	0.6	3
721	EL-A024949	MSR-xx-xx-xx-xx	0.6	0.1	9.5	0.4	84.7	0.6	4
805	EL-A025095	MSR6-xx	0.7	0.1	13.8	0.4	82.5	0.7	3
806	EL-A025096	MSR6-xx	0.7	0.2	12.9	1.0	82.5	0.6	4
807	EL-A025097	MSR6-xx	0.8	0.1	12.1	0.7	83.8	1.1	4
808	EL-A025098	MSR6-xx	0.5	0.1	11.8	0.3	83.6	1.0	4
809	EL-A025099	MSR6-xx	1.3	.	9.8	.	88.3	.	4

Table 4: Pedigree and performance of the MSR6 (sugar x red) recombinant inbred population.

Table 4: (con't)

Entry	ID	Pedigree	Mean beet wt (g)	std. dev.	Mean Suc %	std. dev.	Mean Water %	std. dev.	Aug24 cerc
796	EL-A025646	MSR-101-01-01-02-03	0.4	0.1	13.4	1.3	84.0	0.8	2
631	EL-A023915	MSR-101-01-02-01-01	0.5	.	10.2	.	84.0	.	3
684	EL-A024099	MSR-101-02-01-02-01	0.4	0.1	11.9	1.1	82.3	1.1	3
673	EL-A024054	MSR-101-02-02-04-01	0.6	0.1	13.7	0.9	82.3	0.9	4
752	EL-A025356	MSR-101-03-02-01-05	0.3	0.1	13.7	0.7	82.5	0.7	2
718	EL-A024239	MSR-101-04-01-02-01	1.2	0.5	14.4	0.9	82.8	0.4	5
803	EL-A025677	MSR-101-04-01-05-02	0.7	0.2	13.3	0.8	82.6	0.8	4
637	EL-A023931	MSR-101-04-03-01-01	0.3	0.2	10.7	1.5	84.8	0.9	2
692	EL-A024142	MSR-103-01-03-01-01	0.3	0.0	12.7	0.7	84.5	1.1	4
676	EL-A024066	MSR-103-01-04-03-04	0.7	0.3	11.6	1.2	84.9	1.4	3
728	EL-A025159	MSR-103-02-02-02-05	0.6	0.2	12.2	1.4	83.5	1.6	3
638	EL-A023933	MSR-104-01-02-01-03	0.2	0.1	12.2	0.6	82.3	0.5	3
745	EL-A025302	MSR-104-01-02-02-04	0.4	0.1	13.2	0.7	83.2	0.5	3
660	EL-A024024	MSR-104-01-04-01-01	0.5	0.2	13.3	0.6	83.8	0.6	6
773	EL-A025483	MSR-104-02-04-01-06	1.2	0.3	11.6	0.6	84.5	0.6	2
620	EL-A025171	MSR-107-GH1-01-01-05	0.7	0.4	10.2	2.4	86.3	1.6	5
704	EL-A024178	MSR-110A-01-02-01-02	0.9	0.4	11.7	4.5	85.4	2.5	6
697	EL-A024161	MSR-110A-01-03-04-02	0.7	0.2	14.4	0.9	82.2	0.8	3
636	EL-A023927	MSR-110A-05-04-02-01	0.8	0.2	12.4	1.3	83.4	0.7	3
790	EL-A025611	MSR-116A-05-01-02-05	0.7	0.2	13.5	0.8	84.7	1.1	3
666	EL-A024039	MSR-117A-01-01-02-02	0.3	0.0	12.7	0.6	86.4	1.0	3
622	EL-A023421	MSR-117A-04-01-02-03	0.7	0.3	13.2	0.4	84.3	0.5	3
789	EL-A025588	MSR-117A-04-02-01-05	1.0	0.3	13.4	0.5	83.3	0.9	3
648	EL-A023967	MSR-117A-05-01-02-03	1.2	0.2	7.5	3.4	85.0	0.6	3
734	EL-A025199	MSR-121-01-01-01-05	0.9	0.6	10.0	0.4	84.5	0.5	2
735	EL-A025208	MSR-121-02-03-02-05	0.5	0.2	11.1	1.3	83.5	1.0	2
651	EL-A023975	MSR-121-03-01-02-01	0.5	0.1	10.2	1.5	85.3	1.2	4
732	EL-A025189	MSR-121-03-04-01-03	0.6	0.1	13.4	1.1	84.1	1.3	2
778	EL-A025509	MSR-121-04-01-01-05	0.8	0.2	10.7	1.5	85.6	1.0	2
688	EL-A024118	MSR-121-04-02-01-02	0.6	0.1	11.3	0.5	83.3	0.2	3
703	EL-A024175	MSR-121-05-01-01-01	0.7	0.2	13.0	0.4	83.3	0.9	3
784	EL-A025539	MSR-121-05-03-02-03	1.0	0.1	10.9	0.4	84.1	0.2	3
657	EL-A023991	MSR-122A-01-02-02-01	0.7	0.2	13.5	0.8	82.8	0.6	4
785	EL-A025548	MSR-122A-01-04-01-04	0.7	0.1	13.1	0.5	83.5	0.2	4
763	EL-A025409	MSR-122A-03-01-09-03	0.6	0.1	11.4	1.0	84.6	0.8	3
640	EL-A023936	MSR-122A-04-04-02-02	0.4	0.1	11.6	0.8	83.4	0.6	2
687	EL-A024117	MSR-123A-01-03-04-02	0.6	0.1	11.1	1.6	84.9	0.9	3
755	EL-A025376	MSR-123A-01-04-02-05	0.7	0.1	13.1	0.7	83.0	0.5	6
667	EL-A024040	MSR-123A-03-01-02-01	0.9	0.5	13.9	0.5	81.1	0.5	6
628	EL-A023909	MSR-123A-04-01-01-01	0.6	0.2	12.1	0.8	83.6	0.4	2
695	EL-A024150	MSR-123A-04-03-03-02	0.8	0.2	12.1	0.6	84.9	0.7	3
656	EL-A023988	MSR-123A-05-03-01-02	0.6	0.1	12.1	0.3	83.1	0.4	3
731	EL-A025186	MSR-125-04-03-01-03	0.7	0.3	12.0	0.9	83.9	0.8	3
625	EL-A023457	MSR-125-05-02-01-02	0.7	0.2	14.8	2.1	83.1	1.1	3
652	EL-A023977	MSR-127-01-01-01-01	0.7	0.1	14.4	0.7	82.7	0.4	4
624	EL-A023431	MSR-127-01-02-02-01	0.4	0.1	15.4	0.8	83.0	0.4	4
801	EL-A025669	MSR-127-02-01-02-01	0.5	0.1	13.8	0.5	84.0	0.6	3
751	EL-A025355	MSR-27-01-03-01-02	0.4	0.1	11.8	0.5	83.0	0.9	2
756	EL-A025378	MSR-27-01-03-01-03	0.5	0.1	12.2	0.5	82.5	0.7	3
629	EL-A023912	MSR-27-03-02-??-02	0.4	0.1	12.5	0.6	82.4	0.7	3
738	EL-A025260	MSR-27-04-01-05-05	0.9	0.3	12.5	0.6	83.6	0.9	4
642	EL-A023944	MSR-27-04-04-01-02	0.6	0.2	12.1	0.8	83.2	0.4	2
761	EL-A025401	MSR-27A-xx-03-01-07	1.0	0.4	12.3	0.8	83.0	0.6	2
682	EL-A024089	MSR-29A-01-03-02-03	0.5	0.2	10.9	1.2	85.2	0.7	4
795	EL-A025638	MSR-29A-01-04-02-04	0.3	0.1	13.3	0.8	83.8	0.7	3
663	EL-A024031	MSR-31-01-01-01-01	0.2	0.1	13.1	2.3	85.6	1.9	4
654	EL-A023981	MSR-31-01-02-01/2-01	0.5	0.1	13.3	1.5	83.0	0.8	3
722	EL-A025114	MSR-31-02-01-01-05	0.8	0.1	11.7	0.7	85.3	0.8	3
645	EL-A023954	MSR-31-02-03-01-01	0.7	0.3	8.5	0.7	85.7	0.7	3
649	EL-A023968	MSR-31-03-04-02-01	1.3	0.6	12.1	0.6	82.2	0.6	3
716	EL-A024228	MSR-31-04-03-03-03	0.9	0.4	12.3	0.8	86.2	0.6	3
802	EL-A025675	MSR-31-05-01-02-04	0.9	0.3	12.7	0.7	83.6	0.8	3
664	EL-A024034	MSR-31-05-04-03-02	0.4	0.2	11.8	0.8	85.3	0.5	3
800	EL-A025663	MSR-31-06-03-03-01	0.8	0.2	12.4	1.0	86.3	0.6	4
672	EL-A024050	MSR-33-01-02-01-01	0.6	0.2	9.5	1.0	87.4	1.4	3
632	EL-A023917	MSR-33-01-04-03-01	0.5	0.5	12.6	2.0	86.9	0.9	4
720	EL-A024946	MSR-33-02-03-05-02a	0.9	0.2	12.8	1.7	85.2	0.5	4
709	EL-A024197	MSR-33-03-03-02-01	0.7	0.4	12.9	1.9	86.0	1.3	4
705	EL-A024179	MSR-33-03-04-04-01	0.7	0.2	12.8	0.5	84.7	0.5	3
766	EL-A025438	MSR-33-05-01-02-05	1.1	0.2	10.2	0.8	83.8	0.5	4
686	EL-A024106	MSR-33-05-04-02-01	0.8	0.2	11.9	1.1	84.4	1.3	3
775	EL-A025503	MSR-35-01-02-01-04	0.5	0.2	12.2	0.3	83.3	0.7	3
717	EL-A024236	MSR-35-01-03-01-03	0.7	0.2	12.5	0.8	83.1	0.5	2
733	EL-A025191	MSR-35-05-03-02-04	0.5	0.2	11.4	1.1	84.4	0.8	3
693	EL-A024144	MSR-38A-02-01-02-01	0.9	0.3	12.7	0.7	82.7	0.8	3
719	EL-A024241	MSR-38A-02-04-03-01	1.0	0.5	10.4	0.8	84.9	0.3	4
793	EL-A025628	MSR-38A-02-04-05-04	0.7	0.2	12.5	0.6	85.5	0.9	4
626	EL-A023460	MSR-38A-03-04-01-02	0.4	0.2	13.3	0.8	82.8	0.1	4
804	EL-A025697	MSR-38A-03-04-02-05	0.9	0.2	10.7	1.1	84.5	0.7	4

Table 4: (con't)

Entry	ID	Pedigree	Mean beet wt (g)	std. dev.	Mean Suc %	std. dev.	Mean Water %	std. dev.	Aug24 cerc
794	EL-A025630	MSR-42A-05-02-05-02	0.7	0.1	12.6	0.5	87.0	0.5	4
674	EL-A024059	MSR-63-01-01-02-01	0.8	0.1	12.5	1.2	82.8	1.0	4
777	EL-A025507	MSR-63-01-03-02-07	0.9	0.3	10.6	0.9	84.5	0.9	3
621	EL-A023406	MSR-63-01-03-03-01	0.4	0.2	14.0	1.2	84.2	0.3	4
786	EL-A025553	MSR-63-02-01-01	1.0	0.2	12.5	0.9	81.7	0.8	3
694	EL-A024147	MSR-63-02-01-03-02	0.9	0.3	11.5	0.4	83.2	0.4	3
754	EL-A025369	MSR-63-02-01-05	0.4	0.1	13.2	0.4	83.4	0.5	3
710	EL-A024207	MSR-63-03-01-07-03	1.0	0.2	12.9	1.3	85.7	1.0	3
791	EL-A025615	MSR-63-03-03-03-04	0.9	0.3	13.3	1.5	83.4	1.1	4
650	EL-A023969	MSR-63-04-01-02-01	0.8	0.2	10.2	0.5	84.6	0.8	3
779	EL-A025510	MSR-63-04-02-01-07	1.0	0.3	10.4	0.2	83.4	0.7	3
798	EL-A025656	MSR-63-05-02-02-02	0.3	0.1	13.2	0.8	84.0	0.6	4
669	EL-A024044	MSR-65-01-03-04-01	0.6	0.1	11.9	1.4	87.1	1.7	3
658	EL-A024001	MSR-65-01-04-01-01	0.6	0.1	14.4	1.5	83.1	1.5	3
706	EL-A024185	MSR-65-04-03-02-02	0.4	0.1	12.2	1.0	86.0	1.3	5
736	EL-A025251	MSR-65-04-04-02-03	0.2	0.1	11.7	0.8	86.1	1.0	3
646	EL-A023958	MSR-65-05-03-01-01	0.8	0.1	9.7	1.0	86.3	1.2	3
797	EL-A025649	MSR-65-05-03-02-01	0.4	0.3	13.3	1.4	85.8	0.6	5
713	EL-A024215	MSR-66-02-04-02-03	0.6	0.1	11.7	0.6	83.3	0.5	2
708	EL-A024192	MSR-66-03-03-02-01	0.7	0.3	8.4	3.0	88.1	3.0	3
780	EL-A025514	MSR-66-06-03-01-04	1.1	0.3	10.7	0.6	84.8	0.6	3
769	EL-A025458	MSR-71-01-02-02-05	1.2	0.5	10.8	1.0	84.6	1.1	2
730	EL-A025183	MSR-71-02-01-02-01	0.5	0.1	13.6	1.2	82.8	0.8	2
744	EL-A025298	MSR-71-03-02-01-07	0.4	0.1	14.5	1.2	82.0	0.9	3
665	EL-A024037	MSR-71-03-04-02-02	0.3	0.1	12.6	0.7	84.3	1.0	4
714	EL-A024219	MSR-71-04-02-01-03	0.7	0.2	14.1	0.7	82.1	1.5	3
627	EL-A023894	MSR-71-05-01-01-02	0.4	0.3	13.6	1.2	82.3	0.9	3
726	EL-A025148	MSR-72-01-04-01-05	0.4	0.1	11.2	0.6	85.8	0.4	2
799	EL-A025662	MSR-72-03-01-04-02	0.4	0.0	12.4	3.1	86.1	2.0	6
683	EL-A024098	MSR-72-03-01-05-02	1.0	0.3	10.0	0.8	85.9	0.7	3
639	EL-A023934	MSR-72-05-03-04-01	0.2	0.1	13.4	0.7	80.7	1.3	2
750	EL-A025346	MSR-72A-01-01-01-06	0.5	0.1	11.0	0.9	84.2	1.1	3
768	EL-A025448	MSR-72A-02-02-05	0.8	0.2	11.7	0.4	83.9	0.6	2
711	EL-A024208	MSR-72A-03-03-01-01	1.0	0.4	12.5	0.5	83.6	0.5	6
782	EL-A025532	MSR-72A-04-01-02-04	0.9	0.3	8.6	0.6	85.2	0.8	3
753	EL-A025367	MSR-75-01-04-02-05	0.3	0.1	12.6	0.7	83.3	1.1	3
679	EL-A024080	MSR-75-02-04-01-03	0.8	0.2	10.5	1.0	86.3	1.0	4
712	EL-A024211	MSR-75-03-03-01-01	0.5	0.1	12.0	0.7	84.6	0.8	3
757	EL-A025390	MSR-75-03-03-02-01	1.0	0.2	11.2	0.7	84.5	0.7	4
737	EL-A025253	MSR-75-04-01-01-04	0.6	0.1	11.3	0.9	83.5	0.5	3
661	EL-A024026	MSR-75-05-01-01-01	0.3	0.1	12.8	0.6	83.0	0.2	3
760	EL-A025399	MSR-76-02-02-01-04	0.6	0.1	12.3	2.3	84.5	1.8	2
634	EL-A023923	MSR-76-03-02-01-01	0.4	0.1	11.7	1.1	83.0	0.9	3
765	EL-A025414	MSR-76-04-02-02-04	0.5	0.1	11.0	0.3	84.3	0.2	2
776	EL-A025505	MSR-76-05-04-01-01	0.5	0.1	12.3	0.5	82.7	0.7	3
671	EL-A024048	MSR-76A-01-01-01-01	1.0	0.2	13.1	0.4	83.2	0.4	2
783	EL-A025537	MSR-76A-01-01-02-03	0.5	0.1	9.5	1.9	87.7	1.7	3
641	EL-A023938	MSR-76A-02-01-01-01	0.6	0.3	12.4	0.8	84.5	0.9	3
747	EL-A025307	MSR-76A-02-03-03-05	0.7	0.3	12.9	0.6	84.2	0.5	3
644	EL-A023951	MSR-76A-02-03-05-01	1.2	0.6	12.0	0.6	82.7	1.0	3
748	EL-A025319	MSR-76A-03-01-01-03	0.4	0.0	13.4	1.0	83.9	0.6	6
764	EL-A025413	MSR-76A-04-01-01-06	0.5	0.2	11.0	2.3	86.9	2.4	3
725	EL-A025135	MSR-76A-05-04-02-06	0.5	0.2	10.2	0.4	85.3	0.5	2
762	EL-A025406	MSR-79-02-04-01-05	0.5	0.1	12.5	0.7	83.6	0.3	4
723	EL-A025125	MSR-79-03-02-01-05	0.6	0.1	9.6	1.4	85.5	1.6	3
668	EL-A024043	MSR-82A-04-03-03-02	0.6	0.3	14.6	0.9	82.8	1.0	4
749	EL-A025336	MSR-82A-04-03-04-03	0.6	0.3	12.2	0.5	85.0	0.3	3
662	EL-A024030	MSR-82A-05-01-02-02	0.8	0.2	11.6	0.6	84.0	0.6	4
678	EL-A024068	MSR-82A-05-01-06-01	0.8	0.1	10.5	0.8	84.6	0.4	4
680	EL-A024082	MSR-82A-05-03-02-02	0.5	0.1	13.1	0.4	82.4	0.9	3
739	EL-A025268	MSR-84-02-01-01-05	0.5	0.3	9.9	1.4	86.1	0.8	4
630	EL-A023913	MSR-84-03-01-03-01	0.7	0.3	13.5	1.8	84.3	1.1	5
690	EL-A024124	MSR-84-03-04-05-01	0.8	0.4	10.3	0.3	85.4	0.6	2
746	EL-A025305	MSR-84-04-01-01-04	0.6	0.1	12.7	0.6	83.4	0.6	3
767	EL-A025446	MSR-84-05-03-01-05	0.8	0.2	8.9	1.2	86.7	1.4	3
689	EL-A024120	MSR-84-05-03-02-02	0.4	0.1	9.4	0.5	85.5	0.9	3
675	EL-A024061	MSR-86-01-01-03-01	0.5	0.2	12.3	1.0	85.6	0.8	4
742	EL-A025286	MSR-86-01-03-04-04	1.3	0.4	10.2	1.0	85.3	0.7	3
653	EL-A023979	MSR-86-01-03-10-01	0.7	0.2	14.1	1.2	84.2	0.7	4
670	EL-A024047	MSR-86-02-04-01-02	0.6	0.1	13.3	0.2	83.4	0.3	3
774	EL-A025499	MSR-86-03-04-01-05	0.9	0.4	12.5	0.9	83.7	0.9	2
659	EL-A024019	MSR-86-03-04-05-01	0.5	0.1	12.8	0.5	82.8	0.6	3
772	EL-A025478	MSR-86-04-01-05-06	0.9	0.3	10.0	0.8	85.3	0.9	3
635	EL-A023925	MSR-86-04-02-04-01	0.5	0.0	10.1	0.5	84.2	0.4	4
715	EL-A024223	MSR-86-05-01-01-02	1.0	0.3	12.4	2.1	84.8	1.1	3
647	EL-A023963	MSR-86-05-02-04-02	0.6	0.2	10.7	0.6	84.0	0.4	3
792	EL-A025624	MSR-86-05-02-05-01	0.6	0.2	12.9	1.2	84.5	0.9	6
781	EL-A025524	MSR-89A-04-03-01-04	0.8	0.4	11.0	1.0	84.1	0.9	4
727	EL-A025157	MSR-89A-05-01-02-03	0.4	0.1	10.1	0.4	83.8	0.7	2

MICHIGAN STATE UNIVERSITY EXTENSION

Michigan State University AgBioResearch

Effect of row width, population, and herbicide treatment on dry bean yield (Saginaw Valley Research and Extension Center – 2011)

Ryan Holmes, Christy Sprague, and Gary Powell, Michigan State University

Location:	Richville (SVREC)	**Tillage:**	Conventional
Planting Date:	June 6, 2011	**Herbicides:**	see tables
Soil Type:	Clay loam	**Replicated:**	4 times

Table 1. Black bean yield was not affected by row width, bean population, or herbicide treatment.

'ZORRO' BLACK BEANS					
ROW WIDTH EFFECT		**POPULATION EFFECT**		**HERBICIDE EFFECT**	
	— cwt/A —	— seeds/A —	— cwt/A —		— cwt/A —
15-inch	27.1	**79,500**	26.0	**Weed-free**	26.0
20-inch	26.0	**106,000**	26.6	**POST**[a]	26.5
30-inch	25.8	**132,500**	26.3		
$LSD_{0.05}$	N.S.[b]		N.S.		N.S.

[a] Raptor (4 fl oz) + Basagran (8 fl oz) + COC (1%) + AMS (2.5 lb) applied to 2-4" weeds.
[b] Means in each column followed by the same letter are not significantly different at $P \leq 0.05$, N.S. = not significant.

Table 2. Small red bean yield was affected by row width, but not by population or herbicide treatment.

'MERLOT' SMALL RED BEANS					
ROW WIDTH EFFECT		**POPULATION EFFECT**		**HERBICIDE EFFECT**	
	— cwt/A —	— seeds/A —	— cwt/A —		— cwt/A —
15-inch	23.1 A[b]	**60,000**	21.5	**Weed-free**	21.4
20-inch	22.7 A	**79,500**	22.2	**POST**[a]	23.0
30-inch	20.8 B	**106,000**	22.9		
$LSD_{0.05}$	1.3		N.S.		N.S.

[a] Raptor (4 fl oz) + Basagran (8 fl oz) + COC (1%) + AMS (2.5 lb) applied to 2-4" weeds.
[b] Means followed by the same letter are not significantly different at $P \leq 0.05$. N.S. = not significant.

Summary: This trial was conducted to determine the effect of row width and bean population on yield of two classes of dry bean. This trial was conducted at two different locations. At this location, the Saginaw Valley Research and Extension Center, conditions were mildly dry but otherwise favorable, resulting in average yields of 26.2 cwt/A for black beans and 22.2 cwt/A for small red beans. Black bean yield was not significantly affected by row width, bean population or herbicide treatment (Table 1). However, small red bean yield was significantly higher in narrow rows (15- and 20-inch) compared with 30-inch rows (Table 2). There was not a significant difference in yield between small red bean populations. In both classes, 15-inch rows suppressed weed growth after the POST herbicide treatment. In black beans, the 20-inch rows weed suppression was similar to the 15-inch rows, but this was not the case for the small red beans. In some cases, narrow rows also reduced *Alternaria* and western bean cutworm feeding severity. This research has been conducted for the past two years at two different locations, while yield of both classes of beans has not always benefited from planting in narrow rows, the majority of times there has been a yield advantage, and suppression of late season weed growth has been a benefit. This research was supported by Project GREEEN and Michigan Dry Bean Commission funding from the Michigan Department of Agriculture Specialty Crops grant.

MICHIGAN STATE UNIVERSITY EXTENSION

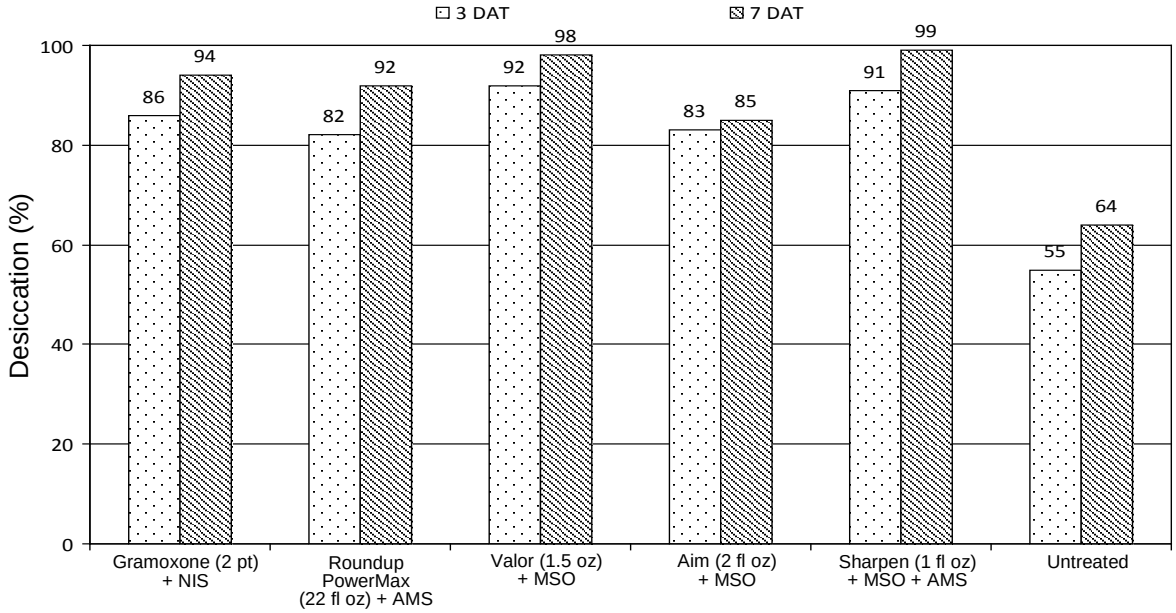
Michigan State University AgBioResearch

Evaluation of preharvest desiccants in dry edible beans (Saginaw Valley Research and Extension Center – 2011)

Christy Sprague and Gary Powell, Michigan State University

Location: Richville (SVREC)	**Tillage:** Conventional
Planting Date: June 10, 2011	**Variety:** 'Jaguar' black beans
Preharvest Application Date: August 29, 2011	**Row width:** 20-inch
Soil Type: Clay loam	**Replicated:** 4 times

Figure 1. Preharvest treatment effects on dry bean desiccation 3 and 7 days after treatment (DAT).



Summary: This study was conducted to examine various preharvest treatments for dry edible bean desiccation. At the 3 DAT evaluation, Valor (1.5 oz/A) + MSO and Sharpen (1 fl oz/A) + MSO + AMS provided significantly higher ($p \leq 0.05$) dry bean desiccation than Gramoxone Inteon, Roundup PowerMax, or Aim. However by 7 DAT, all treatments except Aim alone provided greater than 90% dry bean desiccation. Higher rates of Valor (2 oz/A) or Sharpen (2 fl oz/A) did not improve dry bean desiccation. Additional treatments in this study included various combinations of the above treatments. The addition of Aim to Sharpen or Gramoxone Inteon did not improve dry bean desiccation over any of these treatments alone. The combination of Valor and Roundup PowerMax also was not different than Valor alone. Additional treatments examined two potential new products, Reglone and a Reglone premixture at various rates. The 7 DAT results with these products look promising. From these results and those from previous years there are several effective desiccation products. However, each of these products has specific precautions and limitations that need to be considered. Information on these restrictions and how to best use these products can be found in chapter 5 of the 2012 MSU Weed Control Guide for Field Crops (E-434). This research was supported by various companies and Michigan Dry Bean Commission funding from the Michigan Department of Agriculture Specialty Crops grant.

Comparison of Roundup Ready and conventional sugarbeet varieties and weed control systems

Christy Sprague and Gary Powell, Michigan State University

Location: Saginaw Valley Research and Extension Center	**Tillage:** Conventional
Planting Date: May 4, 2011	**Herbicides:** see treatments
Soil Type: Clay loam; 2.8 OM; pH 7.9	**Varieties:** ACH 963 (conventional); Hilleshog 9042 (RR)
Replicated: 4 times	**Population:** 4 1/4-inch spacing

Table 1. Sugarbeet injury, weed control, sugarbeet yield and recoverable white sugar per acre (RWSA)

		WEED CONTROL (at Harvest)			SUGARBEET	
Herbicide treatments [a]	Injury[b]	Common lambsquarters	Pennsylvania smartweed	Pigweed spp.	Yield	RWSA
ACH 963 (Conventional variety)	— % —	——— % control ———			- ton/A -	— lb/A —
Nortron (PRE) fb. Betamix + UpBeet + Stinger (Std. split applied 2X)	28	98	84	99	14.1	3646
Betamix + UpBeet + Stinger (Std. split applied 2X)	23	86	70	93	13.3	3534
H9042 (Roundup Ready variety)						
Nortron (PRE) fb. Betamix + UpBeet + Stinger (Std. split applied 2X)	30	98	90	97	18.8	5113
Betamix + UpBeet + Stinger (Std. split applied 2X)	26	96	78	99	20.8	5985
Nortron (PRE) fb. Roundup PowerMax	9	97	99	99	21.5	6150
Roundup (applied 2X)	0	98	98	99	21.0	6045
Roundup fb. UpBeet + Roundup	0	99	99	99	21.7	6122
Roundup fb. Stinger + Roundup	0	99	99	99	20.5	5733
Roundup fb. Outlook + Roundup	0	99	99	99	20.8	6073
Roundup fb. Warrant + Roundup	0	99	99	99	21.3	6164
Roundup fb. Dual Magnum + Roundup	0	99	99	99	21.2	5919
Roundup fb. Sequence	0	99	99	99	20.7	5742
$LSD_{0.05}$[c]	4	8	12	5	4	1133

[a] Herbicide treatments follow recommended rates, timings, and adjuvant choices as recommended in the MSU Weed Control Guide for Field Crops.

[b] Injury was evaluated June 14

[c] Means within a column greater than least significant difference (LSD) value are different from each other

Summary: This trial was conducted to compare conventional weed control systems using a conventional variety and a Roundup Ready variety with current and future weed control systems in Roundup Ready sugarbeet. Overall using the conventional weed control systems of a standard-split program with or without Nortron applied preemergence resulted in significant sugarbeet injury, regardless of variety. Weed control with these systems were also not as consistent as the glyphosate (Roundup)-based programs and many times resulted in significantly less control of Pennsylvania smartweed. Yield and RWSA was lower with the conventional sugarbeet variety, probably due to the differences in yield potential between the two varieties. Weed control with the different glyphosate-based programs was excellent and there were no significant differences in yield or RWSA.

Tank-mixtures of UpBeet and glyphosate in Roundup Ready sugarbeet

Christy Sprague and Gary Powell, Michigan State University

Location: Saginaw Valley Research and Extension Center	**Tillage:** Conventional
Planting Date: May 4, 2011	**Herbicides:** see treatments
Soil Type: Clay loam; 2.8 OM; pH 7.9	**Varieties:** Hilleshog 9042 RR
Replicated: 4 times	**Population:** 4 1/4-inch spacing

Table 1. Sugarbeet injury and weed control from the various UpBeet and glyphosate combinations

		WEED CONTROL			
		7 DAT		14 DAT	
Herbicide treatments[a]	Injury[b]	Common lambsquarters	Pennsylvania smartweed	Common lambsquarters	Pennsylvania smartweed
	—%—	——— % control ———		——— % control ———	
Timing (2-inch weeds)					
Roundup PowerMax (11 fl oz) + AMS[a]	0	88	90	93	96
+ UpBeet (0.5 oz) + Destiny HC (1 pt)	15	96	96	97	98
+ UpBeet (1 oz) + Destiny HC (1 pt)	20	90	90	90	99
$LSD_{0.05}$[c]	6	7	n.s.	4	n.s.
Timing (6-inch weeds)					
Roundup PowerMax (11 fl oz) + AMS	0	74	33	99	86
+ UpBeet (0.5 oz) + Destiny HC (1 pt)	0	73	28	99	88
+ UpBeet (1 oz) + Destiny HC (1 pt)	0	81	49	99	95
$LSD_{0.05}$[c]	n.s.	n.s.	14	n.s.	7

[a] A reduced rate of Roundup PowerMax (11 fl oz) + ammonium sulfate (AMS) 17 lb/100 gal was included in all treatments.
[b] Sugarbeet injury was evaluated 7 days after treatment (DAT) and weed control was evaluated 7 and 14 DAT.
[c] Means within a column greater than least significant difference (LSD) value are different from each other; n.s. indicates that treatments were not different from each other.

Summary: The goal of this trial was to determine if there is a benefit to tank-mixing UpBeet with glyphosate for weed control in Roundup Ready sugarbeet. Table 1 contains a subset of treatments from a larger trial. The treatments above are comparing a reduced rate (11 fl oz/A) of Roundup PowerMax alone and in combination with two rates of UpBeet. The reduced rate of Roundup was used to help determine if UpBeet was contributing to weed control. The full rate of Roundup was also examined with these tank-mixtures, but there were very few differences in weed control. Destiny HC, a methylated seed oil, was included with all UpBeet treatments. The two application timings were 2- and 6-inch weeds; data is presented separately for the two timings. The addition of UpBeet at 0.5 oz and 1 oz caused significant sugarbeet injury compared with glyphosate alone at the earlier application timing (4-leaf beets); however by 14 DAT injury was not apparent. At the later application timing (8- to 10- leaf beets) there was no signs of sugarbeet injury. The addition of UpBeet did not improve control compared with glyphosate alone for pigweed. Initially it appeared that in some cases the addition of UpBeet may slightly improve control of common lambsquarters and Pennsylvania smartweed. However, by later evaluation times there were not any differences in control between glyphosate alone and when UpBeet was included. Overall there may be some initial benefits in the speed of control, but in our research we have not observed a benefit to the inclusion of UpBeet. However, if certain species become more difficult to control results may be different.

MICHIGAN STATE UNIVERSITY EXTENSION

Michigan State University AgBioResearch

Sugarbeet tolerance from Betamix and glyphosate tank-mixtures

Christy Sprague and Gary Powell, Michigan State University

Location: Saginaw Valley Research and Extension Center	**Tillage:** Conventional
Planting Date: May 4, 2011	**Herbicides:** see treatments
Soil Type: Clay loam; 2.8 OM; pH 7.9	**Varieties:** Hilleshog 9042 RR
Replicated: 4 times	**Population:** 4 1/4-inch spacing

Table 1. Sugarbeet injury, weed control, sugarbeet yield and recoverable white sugar per acre (RWSA)

		WEED CONTROL (at Harvest)			SUGARBEET	
Herbicide treatments[a] (application timing beet stage)	Injury[b]	Common lambsquarters	Pennsylvania smartweed	Pigweed spp.	Yield	RWSA
	—%—	% control			ton/A	lb/A
Roundup PMax + AMS[b] (2-, 6-lf)	0	92	97	93	21.5	6077
Betamix (2 pt) + Roundup + AMS (2-lf) Roundup + AMS (6-lf)	9	98	97	99	21.3	6205
Betamix (3 pt) + Roundup + AMS (2-lf) Roundup + AMS (6-lf)	16	97	99	96	19.1	5425
Betamix (3 pt) + Roundup + AMS (2-lf) Betamix (3 pt) + Roundup + AMS (6-lf)	26	97	99	95	17.5	4665
Roundup + AMS (2-lf) Betamix (2 pt) + Roundup + AMS (6-lf)	9	99	96	95	21.5	6160
Roundup + AMS (2-lf) Betamix (3 pt) + Roundup + AMS (6-lf)	21	98	98	98	19.4	5491
Roundup + AMS (2-lf) Betamix (4.5 pt) + Roundup + AMS (6-lf)	31	99	99	99	20.9	6006
Roundup + AMS (2-lf) Betamix (6 pt) + Roundup + AMS (6-lf)	35	95	99	99	18.3	5162
$LSD_{0.05}$[c]	5	5	3	5	3.3	1041

[a] Roundup PowerMax (22 fl oz) + ammonium sulfate (AMS) 17 lb/100 gal was included in all treatments
[b] Injury was evaluated 7 days after the 6-leaf application timing, DAT
[c] Means within a column greater than least significant difference (LSD) value are different from each other

Summary: The inclusion of additional herbicides with glyphosate may improve control of certain weeds. However, many herbicides that are labeled for sugarbeet tend to cause sugarbeet injury and may reduce yield and recoverable white sugar (RWSA). The goal of this trial was to examine various rates and application timings of Betamix in a typical glyphosate (Roundup)-based weed control program. Overall the addition of UpBeet caused significant sugarbeet injury. Injury was greatest when Betamix was applied at 3 pints per acre or higher. Sugarbeet injury persisted up to 20 DAT for the higher application rates and when Betamix was applied twice. There were no improvements in weed control when Betamix was added to glyphosate at the early evaluations. All treatments provided 99% control of common lambsquarters, Pennsylvania smartweed, and pigweed. At harvest there were some statistical improvements in common lambsquarters and pigweed control, but overall weed control was greater than 90% from two applications of glyphosate. Yield and RWSA was lower when Betamix at 3 pint per acre was applied twice. RWSA was also lower than the highest yielding treatment when Betamix was applied at 6 pint per acre in the second application. If Betamix is to be included with glyphosate for weed control in Roundup Ready sugarbeet, it should be applied at 2 pints per acre or less and at the later application timing.

MICHIGAN STATE UNIVERSITY EXTENSION

Michigan State University AgBioResearch

Weed control and crop tolerance with Warrant a potential new herbicide for sugarbeet

Christy Sprague and Gary Powell, Michigan State University

Location: Saginaw Valley Research and Extension Center	**Tillage:** Conventional
Planting Date: May 4, 2011	**Herbicides:** see treatments
Soil Type: Clay loam; 2.8 OM; pH 7.9	**Varieties:** Hilleshog 9042 RR
Replicated: 4 times	**Population:** 4 1/4-inch spacing

Table 1. Sugarbeet injury, weed control, sugarbeet yield and recoverable white sugar per acre (RWSA)

		WEED CONTROL (at Harvest)			SUGARBEET	
Herbicide treatments[a] (application timing beet stage)	Injury[b]	Common lambsquarters	Pennsylvania smartweed	Pigweed spp.	Yield	RWSA
		% control			ton/A	lb/A
Roundup PMax + AMS[c] (2-, 6-lf)	0	99	99	98	21.6	6049
Warrant + Roundup + AMS (2-lf) Roundup + AMS (6-lf)	4	99	99	99	21.4	5780
Outlook + Roundup + AMS (2-lf) Roundup + AMS (6-lf)	11	99	99	99	22.6	6209
Dual + Roundup + AMS (2-lf) Roundup + AMS (6-lf)	11	97	99	99	20.6	5530
Roundup + AMS (2-lf) Warrant + Roundup + AMS (6-lf)	5	99	99	99	21.7	5961
Roundup + AMS (2-lf) Outlook + Roundup + AMS (6-lf)	6	99	99	99	22.2	6250
Roundup + AMS (2-lf) Dual + Roundup + AMS (6-lf)	5	99	99	99	20.9	5898
Nortron (PRE) fb. Betamix + UpBeet + Stinger (Std. split applied 2X)	31	96	99	99	18.6	4864
$LSD_{0.05}$[d]	8	3	n.s.	n.s.	3	912

[a] Herbicide rates: Roundup PowerMax (22 fl oz), Warrant (3 pt), Outlook (16 fl oz), Dual Magnum (1.33 pt), AMS (17 lb/100 gal), Nortron (3 pt), Betamix (3 pt), UpBeet (0.5 oz), Stinger (4 fl oz)

[b] Injury was evaluated 7 days after the second standard split application.

[c] Abbreviations: AMS = ammonium sulfate; RWSA = recoverable white sugar per acre

[d] Means within a column greater than least significant difference (LSD) value are different from each other; n.s. indicates that treatments were not different from each other.

Summary: Warrant is a new encapsulated acetochlor product that is being examined as a potential tank-mix partner with Roundup (glyphosate) in Roundup Ready sugarbeet. This trial compares crop tolerance, weed control and sugarbeet yield of two different application timings of Warrant with the current standards of Dual Magnum and Outlook. A conventional weed control treatment (standard-split herbicide program) was also included as a comparison. There was significant sugarbeet injury from the standard-split herbicide program and this injury resulted in a 20% reduction in RWSA compared two-applications of Roundup PowerMax. Sugarbeet tolerated applications of Warrant, Outlook, and Dual Magnum that were tank-mixed with Roundup at either 2- or 6-leaf sugarbeet, with only some injury from applications of Dual Magnum and Outlook at the 2-leaf stage, but this injury was not statistically different from Warrant at this timing. At harvest all herbicide treatments provided excellent control of common lambsquarters, Pennsylvania smartweed, and pigweed.

MICHIGAN STATE UNIVERSITY EXTENSION

Michigan State University AgBioResearch

Tolerance of replanted sugarbeet to Warrant

Christy Sprague and Gary Powell, Michigan State University

Location: Saginaw Valley Research and Extension Center	**Tillage:** Conventional
Planting Dates: see treatments	**Herbicide Application Date:** May 4, 2011
Soil Type: Clay loam; 2.8 OM; pH 7.9	**Varieties:** Hilleshog 9042 RR
Replicated: 4 times	**Population:** 4 1/4-inch spacing

Table 1. Injury and stand counts for sugarbeet planted in to herbicide residues at various weeks after application.

	WEEK-0[b]		WEEK-1		WEEK-2		WEEK-3		WEEK-4		WEEK-5	
Herbicides[a]	Injury	Stand	Injury	Stand	Injury	Stand	Injury	Stand	Injury	Stand	Injury	Stand
	— % —	#/100 ft	— % —	#/100 ft	— % —	#/100 ft	— % —	#/100 ft	— % —	#/100 ft	— % —	#/100 ft
No herbicide	0	225	0	212	0	171	0	162	0	162	0	207
Warrant (3 pt)	11	214	23	161	11	132	16	133	7	143	0	209
Warrant (6 pt)	23	205	41	130	31	110	44	98	13	113	4	205
Dual Magnum	15	211	25	167	13	135	20	123	2	160	0	209
$LSD_{0.05}$[c]	4	19	7	31	8	25	6	20	4	20	n.s.	n.s.

[a] Herbicides were applied on May 4 into a weed-free seed bed; the application rate of Dual magnum was 1.33 pt/A
[b] Sugarbeet were planted weekly for 6 weeks, including the day of application.
[c] Means within a column greater than least significant difference (LSD) value are different from each other; n.s. indicates that treatments were not different from each other.

Table 2. Main effects of herbicide and planting date for sugarbeet yield and recoverable white sugar per acre

MAIN EFFECT[a]	YIELD	RWSA
HERBICIDE	— ton/A —	— lb/A —
No herbicide	18.1 A[b]	4669 A
Warrant 3 pt	18.4 A	4615 AB
Warrant 6 pt	15.2 B	3690 C
Dual Magnum	17.3 A	4299 B

MAIN EFFECT[a]	YIELD	RWSA
PLANTING DATE	— ton/A —	— lb/A —
Week-0	20.9 A[b]	5631 A
Week-1	19.4 A	5086 B
Week-2	16.7 B	4155 C
Week-3	17.4 B	4193 C
Week-4	14.8 C	3474 D
Week-5	14.5 C	3371 D

[a] Main effects of herbicide data are averaged over planting dates; and planting dates are averaged over herbicides
[b] Means within a column with different letters are significantly different from each other

Summary: Warrant is a new encapsulated acetochlor product that is being examined as a potential tank-mix partner with Roundup (glyphosate) in Roundup Ready sugarbeet. Preemergence applications of Warrant have been shown to cause significant sugarbeet injury and in some cases reductions in yield. If sugarbeet needs to be replanted after a lay-by application of Warrant sugarbeet injury, reductions in stand, and potential reductions of yield may be a concern. This study was conducted to determine the time interval needed between Warrant applications and replanting sugarbeet. Four different treatments a no herbicide control, Warrant at 1X (3 pt) and 2X (6 pt) the suggested labeled rate, and Dual Magnum a similar herbicide to Warrant currently labeled for use in sugarbeet were examined. Injury to sugarbeet and reductions and stand were similar between the 1X rate of Warrant and Dual Magnum. If sugarbeet were planted into either of these treatments prior to the 4 week after application planting, sugarbeet stand was significantly lower than the no herbicide treatment. For the 2X Warrant application rate sugarbeet stand was lower until the 5 week planting. Overall the 2X rate of Warrant caused significant reductions in yield and RWSA. This research needs to be repeated to provide more information to growers on safe replanting intervals.

Nitrogen and weed control timing influences on Roundup Ready sugarbeet quality and yield (2010 & 2011)

Alicia Spangler and Christy Sprague, Michigan State University

Location: East Lansing/ Saginaw Valley Research & Extension Center	**Weed Removal Timings:** <1, 3, 6, and 12-inch weeds
Planting Dates: May 19, 2010; May 5, 2011 (EL) March 31, 2010; May 4, 2011 (S)	**Nitrogen Rates:** 0, 60, 90, 120 and 60:60 lbs N/A
Soil Type: Clay Loam, 3.4/3.2 OM, pH 6.1/6.8 (EL, '11/'12) Clay/Clay Loam, 3.0/2.6 OM, pH 7.3/7.8 (S, '10/'11)	**Tillage:** Conventional
Herbicides: Roundup PowerMax (22 fl oz/A) + AMS	**Population:** 4 ¼ - inch spacing
Variety: Hilleshog 9042, Roundup Ready	**Replicated:** 4 times

Table 1. Effect of weed removal timings on sugarbeet yield and quality averaged across nitrogen rates.

	EAST LANSING*		2010 SAGINAW		2011 SAGINAW	
WEED REMOVAL[a]	Yield	RWSA	Yield	RWSA	Yield	RWSA
	—tons/A—	—lbs/A—	—tons/A—	—lbs/A—	—tons/A—	—lbs/A—
<1 inch	15.3 a[b]	3967 a	28.7 a	7354 a	18.7 a	5180 a
3 inches	14.0 b	3638 b	24.7 b	6212 b	18.9 a	5364 a
6 inches	14.1 b	3630 b	24.7 b	6232 b	20.4 a	5744 a
12 inches	14.0 b	3568 b	22.7 c	5874 bc	18.7 a	5200 a

*Combined over 2010 and 2011.
[a] Weeds were controlled at these weed heights using Roundup PowerMax (22 fl oz/A) + AMS (17 lb/100 gal)
[b] Means within a column with different letters are significantly different from each other

Table 2. Effect of nitrogen on sugarbeet yield and quality averaged across weed removal timings.

	EAST LANSING*		2010 SAGINAW		2011 SAGINAW	
NITROGEN RATE[a]	Yield	RWSA	Yield	RWSA	Yield	RWSA
	—tons/A—	—lbs/A—	—tons/A—	—lbs/A—	—tons/A—	—lbs/A—
0 lb/A	13.5 b[b]	3596 a	22.2 c	5841 b	14.1 c	3932 c
60 lb/A	14.3 ab	3789 a	25.4 ab	6605 a	18.3 b	5189 b
90 lb/A	14.6 a	3761 a	24.7 b	6308 ab	20.2 a	5721 a
120 lb/A	14.7 a	3671 a	26.6 a	6612 a	21.4 a	6016 a
60:60 lb/A	13.8 a	3687 a	26.9 a	6722 a	21.8 a	6002 a

*Combined over 2010 and 2011.
[a] Nitrogen was applied pre-plant for all but the split application which was applied preplant and at 4-6 leaf sugarbeet.
[b] Means within a column with different letters are significantly different from each other

Summary: This trial was conducted to determine the impact of different weed removal timing and nitrogen rates on sugarbeet yield and quality. Due to similar results at the East Lansing, data were combined over 2010 and 2011. At East Lansing and Saginaw 2010 yield and RWSA was reduced if weeds were not controlled prior to 3-inch weeds and yield was reduced further if weeds were allowed to grow with sugarbeet until 12-inches tall. The main effect of nitrogen affected yield and RWSA differently for the different locations. Overall the 90 lb/A rate of higher provided the greatest yields and RWSA. However under certain conditions, maximum yields were achieved with lower nitrogen rates. This usually occurred under lower yielding environments.

2011 DRY BEAN YIELD TRIALS

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The bean breeding program initiated its third season on the new 320 acre research farm, Saginaw Valley Research & Extension Center (SVREC) near Frankenmuth in 2011. A total of 5,600 yield trial plots planted in 32 tests were harvested in 2011 and over 2,360 single plant selections were made in the early generation nurseries. Yield trials at SVREC included 36-entry standard navy test; two 36-entry standard black tests; two 56-entry prelim navy tests; 84-entry prelim black test; 36-entry standard GN; 36-entry standard pinto test; 20-entry standard red/pink test; 84-entry prelim GN test; 36-entry prelim pinto test; 48-entry prelim red/pink test; 30-entry prelim FM test; 32-entry USDA red/pink test; 300-entry BeanCAP test; two canning quality trials for CONAGRA: 8-entry navy and 14-entry pinto; and 48-entry CDBN and regional test that includes pinto, GN, red and pinks. At Montcalm two bush cranberry tests with 128 and 72 entries; 112-entry prelim kidney test; 12-entry mayacoba test; two white mold tests: one with 64-entries and one 96-entry pinto trials; 96-entry BeanCAP drought trial; two 36-entry certified organic trials in Tuscola county and SVREC; on campus one potato leaf hopper (PLH) trial with 80-entries; and 130-entry nitrogen fixation (BNF) test. All trials at SVREC were direct harvested and the kidney, cranberry, drought, BNF and white mold trials in Montcalm and on campus were pulled mechanically and threshed in the same combine. In the drought and BNF trial plant biomass was determined on all plots prior to threshing. Root measurements were taken on the drought plots in Montcalm at flowering by digging plants and following protocol termed Shovelomics to measure root diameter, angle and vigor traits that may play a role in tolerating drought.

The season in Frankenmuth started with limited rainfall following planting through July 26-27 when more normal rainfall patterns prevailed throughout the remainder of the season. The drought reversed maturities with full-season black and navy beans maturing ahead of pinto and great northerns. As a result of the early drought, many of the early-season lines double-set, whereas the longer-season blacks and navies matured normally ahead of pinto, and great northern trials. Some entries in the 300-entry BeanCAP nursery remained green and never matured. Many of the pinto, great northern and small red lines lost upright plant structure as a result of the regrowth making them difficult to harvest and reducing yields. The pink lines matured normally under these conditions and out-yielded the small red lines. Rust was observed in Frankenmuth and is becoming an increasing threat to navy and black bean producers in Michigan. Resistance to race 22:2 in new navy and black bean lines has been identified. Plots at Montcalm had similar rainfall pattern but the stress was offset with supplemental irrigation and excellent yields over 35 cwt/acre were recorded in the kidney and cranberry trials. The BeanCAP drought trial showed good early moisture stress but following the late July rains, the entire trial re-grew, resulting in high yields and later maturity throughout. In addition to yield and agronomic data, roots were sampled and rated and biomass and harvest index were recorded. White mold infection was slow to develop in 2011 and never reached high levels of severity as in 2010. The exceptional yields in the BeanCAP drought trial were a surprise given that no irrigation was applied to the plot which received only 8” of rain over 4-month growing season compared to normal rain of 17.2” over the same time period.

The data for all tests are included in an attached section. Procedures and details on nursery establishment and harvest methods are outlined on the first page. Since the data collected on each test are basically the same, a brief discussion of each variable measured is presented below for clarification purposes.

1. Yield is clean seed weight reported in hundredweight per acre (cwt/acre) standardized to 18% moisture content. Dry beans are commercially marketed in units of 100 pounds (cwt).

2. Seed weight is a measure of seed size, determined by weighing in grams a pre-counted sample of 100 seeds, known as the 100-seed weight. To convert to seeds per 100g (10,000/100 seed wt); for example 100-seed weight of 50 converts to 200 seeds per 100 g (used in marketing).

3. Days to flower is the number of days from planting to when 50% of plants in a plot have one or more open flowers.

4. Days to maturity is the actual number of days from planting until date when all the plants in a plot have reached harvest maturity.

5. Lodging is scored from 1 to 5 where 1 is erect while 5 is prostrate or 100% lodged.

6. Height is determined at physiological maturity, from soil surface to the top of plant canopy, and is recorded in centimeters (cm).

7. Desirability score is a visual score given the plot at maturity that takes into consideration such plant traits as; moderate height, lodging resistance, good pod load, favorable pod to ground distance, uniformity of maturity, and absence of disease, if present in the nursery. The higher the score (from 1 to 9) the more desirable the variety, hence DS serves as a subjective selection index.

At the bottom of each table, the mean or average of all entries in a test is given to facilitate comparisons between varieties. In order to better interpret data, certain statistical factors are used. The LSD value refers to the Least Significant Difference between entries in a test. The LSD value is the minimum difference by which two entries must differ before they can be considered significantly different. Two entries differing in yield by 1 cwt/acre cannot be considered as performing significantly different if the LSD value is greater than 1 cwt/ acre. Such a statement is actually a statement of "probable" difference. We could be wrong once in 20 times (p=0.05) on the average, depending on the level of probability. The other statistic, Coefficient of Variation (CV), indicates how good the test was in terms of controlling error variance due to soil or other differences within a location. Since it is impossible to control all variability, a CV value of 10% or less implies excellent error control and is reflected in lower LSD values. Under the pedigree column, all released or named varieties are **bolded** and always preceded by a comma (,); when preceded by a slash (/), the variety was used only as a parent to produce that particular breeding line.

Expt. 1101: Standard Navy Bean Yield Trial

This 36-entry trial included standard commercial navy bean varieties, and advanced lines from the MSU breeding program, which carry the N-prefix. Yields ranged from 15.8 to 29.2 cwt/acre with a mean of 21.2 cwt/acre. The trial was fairly uniform and variability was well controlled (CV=9.9%) and the LSD needed for significance was 3 cwt/acre. Only five entries significantly out-yielded the test mean and included new varieties Merlin from Coop Elevator and Rexeter from Ontario and two older N08-sister lines from MSU program. The best yielding check varieties were Vista followed by Avalanche, whereas both T9905 and Medalist ranked below the test mean. MSU breeding line N09174 ranked second compared to first place in same trial in 2010 but canning tests and seed color characteristics will determine whether this breeding line will be considered for release.

Expt. 1102: Standard Black Bean Yield Trial

This 36-entry trial included the standard commercial black bean varieties and advanced breeding lines. Yields ranged from 18.4 to 29.9 cwt/acre with a test mean of 25.2 cwt/acre, generally exceeding the yield potential of the advanced navy trial. Variability was low in this test, (CV=9.1%) and the LSD was 3.2 cwt/acre. Only Loreto and one breeding line B09175 significantly out-yielded the test mean and the latter was black seeded sib derived from the top navy line in test 1101. Top yielding checks included Shania, Black Velvet, Jaguar and Zorro exceeded the test mean, whereas Condor, T-39, Eclipse and Aifi Wuriti were below the mean. Future advance of breeding lines will largely depend on disease reactions and canning quality of the entries.

Expt. 1103: Standard Black Bean Yield Trial

This 36-entry trial included newer B10-black bean lines and check varieties compared to older entries in test 1102. Yields ranged from 17.4 to 30.1 cwt/acre with a mean of 23.2 cwt/acre. Variability was moderate in this test (CV=10.4%) and the LSD was 3.4 cwt/acre resulting in three lines that significantly outyielded the test mean. These lines have favorable DS scores and carry additional disease resistance for CBB, rust and anthracnose but future advances of many of these lines will largely depend on canning quality of the entries.

Expt. 1104: Preliminary Navy Bean Yield Trial

This 56-entry trial included new navy bean lines along with check varieties. Yields ranged from14.2 to 30.1 cwt/acre with a mean of 20.9 cwt/acre. Variability was moderate in this 3-rep test (CV=11.8%) and the LSD was 4 cwt/acre. Eight lines including Vista significantly outyielded the test mean. The top yielding entries were very erect, higher DS scores and many carry resistance to anthracnose, CBB and rust. Medalist produced lower yields similar to those in test 1101. Future advances of many of the new breeding lines will largely depend on disease reactions and canning quality of the entries.

Expt. 1105: Preliminary Navy Bean Yield Trial

This 56-entry trial included new navy bean lines different in pedigree from those in 1104 along with check varieties. Yields ranged from 13.1 to 29.5 cwt/acre with a mean of 21.6 cwt/acre. Variability

was moderate in this 3-rep test (CV=12.4%) and the LSD was 4.4 cwt/acre resulting in only 4 lines that significantly outyielded the test mean. The top yielding entries were very erect, excellent dry down and had high DS scores. The top entry was 3 cwt higher than next entry and significantly outyielded Vista. A number of these lines carry Medalist as a parent. Future advances of many of the new breeding lines will largely depend on disease reactions and canning quality of the entries.

Expt. 1106: Preliminary Black Bean Yield Trial

This 84-entry trial included new black bean lines along with check varieties. Yields ranged from 12.2 to 30.1 cwt/acre with a mean of 22.9 cwt/acre. Variability was moderate in this 3-rep test (CV=10.4%) and the LSD was 3.8 cwt/acre. Nine lines significantly outyielded the test mean and showed nice upright architecture, good dry down and high DS scores. The top yielding entry significantly outyielded Zorro. The line with highest DS score yielded lower with Eclipse (21 cwt) as a result of small seed size which fell through a no10- screen during cleaning. Future advances of many of the new breeding lines will largely depend on disease reactions and canning quality of the entries.

Expt. 1107: Standard Great Northern Bean Yield Trial

This 36-entry trial included MSU great northern and otebo breeding lines and standard commercial check varieties. The test ranged in yield from 13.3 to 27 cwt/acre with a mean yield of 20.8 cwt/acre. Variability was high (CV= 14%) resulting in a high LSD value (4.1 cwt/acre) needed for significance. Only two breeding lines significantly outperformed the test mean. Breeding line G09303 that topped the trial in 2010 and in 2011 showed no quality problems and carries the *Co-4*^{2} gene which conditions resistance to anthracnose. The second line G08254 has been a top performer over past years and also significantly out-yielded the check variety Matterhorn. The lowest yielding entry was the Fuji tebo variety and a number of lines in tebo class (26-31g) significantly out-yielded the check. In prior years a large number of lines exhibited severe 'fish-mouth' seed damage making them commercially unacceptable. This seed condition was not as obvious in 2011, but only those entries with larger seed size, improved dry seed quality and cracking resistance better than Matterhorn will be advanced in 2012.

Expt. 1108: Standard Pinto Bean Yield Trial

This 36-entry trial included standard commercial pinto bean varieties and advanced breeding lines from the MSU breeding program with the P-prefix. The trial ranged in yield from 16.7 to 27.6 cwt/acre with a mean of 22.3 cwt/acre. Variability was moderate (CV=10.4%) in this trial and the LSD needed for significance was 3.2 cwt/acre. Only three entries significantly out-yielded the test mean and these included the varieties La Paz, ND-307 and breeding line P07863 under consideration for release. P07863 was the highest yielding pinto in the white mold trials in Montcalm in 2007 2008 and 2009 was 2nd in this test in 2010. Other varieties Croissant and Lariat exceeded the test mean whereas Stampede and Santa Fe yielded below the test mean, and many MSU breeding lines will be discarded due to poor performance in this test. The new pinto 37-2 with tolerance to white mold was mid-pack in performance. Only those high-yielding entries with more upright architecture and canning quality equivalent to Othello will be advanced in 2012.

Expt. 1109: Standard Pink and Small Red Bean Yield Trial

This 20-entry trial included small red and pink breeding lines from MSU (R-S-prefix), in addition to standard commercial check varieties. The test ranged in yield from 15.2 to 31 cwt/acre with a mean yield of 23.9 cwt/acre. Variability was moderate (CV=12.7%) due to direct harvesting resulting in a LSD value (4.4 cwt/acre) for significance. Only two pink breeding lines significantly outperformed the test mean followed by pink breeding line S08418 under consideration for release and Sedona variety. Small red check variety Merlot yielded above the test mean, but Merlot had an overall poor performance year combined with delayed maturity in many locations. Included in the test were two new small red lines from NDSU (ND prefix) and both performed above the test mean. NDZ06249 was recently released as the variety Rio Rojo and ND080547 is a breeding line with high levels of resistance to white mold as is PS02-050-2. The majority of small red lines were lower yielding and lack the canning quality of Merlot. Progress in small red breeding program has been limited by lack of useful variability.

Expt. 1110: Preliminary Great Northern Bean Yield Trial

This 84-entry trial included new great northern bean lines along with check varieties. Yields ranged from 10.9 to 25.3 cwt/acre with a mean of 19.5 cwt/acre. Variability was moderate in this 3-rep test (CV=12.2%) and the LSD was 3.8 cwt/acre. Eight lines significantly out-yielded the test mean and the Matterhorn check variety. The top yielding entries exhibited quality seed and many carry resistance to anthracnose. G09303 was slightly lower yielding than top 15-entries. NE line from Nebraska yielded below test mean and many of the Matterhorn/EMP507 lines exhibited higher yield potential with tolerance to Empoasca leafhopper resistance. Future advances of many of the new breeding lines will largely depend on disease reactions and canning quality of the entries.

Expt. 1111: Preliminary Pinto Bean Yield Trial

This 36-entry trial included new pinto bean lines along with check varieties. Yields ranged from 13.5 to 27.7 cwt/acre with a mean of 21.3 cwt/acre. Variability was moderate in this 3-rep test (CV=13%) and the LSD was 4.6 cwt/acre resulting in only 5 lines that significantly out-yielded the test mean and Santa Fe variety. Among the top entries is La Paz variety and the trial was topped by P07863 breeding line similar to test 1108. P08161 is a new erect line with leafhopper resistance and excellent dry down and high DS scores. Future advances of many of the new breeding lines will largely depend on disease reactions and canning quality of the entries.

Expt. 1112: Preliminary Red and Pink Bean Yield Trial -1

This 48-entry trial included new small red and pink bean lines along with check varieties. Yields ranged from 15.9 to 28.6 cwt/acre with a mean of 21.6 cwt/acre. Variability was moderate in this 3-rep test (CV=11.3%) and the LSD was 4 cwt/acre. Five lines significantly out-yielded the test mean including Sedona variety. A few of top lines exhibited nice upright architecture, good dry down and high DS scores and future advances of many of the new breeding lines will largely depend on disease reactions and canning quality of the entries.

Expt. 1113: Preliminary Flor de Mayo Bean Yield Trial

This 30-entry trial included new upright flor de mayo (FM) bean lines along with check varieties. This is the first trial with FM lines bred for adaptation, upright architecture, yield and suitability for local production. Yields ranged from 15.1 to 31.5 cwt/acre with a mean of 23.5 cwt/acre. Variability was moderate in this 3-rep test (CV=13.5%) and the LSD was 5.2 cwt/acre. Four lines significantly out-yielded the test mean and all the FM varieties, Desert Rose, FM Dolores, M38, Eugenia and Anita from Mexico. Included in the test was small red line R08516 and pink line release candidate S08418. A few of top FM lines exhibited nice upright architecture, good dry down and high DS scores and future advances of many of the new breeding lines will largely depend on disease reactions and canning quality of the entries.

Expt. 1114: Preliminary Red and Pink Bean Yield Trial - 2

This 32-entry trial included new small red and pink bean lines from the USDA-WA program along with check varieties from MI and WA. Yields ranged from 16.1 to 29.6 cwt/acre with a mean of 23 cwt/acre. Variability was high in this 3-rep test (CV=15.4%) as there was a wide range of maturities and growth habits in this test. The LSD was 5.8 cwt/acre, so only two lines significantly out-yielded the test mean including Sedona variety. Interestingly most of the top lines were pink beans (PK-prefix), whereas the small red (SR) lines yielded below the test mean. The main purpose of the test was to identify more genetic variability in both seed types to help expand the MSU program. A few lines exhibited nice upright architecture with good dry down but many lines has low DS scores indicating an overall lack of adaptation to local conditions. All entries carry different genes for resistance to BCMV which will be valuable in the MSU breeding program.

Expt. 1115: Commercial Pinto Bean Quality Trial

This trial was conducted to test current commercial pinto bean varieties and evaluate their potential and canning quality in Michigan – second year for this trial. The trial was conducted at a second location in Michigan and at two other locations in ND and NE. The 14-entry trial ranged in yield from 16.9 to 27.8 cwt/acre with a mean of 22.8 cwt/acre. Variability was high (CV=16.4%) resulting in a high LSD value (5.3 cwt/acre) for significance. Due to the small number of entries no line was significantly higher in yield than the test mean. There was a wide range in variation in growth habit and maturity between entries which contributed to the range in yield and high variability in the test. This trial mirrored pinto test 1108, with La Paz and ND-307 in the top group but the surprise was the separation of the top 4 entries from the rest of the trial. All entries will be canned and evaluated by Conagra brand team for suitability in their canned products.

Expt. 1116: Commercial Navy Bean Quality Trial

This trial was conducted to test current commercial navy bean varieties and evaluate their production potential and canning quality in Michigan – second year for this trial. The trial was conducted at a second location in Michigan and at two other locations in ND and NE. The 8-entry trial ranged in yield from 21.2 to 26.2 cwt/acre with a mean of 23.8 cwt/acre. Variability was moderate (CV=11.2%) resulting in a high LSD value (3.9 cwt/acre) for significance. Due to the small number of entries no line significantly out-yielded the test mean. The top yielding entry was Medalist followed by Schooner. Unlike other navy trials where Medalist did not perform well, it showed its

yield potential in this trial in 2011. Among the other varieties, Norstar was the lowest yielding similar to 2010. All entries will be canned and evaluated by Conagra brand team for suitability in their canned products.

Expt. 1117: Combined Midwest Regional Performance Nursery (MRPN) & Cooperative Dry Bean Nursery (CDBN) Yield Trial

The MRPN is conducted annually in cooperation with North Dakota (ND-prefix), Nebraska (NE-prefix) and Colorado (CO-prefix) in order to test new pinto and great northern lines from all four programs and assess their potential in the different regions. The CDBN is a national trial and includes all classes but only medium-sized entries were included in this trial. The 48-entry trial ranged in yield from 5.8 to 24.4 cwt/acre with a mean of 18.5 cwt/acre. Variability was moderate (CV=13.3%) resulting in a LSD value (4 cwt/acre) for significance. As a result only six lines were significantly higher in yield than the test mean including ND-307 and Longs Peak varieties. The top yielding entries were all pintos included Sequoia, Othello, Lariat, Buster, Montrose, Apache, La Paz, Croissant varieties and breeding line P07863, whereas Odyssey, Matterhorn, Stampede, Coyne, Santa Fe and Max yielded below the test mean. The longer-season vine cranberry varieties Chianti and Bellagio were the lowest yielding entries and do not perform at the level of pintos or great northerns. This cooperative trial continues to be valuable as it allows an evaluation of potential new lines prior to release in other states and a number of full-season, high-yielding pinto bean lines were identified in 2011.

Expt. 1118: BeanCAP Small-Seeded Yield Trial

This 108-entry trial is part of a national trial being conducted at four locations in the US to compare performance of small-seeded (Mesoamerican race) bean varieties released in North America over the last century. In addition to the field performance seed from all locations is being analyzed for over 15 minerals and nutrients to determine genetic variability in order to conduct genetic mapping of these traits for future improvement. Most of the small seeded varieties belong to navy and black bean classes. Yields ranged from 4.9 to 34.8 cwt/acre with a mean of 21.9 cwt/acre. The trial was fairly uniform and variability was well controlled in this 2-rep test (CV=10.4%) and the LSD needed for significance was 4.5 cwt/acre. Seventeen entries significantly out-yielded the test mean and included many varieties from the MSU program. The lower yielding entries tended to be entries from Canada that were very early maturing and a few unadapted types from overseas such as Puebla 152. Clear progress in breeding for upright plant architecture was very obvious between the recent and older varieties. In addition to the normal agronomic traits the growth habits of all entries was recorded.

Expt. 1119: BeanCAP Medium-Seeded Yield Trial

This 200-entry trial is part of a national trial being conducted at four locations in the US to compare performance of medium-seeded (Durango & Jalisco races) bean varieties released in North America over the last century. In addition to the field performance seed from all locations is being analyzed for over 15 minerals and nutrients to determine genetic variability in order to conduct genetic mapping of these traits for future improvement. Most of the medium seeded varieties belong to pinto, great northern, small red and pink bean classes. Yields ranged from 5.9 to 32.4 cwt/acre with a

mean of 19.4 cwt/acre. The trial was highly variable due to range of maturities and growth habit so variability was not well controlled in this 2-rep test (CV=23.3%) and the LSD needed for significance was 8.9 cwt/acre. Thirteen entries significantly out-yielded the test mean and included two breeding line S08418 and P07863 under consideration for release from MSU program. The lower yielding entries tended to be very early maturing entries from Canada, and viney prostrate types that presented harvest problems and a few unadapted types from overseas. Clear progress in breeding for upright plant architecture was very obvious among the recent and older varieties. In addition to the normal agronomic traits the growth habits of all entries was recorded.

Expt. 1120: Organic Dry Bean Yield Trial

A 36-entry navy and black trial was conducted on SVREC under organic production systems, with no fertilizer, no chemical weed or insect control, no harvest aid chemicals using bare seed to evaluate new breeding lines, current and old varieties for potential production under this management system. The same exact trial was repeated on organic grower farm in Tuscola county to compare results. Weeds or insects were not a problem in this trial. Yields ranged in yield from 5.3 to 18.9 cwt/acre with a mean of 15.3 cwt/acre. Variability was moderate (CV=12.8%) resulting in a LSD value (2.8 cwt/acre) for significance. Only four lines were significantly higher in yield than the test mean and this included the Zorro variety. Earlier studies suggested that black beans may perform better under organic system since they fix more nitrogen, and in this test the top four entries were black. The fifth entry was the high yielding navy breeding line N09174 which suggests that lines which perform well under conventional systems are the same ones that perform best under organic production systems. Medalist was the best navy variety, whereas Vista and Black Velvet were mid-pack in performance. The lowest yielding entry was the non-nodulating check R99. This would indicate that nitrogen was a limiting factor in this test as R99 cannot fix nitrogen resulting in low yield. Overall yields in this test were from 5-10 cwt lower than same entries grown under conventional conditions, suggesting the cost to this management system. Since organic growers may choose to save seed as organic seed is not widely available, resistance to seed-borne CBB would be an important criterion in their selection of bean varieties to grow. A number of the entries in this trial have high levels of resistance to CBB. The trial will be repeated in 2012 with a different mix of breeding lines.

Expt. 1221: Preliminary Kidney Bean Yield Trial

This 112-entry trial was conducted on the Montcalm Research Farm to compare the performance of standard and new light red kidney (LRK), dark red kidney (DRK) and white kidney (WK) bean varieties from MSU and CDBN under supplemental irrigation (6x total 3.2”). Yields ranged from 22.8 to 39.1 cwt/acre with a mean of 30.5 cwt/acre. Variability was moderate (CV=13.1%) resulting in a large LSD value (6.5 cwt/acre) needed for significance. Only four WK breeding lines significantly out-yielded the test mean, included K08961 under consideration for release. K08961 was also the top-yielding entry in 2010, 2009, yielding 4 cwt/a more than the next entry, while the same line ranked 4th in 2008. White kidney lines continue to out-yield red kidney lines in this trial and yields in excess of 35cwt in kidney beans is excellent. The highest yielding LRK line ranked 10th while DRK line ranked 12th and the highest yielding variety Clouseau LRK ranked 11th in the trial. All entries were ranked for presence of CBB, those lines with values 2 or lower exhibited genetic resistance. Other varieties that yielded above the test mean include Inferno, vine DRK

Majesty, Pink Panther, Red Hawk and the new earlier-season K10902 selected out of Beluga. Varieties that yielded below the test mean included CELRK, Redcoat, Redstar, Montcalm, Beluga and Chinook. Since canning quality is vital in kidney beans, only those DRK lines equivalent in canning quality to Red Hawk, LRK lines equal or better than CELRK and WK lines equivalent to Beluga will be advanced in 2012.

Expt. 1222: Preliminary Bush Cranberry Bean Yield Trial -1

This 128-entry trial was conducted on the Montcalm Research Farm to compare new and standard bush cranberry bean varieties under supplemental irrigation (6x total 3.2"). Yields ranged from 17.5 to 35 cwt/acre with a mean of 27.2 cwt/acre. Variability was moderate (CV=14.6%) in this 3-rep test and the LSD needed for significance was high (6.4 cwt/acre). As a result four lines significantly out-yielded the test mean. CBB was rated on 1-5 scale and ranged from low of 1.0 to high of 4.9 indicating that many lines with values less than 2.0 had high levels of resistance. Check variety Etna yielded above the test mean while Capri yielded below the test mean. The trial represented a broad array of genotypes with different genetic background and a wide range in maturity, lodging resistance and yield potential among entries. Only those entries equivalent to Capri in seed size with improved yield, earlier maturity and canning quality will be advanced in 2012.

Expt. 1223: Preliminary Bush Cranberry Bean Yield Trial -2

This 72-entry trial was conducted on the Montcalm Research Farm to compare new and standard bush cranberry bean varieties under supplemental irrigation (6x total 3.2"). Yields ranged from 18.2 to 32.2 cwt/acre with a mean of 25.4 cwt/acre. Variability was moderate (CV=12.6%) in this 3-rep test and the LSD needed for significance was high (5.2 cwt/acre). As a result only one line significantly out-yielded the test mean. CBB was rated on 1-5 scale and ranged from low of 1.0 to high of 4.9 indicating that many lines with values less than 2.0 had high levels of resistance. Check variety Etna and Red Rider yielded above the test mean while Capri and UCD901 yielded below the test mean. The trial represented genotypes with different genetic background than those in test 1222 but this trial lacked a wide range in maturity, and many of the lines had smaller seed (<50g) than check varieties. Only those entries equivalent to Capri in seed size with improved yield, earlier maturity and canning quality will be advanced in 2012.

Expt. 1224: Preliminary Mayacoba Bean Yield Trial

This small 12-entry trial was conducted on the Montcalm Research Farm to compare new bush mayacoba (yellow) bean varieties with checks under supplemental irrigation (6x total 3.2"). Yields ranged from 17.7 to 33.1 cwt/acre with a mean of 23.5 cwt/acre. Variability was moderate (CV=13.7%) in this 3-rep test and the LSD needed for significance was high (5.5 cwt/acre). As a result only one line K08961 significantly out-yielded the test mean. The white kidney line was included as a local check and it out-yielded the best mayacoba line by 7.5 cwt/acre. This underscores the difficulty of identifying a high yielding mayacoba seed for production in Michigan. Check variety UC707, Myasi and Higuera from Mexico yielded below the test mean and were over 5 cwt less than the best mayacoba line. The trial was heavily infected with CBB. Only those entries with improved yield and local adaptation will be advanced in 2012.

Expt. 1225: National White Mold Variety Yield Trial

This 64-entry trial was conducted at Montcalm to evaluate a range of diverse dry bean varieties and

breeding lines for reaction to white mold under natural field conditions. Genotypes included commercial navy and black bean cultivars, elite MSU lines, and new sources of white mold resistance entered as part of the National *Sclerotinia* Initiative (NSI) Nursery. Lines in the National trial were developed at MSU, OSU, CSU, Cornell, NDSU and USDA-WA. Entries were planted in two row plots with two rows of susceptible spreader variety Beryl between plots. Supplemental overhead irrigation was applied 8 times for a total of 4.2" to maintain adequate levels of moisture for favorable disease development at the critical flowering period. Natural white mold infection occurred across the entire trial and was extremely severe in certain plots. White mold was rated on a per plot basis on a scale of 1 to 9 based on disease incidence and severity where 9 had 90+% incidence and high severity index. White mold ranged from 11 to 99% and pressure was moderate compared to 2010. The test ranged in yield from 8.9 to 41.4 cwt/acre with a mean yield of 31.5 cwt/acre. Variability was moderate (CV=11.3%), thus a high LSD value (5.8 cwt/acre) was needed for significance. As a result ten lines significantly out-yielded the test mean and included Zorro and La Paz pinto varieties. The top group included new pinto 37-2 from USDA-WA for the second year along with pinto line P07863 that was the top yielder in 2007, 2008 and 2009 and small red line ND080547. The P07863 line continues to demonstrate superior yield performance under white mold pressure. Included in top group were four MSU black breeding lines and pinto 50-2 from USDA-WA. Overall navy lines were among the lowest yielding in the test compared to black bean lines. The top navy line in the test ranked 38th and new varieties like Medalist and Rexeter yielded below test mean. Santa Fe, Jaguar, Merlot, Eclipse, Lariat, Condor Sedona, Clouseau and Matterhorn performed above the test mean, whereas all high-yielding pintos, Stampede, performed below the mean due to white mold pressure. K08961 white kidney that was in top group in 2009 dropped below test mean in 2010 and 2011 due to high white mold pressure and ranked next to Beluga. This was the second year that five of entries in NSI trial yielded above the test mean as many of the standard entries from NSI trial were among the lowest yielding lines in the past. Past experience using low-yielding white mold resistant germplasm as parents has not proved useful in breeding for white mold resistance. Overall the trial confirmed results from previous years (susceptible check-Beryl rated 99% WM) and this trial will continue to be a vital part of the breeding effort to improve tolerance to white mold in dry beans.

Expt. 1226: White Mold Genetic Yield Trial- AP647

A 4-replicate 96-entry trial was conducted at Montcalm to evaluate the genetic resistance to white mold in the recombinant inbred line (RIL) pinto population AP647 developed from the cross of AN 37/P02647. The cross was made to introduce white mold resistance from AN 37 into the upright pinto line P02647 from the MSU program and this is the third year to evaluate this population. Natural white mold infection occurred across the entire trial and ranged from 17 to 83% so disease pressure was moderate due to the wetter season and additional 8 irrigations for a total of 4.2 inches to promote disease development. The test was planted in the same arrangement as test 1225. Yield ranged from 23.4 to 45.6 cwt/acre with a mean yield of 32.2 cwt/acre. Variability was moderate (CV=13.3%), and a LSD value (6.9 cwt/acre) was needed for significance. Due to the high variability, six lines significantly outyielded the test mean. One parent yielded above while other yielded below the test mean. A genetic mapping experiment to find markers associated with white mold resistance and high yield under white mold pressure in this population is underway. Elite lines will be included in standard pinto bean yield tests in 2012.

Expt. 1227: BeanCAP Drought Yield Trial

This 96-entry trial is part of a national trial being conducted at eight locations in the US to compare performance of small and medium-seeded (Middle American gene pool) bean varieties under conditions of drought. The site was selected to produce drought conditions in course textured sandy loam. In addition to the field performance of each entry seed from all locations is being analyzed for over 15 minerals and nutrients to determine genetic variability in order to conduct genetic mapping of these traits for future improvement. Yields ranged from 5.3 to 43.1 cwt/acre with a mean of 30.3 cwt/acre. The trial was variable due to range of maturities and growth habit so variability was not well controlled in this 2-rep test (CV=15.5%) and the LSD needed for significance was 9.4 cwt/acre. Six entries significantly out-yielded the test mean and included three MSU varieties, Matterhorn, Merlot and Santa Fe along with two pinto varieties Lariat and La Paz and Carioca bean A285. Yields were high despite the drought stress as no irrigation was applied and the plot which only received 8" out of normal rainfall 17.2" over the 4-month season. In addition to yield and agronomic data, data was collected on root structure of all entries sampled during flowering. At harvest plant biomass was also recorded to measure harvest index (HI). Harvest index ranged from low of 4% in lowest yielding unadapted entries to 47% in highest yielding entry. The lower yielding entries tended to be late maturing entries combined with viney prostrate types that did not partition into the seed, hence lower HI. Clear progress in breeding for drought tolerance and upright plant architecture was very obvious among the recent varieties. In addition to the normal agronomic traits the growth habits of all entries was recorded.

Expt. 1429: Potato Leafhopper – PLH Trial

A single 80-entry trial was conducted in East Lansing to compare reaction of RIL population to natural infection with PLH. The population consisting of both GN and pinto seed types was developed from cross of Matterhorn with EMP507 line selected in Puerto Rico with resistance to PLH. The trial was rated for reaction to PLH based on PLH counts, leaf burn and leaf curl symptoms – typical damage caused by the pest. Yield ranged from 12.5 to 37.7 cwt/acre with a mean of 26.8 cwt/acre. Variability was high (CV=15.4%), and a LSD value of 6.7 cwt/acre was needed for significance. As a result ten lines significantly exceeded test mean including P08161 pinto line with excellent architecture and low scores. These lines significantly exceeded the performance of the Matterhorn parent and will be evaluated further. Leaf curl ratings ranged from low 1.0 to 5.0 but showed a high CV=16.9%. Likewise the PLH count showed an unsatisfactory high CV=36.8% which suggests that there is too much variability in this measurement to use this as a useful screening method. The trial was repeated in no choice field cages where the same numbers of insects/nymphs were placed on the bean plants being evaluated, to identify those lines that better tolerate insect pressure. Tolerance to PLH would be useful trait for organic bean producers who cannot apply conventional insecticides to control this insect pest.

Expt. 1431: Biological Nitrogen Fixation – BNF Yield Trial

A single 130-entry trial was conducted in East Lansing to measure nitrogen fixation and yield of RIL population grown in a low N (0.03%; normal range 0.05-0.1%) site as only those lines that fix more N will produce more yield under these conditions. The black bean population was developed from cross of Zorro with Puebla 152 line selected as a high nitrogen fixer. The trial was rated for leaf color during season as a measure of N deficiency. Yield ranged from 7.8 to 38.3 cwt/acre with a

mean of 26.8 cwt/acre. Variability was high (CV=16.1%), and a LSD value of 6.9 cwt/acre was needed for significance. As a result eight lines significantly exceeded test mean and these lines exceeded the performance of the Zorro parent and will be evaluated further. At harvest plant biomass was also recorded to measure harvest index (HI). Harvest index ranged from low of 9% in lowest yielding unadapted entries to 46% in higher yielding entries. The lower yielding entries tended to be late maturing entries combined with viney prostrate types that did not partition into the seed, hence lower HI. There is a strong correlation between HI and yield and results are similar to those observed in the Beancap drought trial 1227. Selecting for high yield must be accompanied with partitioning into the seed. Bean lines with enhanced BNF would be useful trait for organic bean producers who cannot apply conventional fertilizers to increase yield.

Expt. 1932: Organic Dry Bean Yield Trial, Tuscola County

A 36-entry navy and black trial was conducted in a commercial organic grower Sattelberg Farms in Tuscola County near Unionville to evaluate new breeding lines, current and old varieties for potential production under this management system. This test is an exact replica of test 1120 grown on SVREC and weeds or insects were not a problem in this trial. Yields ranged in yield from 10.6 to 27.2 cwt/acre with a mean of 20.6 cwt/acre. Variability was moderate (CV=13.6%) resulting in a LSD value (3.9 cwt/acre) for significance. Seven lines were significantly higher in yield than the test mean and this included the Zorro variety which topped the trial. Earlier studies suggested that black beans may perform better under organic system since they fix more nitrogen, and in this test the top seven entries were black. The navy bean entries suffered from the disadvantage of poor stands as the seed planted came from 2010 plots that suffered severe drought stress and were extremely dry at harvest, resulting in intrinsic seed damage and poor germination. Medalist was the lowest yielding navy variety, whereas Vista and Black Velvet were above the test mean. The lowest yielding entry was the non-nodulating check R99. This would indicate that nitrogen was a limiting factor in this test as R99 cannot fix nitrogen resulting in low yield. Overall yields in this test were equivalent to those grown under conventional conditions, suggesting that farmer management is a critical component compared to test 1120 where management was at a minimum. The trial will be repeated in 2012 with a different mix of breeding lines.

Early Generation Breeding Material grown in Michigan in 2011

F3 through F5 lines

Navy and Black - 334 lines
Pinto - 255 lines
GN - 143 lines
Pinks and Reds - 160 lines
Kidneys (DR, LR, White) - 189 lines
Cranberry (bush, vine) - 226 lines
Yellow Eye – 11 lines

F2 populations

Navy and Black -136 populations
Pinto - 52 populations
GN - 71 populations
Pinks and Reds - 104 populations
Kidneys (DR, LR, White) – 81 populations
Cranberry (bush, vine) – 42 populations

F1 populations: 484 different crosses among ten contrasting seed types.

2011 DRY BEAN YIELD TRIALS

EXPERIMENT	TITLE	PLANTING DATE	LOCATION		ENTRIES	DESIGN		REPS	HARVEST METHOD
1101	STANDARD NAVY BEAN YIELD TRIAL	06/02/11	SVR&EC	FRANKENMUTH	36	SQ.	LATTICE	4	DIRECT HARVESTED
1102	STANDARD BLACK BEAN YIELD TRIAL-1	06/02/11	SVR&EC	FRANKENMUTH	36	SQ.	LATTICE	4	DIRECT HARVESTED
1103	STANDARD BLACK BEAN YIELD TRIAL-2	06/02/11	SVR&EC	FRANKENMUTH	36	SQ.	LATTICE	4	DIRECT HARVESTED
1104	PRELIMINARY NAVY BEAN YLD TRIAL-1	06/02/11	SVR&EC	FRANKENMUTH	56	REC.	LATTICE	3	DIRECT HARVESTED
1105	PRELIMINARY NAVY BEAN YLD TRIAL-2	06/02/11	SVR&EC	FRANKENMUTH	56	REC.	LATTICE	3	DIRECT HARVESTED
1106	PRELIMINARY BLACK BEAN YLD TRIAL	06/03/11	SVR&EC	FRANKENMUTH	84	ALPHA	LATTICE	3	DIRECT HARVESTED
1107	STANDARD GREAT NORTHERN YLD TRIAL	06/03/11	SVR&EC	FRANKENMUTH	36	SQ.	LATTICE	4	DIRECT HARVESTED
1108	STANDARD PINTO BEAN YIELD TRIAL	06/03/11	SVR&EC	FRANKENMUTH	36	SQ.	LATTICE	4	DIRECT HARVESTED
1109	STANDARD PINK & SMALL RED YLD TRIAL	06/03/11	SVR&EC	FRANKENMUTH	20	REC.	LATTICE	4	DIRECT HARVESTED
1110	PRELIMINARY GREAT NORTHERN YLD TRIAL	06/03/11	SVR&EC	FRANKENMUTH	84	ALPHA	LATTICE	3	DIRECT HARVESTED
1111	PRELIMINARY PINTO BEAN YIELD TRIAL	06/03/11	SVR&EC	FRANKENMUTH	36	SQ.	LATTICE	3	DIRECT HARVESTED
1112	PRELIM. PINK & SMALL RED YLD TRIAL-1	06/04/11	SVR&EC	FRANKENMUTH	48	ALPHA	LATTICE	3	DIRECT HARVESTED
1113	PRELIM. FLOR DE MAYO YLD TRIAL	06/04/11	SVR&EC	FRANKENMUTH	30	REC.	LATTICE	3	DIRECT HARVESTED
1114	PRELIM. PINK & SMALL RED YLD TRIAL-2	06/04/11	SVR&EC	FRANKENMUTH	32	ALPHA	LATTICE	3	DIRECT HARVESTED
1115	CONAGRA PINTO BEAN QUALITY TRIAL	06/04/11	SVR&EC	FRANKENMUTH	14	RCBD		4	DIRECT HARVESTED
1116	CONAGRA NAVY BEAN QUALITY TRIAL	06/06/11	SVR&EC	FRANKENMUTH	08	RCBD		4	DIRECT HARVESTED
1117	MIDWEST & CO-OP. REGIONAL TRIAL	06/04/11	SVR&EC	FRANKENMUTH	48	ALPHA	LATTICE	3	DIRECT HARVESTED
1118	BEANCAP SMALL-SEEDED YIELD TRIAL	06/04/11	SVR&EC	FRANKENMUTH	108	ALPHA	LATTICE	2	DIRECT HARVESTED
1119	BEANCAP MEDIUM-SEEDED YIELD TRIAL	06/06/11	SVR&EC	FRANKENMUTH	200	ALPHA	LATTICE	2	DIRECT HARVESTED
1120	ORGANIC YIELD TRIAL-NAVY & BLACK	06/09/11	SVR&EC	FRANKENMUTH	36	SQ.	LATTICE	4	DIRECT HARVESTED
1221	PRELIMINARY BUSH KIDNEY YIELD TRIAL	06/14/11	ENTRICAN	MONTCALM	112	ALPHA	LATTICE	3	KNIFE PULLED
1222	PRELIM. BUSH CRANBERRY YLD TRIAL-1	06/14/11	ENTRICAN	MONTCALM	128	ALPHA	LATTICE	3	KNIFE PULLED
1223	PRELIM. BUSH CRANBERRY YLD TRIAL-2	06/14/11	ENTRICAN	MONTCALM	72	REC.	LATTICE	3	KNIFE PULLED
1224	PRELIMINARY MAYACOBA YIELD TRIAL	06/14/11	ENTRICAN	MONTCALM	12	REC.	LATTICE	3	KNIFE PULLED
1225	WHITE MOLD NATIONAL YIELD TRIAL	06/14/11	ENTRICAN	MONTCALM	64	SQ.	LATTICE	3	ROD PULLED
1226	WHITE MOLD GENETIC TRIAL	06/14/11	ENTRICAN	MONTCALM	96	ALPHA	LATTICE	3	ROD PULLED
1227	BEANCAP DROUGHT TRIAL	06/15/11	ENTRICAN	MONTCALM	96	ALPHA	LATTICE	2	ROD PULLED
1429	PLH TOLERANCE TRIAL-1	06/13/11	CAMPUS	E.LANSING	80	RCBD		3	DIRECT HARVESTED
1431	BNF YIELD TRIAL	06/13/11	CAMPUS	E.LANSING	130	ALPHA	LATTICE	3	ROD PULLED
1932	ORGANIC YIELD TRIAL-NAVY & BLACK	06/20/11	WISNER	TUSCOLA	36	SQ.	LATTICE	4	DIRECT HARVESTED

SVR&EC: SAGINAW VALLEY RESEARCH & EXTENSION CENTER

PROCEDURE: PLANTED IN 4 ROW PLOTS, 20 FEET LONG, 20 INCH ROW WIDTH, 4 SEEDS/FOOT, 15 FOOT SECTION OF CENTER 2 ROWS WAS HARVESTED AT MATURITY.

FRANKENMUTH: FERTILIZER BROADCAST: 400 POUNDS OF 15-5-13 + S, ZN, MN, CU PRIOR TO PLANTING.
HERBICIDES APPLIED: 1.0 PT DUAL + 1.5 QT. EPTAM APPLIED PPI. (5/25/11) AND 1.0 PT PROWL (PRE-EMERGE 6/4/11).

ENTRICAN: FERTILIZER BROADCAST: 200 POUNDS OF 19-19-19 PRIOR TO PLANTING. 50 POUNDS 46-0-0 SIDE DRESSED ON JULY 20.
HERBICIDES APPLIED: 2 PT. SONALAN/1.25 QT EPTAM/2PT. DUAL PPI. 3 OZ. RAPTOR/0.75 PT REFLEX/1 PT BASAGRAN ON 7/15/11.
PESTICIDES APPLIED: 3.0 OZ. PROVINCE ON JULY 15, AUGUST 4.
IRRIGATION APPLIED: 4.2 INCHES ON WHITE MOLD TRIALS - 8 APPLICATIONS; 3.2 INCHES ON STANDARD YIELD TRIALS - 6 APPLICATIONS

E. LANSING: FERTILIZER: 100 POUNDS 46-0-0 SIDE DRESSED ON JULY 6 TO PLH TRIALS ONLY.
HERBICIDES APPLIED: 2 PT. SONALAN + 1.25 QT EPTAM + 2PT. DUAL APPLIED PPI. 4OZ. RAPTOR/1PT. BASAGRAN APPLIED 7/6/11.
PESTICIDES APPLIED: 4.0 OZ. WARRIOR ON JULY 25 TO BNF TRIAL ONLY.

EXPERIMENT 1101 STANDARD NAVY YIELD TRIAL									PLANTED: 6/2/11
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE
I11264	COOP 03019, **MERLIN**	10	29.2	22.0	42.0	105.0	2.0	54.5	5.0
N09174	N05311/B05055	2	27.1	28.0	43.0	103.0	2.0	49.5	4.5
N08003	N00844/N02237	3	26.9	24.0	44.0	104.0	2.0	52.5	5.0
N08004	N00844/N02237	7	25.4	22.5	44.0	102.0	2.0	49.0	4.5
I10103	OAC 7-2, **REXETER**	4	25.3	24.9	42.0	106.0	2.5	48.0	4.0
I92002	C-20*3//GTS-0801/Seafarer, **VISTA**	13	24.1	22.1	44.0	105.0	3.0	48.5	4.0
N10102	N05319//N05311/N04109	33	23.6	24.9	41.0	105.0	2.0	54.5	5.0
I06271	ND012103, **AVALANCHE**	21	23.5	22.4	43.0	103.0	2.0	52.0	4.5
N10103	N05319//N05311/N04109	32	23.4	24.8	42.0	104.0	1.5	56.5	5.5
N08002	N00844/N02237	20	23.1	23.2	44.0	103.0	2.0	52.0	5.0
N09104	N05311/B05055	16	23.0	21.6	45.0	105.0	2.0	51.5	4.0
N10109	B05055/N05324	31	22.9	21.4	44.0	104.0	2.0	51.5	5.0
N10108	N05311/B04587	30	22.4	27.2	44.0	105.0	2.5	51.5	4.5
N09175	N05311/B05055	1	21.8	28.6	44.0	105.0	2.0	49.5	4.0
N09021	N05319/B04316	5	21.3	22.1	42.0	104.0	2.0	52.0	4.0
N05324	N00838/N00809//N00792	8	21.3	24.5	43.0	104.0	2.5	51.5	4.5
N07007	N03614/N00844	19	20.9	18.2	44.0	103.0	2.0	50.5	5.5
N09046	B04554/N05357	11	20.8	20.5	44.0	105.0	2.5	49.0	4.5
N06702	N00809//B95556*2/I93154	18	20.7	21.9	44.0	105.0	2.0	50.0	4.5
N09045	N05311/B05034	6	20.5	23.4	44.0	106.0	2.5	49.5	3.5
N08007	N01792/N03614	15	20.3	20.3	44.0	101.0	1.5	53.0	6.0
I08902	**HYLAND T9905**	14	20.2	26.0	44.0	105.0	3.0	47.5	4.0
I08958	Mayflower/Avanti, **MEDALIST**	27	20.2	22.1	43.0	105.0	2.0	54.5	4.5
N11999	NOT ON FILE	36	20.1	22.4	43.0	101.0	1.0	51.0	5.0
N09044	N05311/X06121	23	19.7	21.0	44.0	105.0	2.0	53.0	4.5
N09020	N05319/B04316	9	19.6	23.4	43.0	105.0	2.5	49.5	4.5
N10107	N05346/N05311	35	19.4	22.0	44.0	104.0	3.0	49.0	4.0
N09050	N04154/N00833	17	19.3	21.0	43.0	102.0	2.0	49.5	4.5
N10104	N05319//N05311/N04109	29	19.3	25.3	42.0	104.0	1.5	50.5	4.0
N09056	N04152/N05346	24	19.1	20.8	44.0	103.0	2.5	47.5	4.0
N07009	N03614/N00844	22	17.8	23.4	44.0	105.0	2.5	48.5	4.0
N09054	N04152/N05346	12	17.3	21.1	44.0	105.0	2.0	50.0	4.0
N10101	N04109/B05044	28	16.5	16.3	42.0	105.0	2.0	50.5	4.0
N10105	N05324//N05319/B05044	34	16.3	23.9	44.0	105.0	2.5	48.5	3.5
N09055	N04152/N05346	25	15.8	20.8	44.0	106.0	2.5	46.5	4.0
N09059	N04141/N05317	26	15.8	21.1	45.0	106.0	2.5	49.5	3.5
MEAN (36)			21.2	22.8	43.2	104.0	2.2	50.6	4.4
LSD (.05)			3.0	1.5	1.2	1.4	0.7	2.5	0.9
CV (%)			9.9	4.8	1.3	0.7	16.5	2.4	10.1

EXPERIMENT 1102 STANDARD BLACK YIELD TRIAL (1)									PLANTED: 6/2/11
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE
I10102	Mackinac/Jaguar, **LORETO**	7	29.9	23.0	43.0	103.0	2.0	55.0	3.5
B09175	N05311/B05055	6	29.3	29.7	45.0	103.0	2.0	53.5	5.0
B09210	B04644/B04588	25	28.2	23.5	44.0	104.0	2.0	52.0	4.0
I07116	T-39/Midnight, **SHANIA**	15	27.8	23.2	45.0	105.0	2.0	53.0	4.0
B09183	B04349/B05001	24	27.6	19.1	43.0	101.0	2.0	50.0	5.0
B09184	B04349/B05001	17	27.5	18.6	45.0	105.0	2.5	49.0	4.0
B09174	N05311/B05055	1	27.1	28.7	44.0	104.0	2.0	54.0	5.0
I08907	Midnight/Blackhawk, **BLACK VELVET**	23	27.1	25.8	46.0	106.0	2.0	53.5	4.0
B09128	B05055/B05044	2	27.0	18.8	45.0	102.0	2.0	52.5	5.0
B09208	B04644/B04588	4	27.0	23.1	42.0	102.0	1.5	53.0	5.0
B09198	B05055/B04587	18	27.0	21.8	45.0	103.0	1.5	51.5	4.5
B95556	B90211/N90616, **JAGUAR**	32	26.7	22.5	45.0	102.0	1.0	51.0	4.5
B09166	B04554/B04587	9	26.5	21.7	45.0	104.0	2.0	54.0	5.0
B04554	B00103//B00103/X00822, **ZORRO**	3	26.2	20.4	44.0	104.0	2.0	53.0	5.0
B09202	B04444/B04588	12	26.0	21.2	44.0	105.0	2.0	55.0	4.5
B09209	B04644/B04588	28	26.0	23.1	45.0	102.0	1.0	51.5	5.5
B09197	B05055/B04588	36	25.6	22.8	45.0	103.0	1.5	48.5	4.0
B09130	B05055/B04587	33	25.5	20.4	45.0	102.0	1.0	51.0	4.5
B09170	B04554/B04587	20	25.3	21.6	45.0	101.0	2.0	52.5	3.5
B09119	B04554/X06127	29	25.3	21.2	45.0	103.0	2.0	52.0	4.5
B09171	B04554/B04587	31	25.3	20.5	45.0	102.0	2.0	54.0	4.5
B09204	B05054/B04588	30	25.1	23.1	44.0	100.0	1.0	49.0	4.5
B09194	B05055/B05044	14	24.7	18.5	45.0	102.0	2.5	47.0	4.0
B00101	PHANTOM/BLACKJACK, **CONDOR**	35	24.2	24.6	44.0	103.0	2.0	47.5	4.0
I81066	SEL-BTS, **T-39**	11	24.1	26.3	45.0	103.0	3.0	41.5	3.0
B09165	B04554/B04587	19	24.1	21.7	45.0	102.0	1.5	51.5	4.5
B09129	B05055/B04587	10	23.4	22.1	44.0	102.0	1.0	47.5	4.0
B09135	B04316/B05040	5	23.2	21.4	45.0	101.0	2.0	52.0	4.0
I03390	ND9902621-2, **ECLIPSE**	13	23.2	23.0	43.0	100.0	1.0	49.5	4.0
B08102	B01792/B02549	16	22.9	23.4	42.0	103.0	1.5	53.5	4.5
B09136	B04316/B05040	21	22.9	23.7	44.0	100.0	1.0	48.5	4.0
B09224	B05054/B04588	22	22.4	25.8	45.0	100.0	1.0	50.5	5.0
B09201	B04444/B05044	34	21.7	17.4	44.0	102.0	2.0	53.5	5.0
B09188	B05054/B04588	8	21.2	23.1	45.0	104.0	2.0	53.0	4.0
B09203	B05054/B04588	26	21.1	23.8	44.0	101.0	1.0	48.0	4.0
I10132	**AIFI WURITI**	27	18.4	27.0	43.0	104.0	2.0	46.0	3.0
MEAN (36)			25.2	22.7	44.2	102.4	1.7	51.1	4.3
LSD (.05)			3.2	1.8	1.6	0.7	0.5	2.4	0.9
CV (%)			9.1	5.5	1.7	0.3	14.6	2.3	9.7

EXPERIMENT 1103 STANDARD BLACK YIELD TRIAL (2)									PLANTED: 6/2/11
NAME	**PEDIGREE**	**ENTRY**	**YIELD CWT /ACRE**	**100 SEED WT. (g)**	**DAYS TO FLOWER**	**DAYS TO MATURITY**	**LODGING (1-5)**	**HEIGHT (cm)**	**DES. SCORE**
B10244	B04610/N05346	5	30.1	24.6	45.0	104.0	2.0	50.5	5.0
B10213	B04587//ZORRO/DPC-1	28	27.8	23.1	43.0	103.0	2.0	52.5	5.0
B10210	N05324/B04431	27	27.1	26.9	43.0	106.0	2.0	54.5	5.5
B10215	B04587//ZORRO/DPC-1	26	26.2	22.6	44.0	103.0	2.0	53.0	5.0
B10208	N05324/B05055	22	25.7	26.2	45.0	101.0	1.0	51.0	6.0
B10214	B04587//ZORRO/DPC-1	24	25.3	21.1	44.0	104.0	1.5	54.0	5.5
B10234	B04644/B190	17	25.0	22.3	45.0	103.0	1.5	48.0	4.5
B10243	B04610/N05346	8	24.9	21.2	46.0	105.0	1.5	56.0	5.0
B10223	B05052//B04349/B05044	32	24.9	21.2	46.0	103.0	2.0	52.5	5.0
B10225	B04644//B05055/B05044	6	24.8	22.9	42.0	103.0	2.0	51.5	4.5
B04554	B00103//B00103/X00822, **ZORRO**	7	24.7	22.6	45.0	103.0	1.5	53.0	6.0
B10217	B04587//ZORRO/DPC-1	23	24.7	21.4	44.0	102.0	1.5	49.5	4.5
B10216	B04587//ZORRO/DPC-1	33	24.6	22.6	43.0	104.0	2.0	51.0	4.5
B10233	B04644/B190	14	24.4	23.5	46.0	104.0	2.0	49.5	5.0
B10238	ZORRO/B05055	25	24.1	19.7	44.0	102.0	2.0	51.0	4.5
B10227	B05055/N05324	11	23.7	22.7	45.0	105.0	2.0	55.0	4.0
B10231	B06311/N05311	21	23.4	18.3	44.0	104.0	1.0	55.0	5.0
B10240	B04591/B05039	4	23.1	21.4	44.0	100.0	1.0	48.0	5.0
B10212	B04587//ZORRO/DPC-1	20	23.1	21.7	43.0	105.0	2.0	53.0	4.5
B10239	B04591/ZORRO	15	22.9	22.8	43.0	96.0	1.5	47.5	4.0
B10211	B04587//ZORRO/B05044	16	22.6	23.3	45.0	102.0	1.0	49.5	4.0
B10222	B05052//B04349/B05044	13	22.5	22.1	45.0	103.0	2.0	52.5	4.0
B10224	B04587//B05070/B05044	29	22.5	23.9	44.0	104.0	1.5	51.5	4.0
B10230	B06311/B05055	35	22.3	19.7	46.0	104.0	1.5	51.0	5.0
B10203	B05054/B04588	2	22.1	21.5	44.0	102.0	1.5	49.0	4.0
B10241	B05039/ZORRO	31	21.5	18.7	45.0	104.0	2.0	52.0	4.5
B10202	N05311/X06121	1	21.4	26.7	43.0	104.0	1.0	51.5	5.0
B10228	B06311/B05039	18	21.4	21.5	44.0	104.0	2.0	52.0	4.5
B10207	N05324/B05055	34	21.4	25.1	43.0	103.0	1.5	50.0	5.0
B10242	B05039/ZORRO	19	21.0	18.3	45.0	104.0	1.5	50.0	4.5
I03390	ND9902621-2, **ECLIPSE**	36	20.2	22.0	44.0	99.0	1.5	52.0	4.0
B10206	N04120/ZORRO	12	19.9	22.6	46.0	105.0	2.0	55.0	5.0
B10245	B05039/ZORRO	10	19.6	19.3	46.0	108.0	2.5	53.5	3.5
B10221	B05055/B04644	30	18.9	18.9	45.0	103.0	1.5	48.5	5.0
B10246	B05039/ZORRO	9	18.4	18.1	44.0	104.0	2.5	54.0	4.0
B10201	N05311/B05055	3	17.4	22.6	43.0	106.0	2.0	55.0	4.5
MEAN (36)			23.2	22.0	44.1	103.0	1.7	51.8	4.7
LSD (.05)			3.4	1.7	1.6	2.0	0.6	3.6	0.9
CV (%)			10.4	5.6	1.8	1.0	18.1	3.4	9.4

EXPERIMENT 1104 PRELIMINARY NAVY YIELD TRIAL (1)									PLANTED: 6/2/11
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE
N11216	N04158/B04265	49	30.1	24.2	44.0	103.0	2.5	53.5	5.0
N11215	N04158/B04265	48	28.0	23.8	45.0	104.0	2.5	53.5	4.5
N11225	N05311*/B05044	13	26.8	20.6	45.0	105.0	2.0	54.0	5.0
N11226	N05311*/B05044	14	26.3	20.9	47.0	104.0	2.0	54.5	5.0
N11228	N05311//N07009/N05324	16	26.3	19.8	44.0	102.0	2.0	53.0	5.5
I92002	C-20*3//GTS-0801/Seafarer, **VISTA**	55	26.3	21.6	45.0	104.0	2.5	53.0	4.5
N11202	N05324//N04109/N04158	35	26.2	24.6	42.0	104.0	2.0	52.0	5.0
N11229	N05311//N07009/N05324	17	25.0	21.3	44.0	101.0	2.0	52.5	5.0
N11232	N05311//BMD12/B04587	20	24.8	21.3	43.0	104.0	2.0	54.5	5.5
N11227	N05311//N07009/N05324	15	24.5	21.4	43.0	102.0	2.0	54.0	5.5
N11234	N05311//N06705/B04588	22	24.3	22.1	41.0	103.0	1.5	53.5	5.5
N11206	N04158/N05311	39	23.9	22.3	42.0	104.0	2.0	51.0	5.0
N11231	N05311//BMD12/B04587	19	23.5	21.5	43.0	102.0	1.5	54.0	4.5
N11230	N05311//BMD12/B04587	18	23.4	21.8	41.0	103.0	1.5	50.0	4.5
N11207	N04158/N05311	40	23.4	22.7	43.0	102.0	2.0	51.5	5.0
N11210	N05311/B05055	43	23.1	20.3	44.0	103.0	2.0	53.0	5.0
N11240	N07009//N05324/EMP507	28	23.0	23.4	45.0	102.0	1.0	52.5	5.0
N11237	N07009//N05324/B04554	25	22.9	19.0	45.0	105.0	2.0	55.0	5.0
N11221	B04587//ZORRO/B05044	54	22.6	20.3	43.0	101.0	1.0	49.5	5.5
N11236	N05324*/EMP507	24	21.9	23.1	43.0	106.0	2.5	54.0	4.0
N11212	N05311/B05055	45	21.8	19.8	44.0	102.0	1.0	53.0	5.5
N11245	N04158/B07554	33	21.4	21.5	41.0	102.0	1.0	48.5	4.5
N11213	N05346/B05055	46	21.2	22.7	45.0	100.0	1.0	49.0	5.0
N11001	N04164//N05311/B05044	1	21.1	20.7	41.0	103.0	2.0	54.0	5.5
N11239	N07009//N05311/B05044	27	20.9	19.8	42.0	102.0	1.5	54.0	5.5
N11205	N04158//N06705/B05044	38	20.9	20.9	42.0	104.0	2.0	53.0	4.5
N11204	N05324//N05319/B05044	37	20.6	23.0	43.0	106.0	2.0	55.0	4.5
N11208	N04158/N05346	41	20.6	22.5	42.0	104.0	2.0	51.5	4.0
N11238	N07009//N05324/B04554	26	20.5	16.4	45.0	105.0	2.0	55.5	5.5
N11003	N04164//N05311/B05044	3	20.4	22.3	42.0	104.0	1.5	54.0	5.0
N11217	N05324/N04158	50	20.1	18.0	43.0	100.0	2.0	54.5	6.0
N11242	N07009//N05324/EMP507	30	20.0	25.7	41.0	103.0	1.5	53.0	4.0
N11235	N05311//N06705/B04588	23	19.8	21.7	42.0	104.0	2.0	52.0	4.5
N11201	N05324//N04109/N04158	34	19.8	24.8	41.0	106.0	2.0	52.0	4.5
N11004	N05324//N05311/B05044	4	19.7	22.1	40.0	105.0	2.0	52.5	4.0
N11241	N07009//N05324/EMP507	29	19.3	23.6	44.0	103.0	1.5	51.5	4.5
N11008	B07554/N08007	8	19.1	20.6	43.0	104.0	2.0	52.5	5.0
N11009	B07554//B05054/B04588	9	19.1	21.3	43.0	105.0	2.0	49.0	4.5
N11233	N05311//N04120/N04158	21	19.1	22.4	42.0	104.0	1.5	54.5	5.0
N11218	B07104/N05346	51	19.1	20.8	44.0	105.0	2.0	54.0	4.5

EXPERIMENT 1104 PRELIMINARY NAVY YIELD TRIAL (1)									PLANTED: 6/2/11
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE
I08958	Mayflower/Avanti, **MEDALIST**	56	19.0	20.7	44.0	106.0	2.0	53.5	4.5
N11002	N04164//N05311/B05044	2	18.8	24.2	41.0	103.0	1.5	52.0	4.5
N11222	N04164//N05311/B05044	10	18.5	23.4	43.0	102.0	1.0	50.5	4.5
N11211	N05311/B05055	44	18.5	23.9	41.0	105.0	2.0	52.0	4.0
N11203	N04120//N04109/N04158	36	18.4	21.6	42.0	106.0	2.0	54.0	4.0
N11005	B07055//B05044/N04158	5	18.0	19.1	41.0	102.0	2.0	50.0	4.0
N11244	N07009//R06429/R98026	32	17.7	19.2	43.0	104.0	2.0	52.5	4.5
N11007	B07554/N08007	7	16.6	22.6	45.0	105.0	2.0	50.5	4.0
N11006	B07554/N08007	6	16.3	22.2	42.0	104.0	2.0	52.5	5.0
N11209	N05324/N04158	42	16.0	20.8	42.0	105.0	2.0	49.5	4.0
N11243	N07009//R06429/R98026	31	15.8	18.3	41.0	104.0	1.0	53.0	4.0
N11214	N05346/B05055	47	15.8	19.9	43.0	100.0	2.0	49.5	4.0
N11223	N04164//N05324/EMP507	11	15.3	19.7	40.0	98.0	1.0	45.0	4.0
N11219	B05055/B04265	52	15.0	20.7	42.0	104.0	1.5	50.0	4.5
N11224	N04164//N05324/EMP507	12	14.2	18.5	41.0	97.0	1.0	47.0	4.0
N11220	B04644/B04391	53	14.2	22.6	43.0	102.0	2.0	47.5	4.0
MEAN (56)			20.9	21.5	42.6	103.0	1.8	52.2	4.7
LSD (.05)			4.0	2.2	2.0	2.0	0.7	2.7	0.8
CV (%)			11.8	6.4	2.3	1.0	19.3	2.6	8.0

EXPERIMENT 1105 PRELIMINARY NAVY YIELD TRIAL (2)									PLANTED: 6/2/11
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE
N11283	MEDALIST/N08003	53	29.4	21.0	41.0	104.0	2.0	55.5	6.0
N11258	N07009/MEDALIST	6	26.5	22.1	44.0	102.0	2.0	55.5	6.5
N11298	MEDALIST//B05054/B04588	3	26.4	22.7	44.0	104.0	2.0	54.5	5.5
N11262	N08003/B07554	21	26.0	22.3	42.0	102.0	1.5	53.5	6.0
N11264	N08003/MEDALIST	12	25.7	22.6	42.0	104.0	2.0	54.5	5.0
N11284	MEDALIST/N08003	1	25.3	20.2	43.0	102.0	2.0	54.5	6.0
N11282	MEDALIST/N08003	22	25.3	21.6	42.0	103.0	2.0	51.5	5.5
N11256	N07009/MEDALIST	24	25.2	21.2	43.0	101.0	1.0	54.5	6.0
N11257	N07009/MEDALIST	29	24.6	23.3	43.0	104.0	1.5	57.5	6.0
N11292	N08006/MEDALIST	42	24.3	19.6	43.0	102.0	1.0	56.0	5.5
N11280	AVALANCHE/N08007	27	24.1	24.1	44.0	103.0	1.5	54.0	5.5
N11278	N08010/N08007	7	23.9	22.3	45.0	101.0	1.0	57.0	7.0
N11263	N08003/AVALANCHE	50	23.8	21.8	41.0	104.0	2.0	54.5	5.5
N11285	N04152/N05346//N04141/N05317	19	23.7	18.2	44.0	104.0	2.0	53.5	5.0
I92002	C-20*3//GTS-0801/Seafarer, **VISTA**	56	23.7	21.5	45.0	106.0	2.5	52.0	4.0
N11267	N08006//B04349/B05044	9	23.5	20.9	43.0	100.0	2.0	48.5	4.0
N11275	N08010/N08007	52	23.1	20.7	44.0	102.0	1.5	54.0	6.5
N11249	N06705/N08003	44	22.8	20.8	44.0	103.0	2.0	55.0	6.0
N11277	N08010/N08007	30	22.7	23.3	44.0	100.0	1.0	55.5	6.5
N11289	N08012/N08007	45	22.6	24.1	43.0	102.0	1.0	51.5	5.5
N11248	N05319/AVALANCHE	40	22.5	22.2	42.0	104.0	2.5	51.5	4.0
N11291	N08006/MEDALIST	39	22.4	23.0	43.0	103.0	2.0	54.5	5.0
N11295	N08006/MEDALIST	54	22.4	21.7	44.0	104.0	2.0	52.0	5.0
N11250	N06705/N08003	17	22.3	18.8	42.0	104.0	1.5	54.0	5.5
N11286	N08007//N04152/N05346	49	22.2	21.8	44.0	101.0	1.0	51.0	5.0
N11271	N08007//B04349/B05044	36	22.0	19.7	43.0	101.0	1.5	54.5	5.5
N11272	N08007//N04141/N05317	55	22.0	23.2	46.0	102.0	1.0	51.0	5.0
N11259	N07009//B04349/B05044	23	21.9	19.5	42.0	105.0	2.0	51.0	4.5
N11296	MEDALIST//B05054/B04588	26	21.9	23.3	42.0	105.0	2.0	52.5	4.5
N11299	MEDALIST//B05054/B04588	14	21.8	25.2	43.0	105.0	2.0	51.0	5.0
N11294	N08006/MEDALIST	35	21.8	22.6	42.0	104.0	1.5	55.5	6.0
N11300	MEDALIST//B05054/B04588	37	21.8	23.7	42.0	102.0	1.0	50.5	5.0
N11269	N08007/AVALANCHE	43	21.7	20.1	44.0	103.0	2.0	51.5	5.0
N11279	N08010//B04349/B05044	25	21.0	21.9	43.0	102.0	1.0	51.5	5.0
N11266	N08006/B05066	46	21.0	22.3	44.0	101.0	1.0	54.0	5.5
N11270	N08007/AVALANCHE	5	20.5	23.5	43.0	102.0	1.0	55.0	5.5
N11276	N08010/N08007	15	20.2	21.6	42.0	100.0	1.0	52.0	5.0
N11297	MEDALIST//B05054/B04588	34	20.2	24.4	44.0	102.0	1.5	50.5	4.5
N11255	N07009/MEDALIST	48	20.0	19.1	43.0	103.0	1.5	53.0	5.0
N11260	N07009//B04349/B05044	41	19.9	18.8	41.0	102.0	1.5	53.0	5.5

EXPERIMENT 1105 PRELIMINARY NAVY YIELD TRIAL (2)									PLANTED: 6/2/11
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE
N11251	N06705/N08003	32	19.8	21.5	41.0	104.0	2.0	53.0	5.5
N11293	N08006/MEDALIST	20	19.6	21.5	42.0	106.0	2.0	56.0	5.0
N11265	N08006/B05066	16	19.5	23.5	41.0	103.0	2.0	53.5	4.5
N11254	N07009/MEDALIST	31	19.4	17.9	44.0	104.0	2.0	52.0	4.5
N11274	N08010/N08007	33	19.2	20.2	44.0	100.0	1.0	49.0	4.5
N11273	N08007//N04141/N05317	18	19.1	21.6	44.0	100.0	1.0	50.5	4.5
N11287	N04159/X05121//B05054/B04588	11	19.0	21.5	42.0	103.0	1.0	47.0	4.5
N11261	N07009//B04349/B05044	2	18.7	19.5	42.0	103.0	1.5	51.0	5.0
N11288	N04159/X05121//B05054/B04588	28	18.5	20.0	42.0	103.0	1.0	46.5	4.0
N11246	N05319/N08007	47	18.5	18.5	42.0	103.0	2.0	51.5	4.5
N11252	N06705/N08007	51	18.4	22.9	45.0	104.0	1.5	54.5	4.5
N11253	N06705//N04159/X05121	13	18.0	23.1	42.0	104.0	2.0	48.5	4.0
N11247	N05319/N08007	10	17.6	19.8	42.0	105.0	2.0	54.5	4.5
N11268	N08006//B05054/B04588	38	16.5	22.7	43.0	101.0	1.0	51.5	5.0
N11281	AVALANCHE//N04141/N05317	4	15.7	19.1	44.0	104.0	2.0	55.0	5.5
N11290	N08012/N08007	8	13.6	20.0	41.0	103.0	1.5	46.0	4.0
MEAN (56)			21.7	21.5	42.7	102.6	1.6	52.7	5.2
LSD (.05)			4.4	2.3	2.1	2.3	0.5	1.6	1.1
CV (%)			12.4	6.6	2.5	1.1	16.2	1.5	11.0

EXPERIMENT 1106 PRELIMINARY BLACK YIELD TRIAL								PLANTED: 6/3/11	
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE
B11343	B07554//ZORRO/B05044	43	30.1	23.3	42.0	100.0	2.0	49.5	4.5
B11363	B04644/B07554	63	28.3	25.2	44.0	101.0	1.0	52.5	5.0
B11334	N07009//B04349/B05044	34	28.2	20.9	42.0	103.0	2.0	52.5	5.0
B11373	B07104/B04391	73	27.7	21.2	47.0	101.0	2.0	55.5	6.0
B11347	B04644//ZORRO/B05044	47	27.4	22.6	43.0	102.0	2.0	52.5	5.5
B11360	B04644/B05066	60	27.4	24.9	42.0	101.0	1.5	51.5	5.0
B11301	N05311//B05055/B05053	1	27.3	20.6	47.0	103.0	1.0	56.0	6.0
B11358	B04644/B05066	58	27.3	25.5	43.0	100.0	2.0	52.0	5.5
B11355	JAGUAR/B04644	55	26.7	21.0	47.0	102.0	1.5	51.0	4.0
B11375	B07104/B04391	75	26.6	27.7	43.0	100.0	2.0	51.0	4.5
B11361	B04644/B05066	61	26.5	22.9	43.0	101.0	1.0	50.5	5.0
B11362	B04644/B07554	62	26.5	24.0	42.0	101.0	2.0	52.5	5.5
B11305	N05324/N04158	5	26.2	22.2	43.0	101.0	1.5	49.0	4.5
B11312	B04587//B05070/B05044	12	26.1	23.9	45.0	104.0	2.0	52.0	4.5
B11328	B04265/B05055	28	26.1	22.6	46.0	100.0	1.5	52.5	5.5
B11302	N05311//B05055/B05053	2	25.7	22.8	45.0	104.0	2.5	52.5	5.0
B11309	B04587//ZORRO/B05055	9	25.5	24.0	44.0	101.0	1.5	50.0	5.0
B11310	B04587//ZORRO/DPC-1	10	25.5	22.7	42.0	102.0	1.5	50.5	4.0
B11364	B04644/B07554	64	25.5	24.7	43.0	102.0	2.0	51.5	5.5
B11371	B05055/B04587	71	25.5	22.4	44.0	102.0	2.5	50.5	4.5
B04554	B00103//B00103/X00822, **ZORRO**	83	25.5	22.2	42.0	104.0	2.0	51.5	5.0
B11306	B04591/ZORRO	6	25.4	21.0	46.0	105.0	2.0	55.5	5.0
B11320	B05052//ZORRO/DPC-1	20	25.3	24.2	45.0	101.0	2.0	50.0	4.5
B11344	B07554//ZORRO/B05044	44	25.2	23.6	42.0	98.0	2.0	47.5	4.0
B11341	N05311//N07009/N05324	41	25.0	21.7	42.0	101.0	2.0	50.0	5.0
B11374	B07104/B04391	74	25.0	23.1	45.0	100.0	2.0	50.5	5.5
B11318	B05052//ZORRO/DPC-1	18	24.9	23.4	43.0	100.0	1.0	49.5	4.5
B11259	N07009//B04349/B05044	78	24.9	21.9	41.0	104.0	2.0	50.5	4.0
B11372	B05055/B04587	72	24.8	22.1	48.0	100.0	3.0	48.5	4.0
B11325	B05055/B04644	25	24.5	26.6	46.0	101.0	2.0	50.0	5.0
B11352	B04644//B06311/B05044	52	24.5	23.0	46.0	102.0	2.0	51.0	5.0
B11351	B04644//B05055/B05044	51	24.4	23.1	43.0	99.0	2.0	47.0	4.5
B11313	B04644//B04349/B05044	13	24.3	23.6	42.0	100.0	1.5	49.5	5.0
B11315	B04644//B05055/B04587	15	24.3	22.2	42.0	100.0	1.5	48.0	5.0
B11304	N05324/B05055	4	24.1	24.6	44.0	101.0	2.0	53.0	5.5
B11356	JAGUAR/B04644	56	24.1	23.0	43.0	101.0	2.0	51.0	4.5
B11350	B04644//B05055/B05044	50	23.9	24.5	43.0	101.0	2.0	48.5	5.0
B11311	B04587//ZORRO/DPC-1	11	23.7	21.6	43.0	102.0	1.0	50.5	5.5
B11338	N08007//B04349/B05044	38	23.7	20.2	45.0	100.0	1.0	55.5	6.0
B11342	N05311//N07009/N05324	42	23.6	22.0	43.0	100.0	2.0	50.0	4.5
B11370	B05055/B04265	70	23.6	21.6	45.0	100.0	1.0	50.0	5.0
B11329	B04644/B04391	29	23.2	23.8	45.0	103.0	1.5	50.5	5.5
B11314	B04644//B04349/B05044	14	23.1	25.4	41.0	101.0	1.5	48.0	4.5
B11326	B05055/B04644	26	23.1	23.4	43.0	104.0	1.5	48.0	5.0
B11327	B05055/B04644	27	23.0	28.5	43.0	102.0	1.5	48.5	5.0

EXPERIMENT 1106 PRELIMINARY BLACK YIELD TRIAL								PLANTED: 6/3/11	
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE
B11331	VCW54 SELECTION	31	22.8	24.9	43.0	105.0	2.0	54.5	4.0
B11324	B05055/B04644	24	22.7	24.0	43.0	100.0	2.0	49.0	5.0
B11369	B05054/B04588//B07554	69	22.7	24.0	46.0	100.0	1.5	47.5	4.5
B11307	N05311/B04587	7	22.6	24.7	43.0	102.0	1.5	47.5	4.0
B11004	N05324//N05311/B05044	77	22.5	25.9	41.0	105.0	2.0	52.0	4.0
B11354	JAGUAR/B04644	54	22.4	20.3	46.0	101.0	2.0	51.0	3.5
N11365	B07554/N08007	65	22.2	19.9	43.0	106.0	2.5	54.0	5.0
B11368	B05054/B04588//B07554	68	22.2	24.7	49.0	100.0	1.0	47.5	4.5
B11285	N04152/N05346//N04141/N05317	80	22.1	21.1	45.0	101.0	2.0	53.0	5.5
B11316	B05052//B05044/B04588	16	21.5	20.5	44.0	103.0	1.5	52.5	5.0
B11359	B04644/B05066	59	21.3	23.9	42.0	100.0	1.5	48.0	4.5
B11321	B05052//ZORRO/DPC-1	21	21.1	22.5	43.0	100.0	1.0	49.0	4.0
B11322	B05055/B04644	22	21.1	21.0	46.0	102.0	1.5	48.5	5.0
B11348	B04644//ZORRO/B05044	48	21.1	24.1	44.0	101.0	2.0	48.5	4.0
I03390	ND9902621-2, **ECLIPSE**	84	21.1	22.8	42.0	99.0	1.5	51.5	5.0
B11336	N08006//B04349/B05044	36	21.0	21.6	42.0	100.0	1.0	50.0	5.0
B11271	N08007//B04349/B05044	79	21.0	19.7	46.0	100.0	1.0	55.0	6.5
B11345	B07554//B05044 /N04158	45	20.9	21.9	41.0	100.0	2.0	48.5	4.5
B11001	N04164//N05311/B05044	76	20.7	19.9	42.0	102.0	1.5	55.0	5.0
B11367	B07554//B05054/B04588	67	20.5	23.6	42.0	100.0	1.0	49.5	4.5
B11296	MEDALIST//B05054/B04588	82	20.5	24.8	43.0	103.0	2.0	50.0	5.0
B11319	B05052//ZORRO/DPC-1	19	20.4	21.1	45.0	100.0	1.0	47.0	4.0
B11340	N05311//N07009/N05324	40	20.3	22.2	47.0	100.0	2.0	49.5	5.0
B11346	B07554//B05055/B05044	46	20.2	21.6	41.0	99.0	1.0	46.5	4.0
B11323	B05055/B04644	23	20.1	18.4	46.0	104.0	1.0	49.0	5.5
B11349	B04644//ZORRO/B05044	49	20.0	22.2	45.0	100.0	2.0	48.5	4.5
N11366	B07554//B05054/B04588	66	19.9	20.4	45.0	105.0	2.0	50.5	4.0
B11339	N04159/X05121//B05054/B04588	39	19.7	21.6	43.0	102.0	1.0	47.5	4.5
B11335	N08006/JAGUAR	35	19.4	19.8	41.0	101.0	1.0	51.0	5.5
B11308	B04587//ZORRO/B05055	8	19.3	20.2	42.0	102.0	1.0	47.5	5.0
B11317	B05052//B05044/B04588	17	18.8	20.5	42.0	105.0	1.5	53.0	4.5
B11337	N08006//B04349/B05044	37	18.7	20.4	41.0	101.0	1.0	52.5	4.5
B11353	B04644//B07104/B05044	53	18.6	21.7	42.0	103.0	1.5	54.0	4.5
B11330	B04644/ZORRO	30	18.5	20.9	43.0	101.0	2.0	48.0	4.0
B11357	JAGUAR/N06705	57	18.4	20.8	41.0	101.0	1.0	50.5	4.5
B11287	N04159/X05121//B05054/B04588	81	17.9	20.0	43.0	102.0	2.0	48.0	4.5
B11332	VCW54 SELECTION	32	14.0	20.4	46.0	107.0	3.5	50.0	3.5
B11333	VCW54 SELECTION	33	13.2	24.7	45.0	107.0	3.0	48.0	3.0
B11303	N05324/B05055	3	12.2	18.8	42.0	103.0	2.0	50.5	5.0
MEAN (84)			22.9	22.6	43.3	101.3	1.7	50.5	4.8
LSD (.05)			3.8	1.9	2.1	1.9	0.7	2.7	0.9
CV (%)			10.4	5.2	2.4	0.9	21.7	2.7	9.0

EXPERIMENT 1107 STANDARD GREAT NORTHERN YIELD TRIAL									PLANTED: 6/3/11
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE
G09303	G04207/P05437	1	27.0	38.0	40.0	100.0	1.5	54.5	4.5
G08254	G04514/G93414	3	26.8	40.8	41.0	100.0	2.0	52.0	4.5
G10410	G05220/X07810	25	24.8	39.3	42.0	100.0	2.0	49.0	4.0
G08256	G04514/G93414	17	24.2	40.0	42.0	100.0	1.5	52.0	4.5
G09329	G04514/G02647	12	23.9	43.4	42.0	101.0	2.0	51.5	4.5
G10413	G05220/G04207	23	23.8	39.2	43.0	104.0	2.5	51.5	4.5
G10412	G05220/G04207	26	23.5	40.4	45.0	103.0	2.0	49.5	5.5
G10411	G05220/X07810	24	23.4	36.8	41.0	101.0	2.0	49.0	4.0
G09321	G04514/G02647	16	23.2	42.5	43.0	103.0	2.0	54.0	4.5
G08239	G04514/G02647	8	23.1	42.8	40.0	103.0	2.0	51.5	4.0
G09323	G98602/G04517	19	22.9	44.5	44.0	104.0	2.0	52.5	5.0
N09060	G05241/B04588	29	22.2	31.8	45.0	101.0	2.0	57.5	6.0
G08258	G04517/G02647	20	21.5	42.3	42.0	102.0	2.0	55.0	4.5
G08260	G04517/G02647	9	21.3	40.4	42.0	102.0	2.0	54.5	4.5
G09330	G04514/G02647	10	21.3	40.8	43.0	100.0	2.0	53.0	4.5
G08259	G04517/G02647	14	21.1	43.1	43.0	106.0	2.0	49.0	4.0
G93414	**MATTERHORN**	2	20.9	40.2	41.0	101.0	2.0	50.0	4.5
G08264	G98601/G04514	13	20.9	42.3	41.0	102.0	2.0	52.0	4.5
G09320	G04514/G02647	5	20.8	42.6	43.0	102.0	2.0	54.0	5.0
G09328	G04514/G02647	11	20.7	40.7	42.0	104.0	2.0	50.0	3.5
G09302	G93414/P05436	18	20.5	39.7	43.0	100.0	2.0	53.0	5.5
G08240	G04514/G02647	15	20.2	41.9	41.0	101.0	1.5	53.5	4.5
N09063	G05241/B04588	32	20.2	26.1	46.0	100.0	1.0	55.0	6.0
G10403	MATTERHORN//G04207/P05437	28	20.1	37.5	40.0	106.0	2.5	50.0	3.5
G10401	MATTERHORN/P05436	4	19.7	37.3	42.0	102.0	2.5	48.0	3.5
G08263	G98601/G04514	21	19.5	40.2	42.0	103.0	2.0	50.0	4.5
G10406	G04207/X07806	27	19.1	39.2	45.0	103.0	1.0	55.5	5.0
G07309	G02646/G02454	7	18.2	43.4	43.0	101.0	2.0	47.5	4.0
N09065	G05241/B04588	34	17.7	28.2	44.0	103.0	2.0	57.5	5.5
G10409	G05220/X07810	22	17.5	35.7	42.0	103.0	2.0	53.0	4.5
I09112	NE1-08-16	36	17.4	36.2	40.0	102.0	2.0	44.0	3.0
N09067	G05241/B04588	31	16.9	28.3	43.0	103.0	2.0	57.0	5.5
G09312	G05241/B04588	30	16.6	30.0	43.0	101.0	2.0	57.0	5.5
G08243	G02460/G04514	6	16.5	41.3	42.0	106.0	2.0	52.0	4.0
G10901	G05241/B04588	33	16.3	29.7	45.0	105.0	2.0	53.0	4.5
G05922	HIME TEBO*4/MATTERHORN,**FUJI**	35	13.3	28.2	40.0	110.0	2.0	45.5	3.5
MEAN (36)			20.8	38.2	42.2	102.2	1.9	52.0	4.5
LSD (.05)			4.1	3.2	2.2	2.9	0.5	5.7	1.3
CV (%)			14.0	5.9	2.5	1.4	13.8	5.3	14.5

EXPERIMENT 1108 STANDARD PINTO YIELD TRIAL									PLANTED: 6/3/11
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE
P07863	I02545/P02630	2	27.6	40.5	43.0	106.0	2.0	54.0	5.0
I07113	PNE-6-94-75/Kodiak, **LAPAZ**	1	27.2	44.9	42.0	103.0	1.5	53.5	5.0
I09101	CBB/Matterhorn//Maverick, **ND-307**	10	26.1	39.0	41.0	103.0	2.5	48.0	3.5
I06251	CO23704,**CROISSANT**	18	25.2	34.7	40.0	103.0	3.0	46.5	4.0
P08403	P05463/I06206	5	25.1	33.8	42.0	103.0	1.5	52.5	4.0
I06249	ND020069, **LARIAT**	9	24.4	42.9	41.0	107.0	3.0	51.5	4.0
P08402	P05463/I06206	8	24.3	30.9	42.0	103.0	2.0	54.0	5.0
P09424	P00225/I06205	16	24.3	42.4	42.0	101.0	1.5	53.5	5.5
P06125	P02646/P02630	4	24.1	37.7	43.0	101.0	2.0	49.5	4.0
P09414	X05129/P02647	30	24.1	41.0	42.0	100.0	1.5	49.0	4.5
I10110	ND041062-1	35	24.0	40.5	42.0	103.0	1.5	59.5	4.5
P09402	I06220/P05436	27	23.6	39.0	40.0	103.0	2.0	53.0	4.0
P09410	X05129/P02647	28	23.5	43.5	41.0	100.0	1.0	48.0	4.0
P08388	P05463/P04207	25	23.4	38.9	42.0	101.0	2.5	47.0	4.0
P09425	P00225/I06205	14	23.2	41.1	42.0	102.0	2.0	54.5	5.5
P09408	I04305/P00218	7	22.9	47.1	41.0	100.0	3.0	47.0	3.5
P08320	P00226/P02627	12	22.8	34.8	42.0	101.0	1.5	55.0	5.5
P08312	I04324/P02646	31	22.2	39.9	42.0	101.0	2.5	48.5	4.0
I08933	37-2	36	22.0	37.7	41.0	103.0	2.0	52.5	4.5
P07839	I02545/P02630	3	21.8	33.0	41.0	107.0	2.5	51.0	3.5
P04205	P99119/G99750, **SANTA FE**	26	21.5	39.3	40.0	99.0	3.0	47.0	4.0
P08396	P05457/P04204	17	21.4	36.4	41.0	101.0	1.0	54.0	4.5
P09420	P02630/I03386	13	21.2	41.8	41.0	101.0	2.0	48.0	4.0
P09404	P06121/P05436	24	21.1	38.7	40.0	99.0	2.0	46.5	4.0
P08369	P05410/P04205	32	21.1	37.6	41.0	101.0	2.0	52.0	4.0
P08329	X05129/P02646	20	20.7	39.2	42.0	101.0	2.0	49.0	4.0
P09413	P02633/I03386	29	20.7	42.3	41.0	100.0	1.5	47.0	4.5
I05834	ND020351, **STAMPEDE**	22	20.5	42.7	40.0	105.0	2.5	53.0	4.0
P07751	I02545/P02647	6	20.2	34.4	40.0	103.0	2.5	48.5	3.5
P08339	X05129/P02646	23	19.5	38.1	41.0	102.0	2.0	50.5	4.5
P08325	P00218/X05129	11	19.4	40.4	41.0	101.0	1.5	49.0	4.0
P08371	P05410/P04205	34	19.4	39.0	41.0	102.0	2.0	54.5	4.0
P08364	P02633/P00225	19	19.1	39.4	41.0	100.0	1.5	52.5	4.0
P08391	P05410/P00225	33	18.9	35.8	41.0	104.0	1.5	54.5	3.5
P09417	P02630/I04305	21	18.4	38.3	41.0	100.0	1.5	46.0	4.0
P10502	P06121/P05436	15	16.7	36.8	41.0	102.0	2.0	49.0	4.0
MEAN (36)			22.3	39.0	41.0	101.7	2.0	50.8	4.2
LSD (.05)			3.2	3.6	2.2	2.8	1.0	2.6	0.8
CV (%)			10.4	6.6	2.6	1.4	25.3	2.5	8.7

EXPERIMENT 1109 STANDARD RED AND PINK YIELD TRIAL									PLANTED: 6/3/11
NAME	**PEDIGREE**	**ENTRY**	**YIELD CWT /ACRE**	**100 SEED WT. (g)**	**DAYS TO FLOWER**	**DAYS TO MATURITY**	**LODGING (1-5)**	**HEIGHT (cm)**	**DES. SCORE**
S08409	R98026/S02753	5	31.0	38.4	40.0	102.0	1.5	59.5	6.0
S07501	S00809/I03386//R02205	2	28.6	36.6	44.0	106.0	2.0	57.5	5.0
S08418	S02754/S04503	14	28.0	38.5	42.0	103.0	2.0	53.5	5.5
S00809	R94142/X94076, **SEDONA**	4	27.8	39.6	41.0	104.0	2.0	56.0	5.5
I10125	ND080547	19	27.3	33.7	43.0	104.0	2.5	46.0	4.0
I09208	NDZ06249, **RIO ROJO**	15	26.7	36.1	44.0	104.0	2.5	48.0	4.0
R98026	R94037/R94161, **MERLOT**	1	26.6	43.8	42.0	109.0	2.5	56.0	4.0
S08437	S00809/I06202	17	25.7	42.1	40.0	103.0	3.0	48.0	4.0
I10126	PS02-050-2	20	25.2	35.0	40.0	105.0	2.0	53.0	4.5
R08516	R98026/S02753	3	23.9	41.7	41.0	108.0	2.0	54.5	4.0
S09601	S00809/S02068	18	23.5	33.9	43.0	108.0	2.0	58.5	4.5
S08419	S02754/S04503	12	22.8	39.1	40.0	104.0	2.0	54.5	5.5
R09506	R06249/R98026	13	22.3	39.0	41.0	106.0	2.5	55.0	4.5
R08542	I04310/R98026	6	21.4	42.6	41.0	109.0	2.0	53.0	4.0
R08514	R98026/S02753	16	21.3	41.3	43.0	109.0	2.0	58.0	4.0
I09207	NDZ06209	8	21.2	42.6	40.0	103.0	2.0	47.0	4.0
R09504	S02068/S04504	11	20.6	43.2	42.0	105.0	2.0	54.5	4.0
R09509	R06415/R06427	9	20.3	38.3	42.0	107.0	2.5	51.0	4.5
R08541	R98026/X05139	7	19.2	44.7	41.0	110.0	2.0	56.0	4.0
R09501	X05137/X05145	10	15.2	35.2	40.0	107.0	1.5	53.5	4.0
MEAN (20)			23.9	39.3	41.2	105.6	2.1	53.7	4.5
LSD (.05)			4.4	2.9	1.5	2.9	0.9	4.7	0.9
CV (%)			12.7	5.2	1.7	1.3	19.3	4.2	9.4

EXPERIMENT 1110 PRELIMINARY GREAT NORTHERN YIELD TRIAL								PLANTED: 6/3/11	
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE
G11404	G05220//G04207/P05437	14	25.3	38.2	40.0	104.0	2.5	51.5	4.0
G08119	MATTERHORN/EMP507	3	24.7	36.5	41.0	104.0	2.5	54.0	4.5
G11471	P07863//G05241/B04588	81	24.5	35.4	42.0	104.0	2.0	56.0	4.5
G11464	G07309//G07302/I07158	74	24.3	45.2	40.0	104.0	2.0	54.0	4.5
G08157	MATTERHORN/EMP507	9	24.0	39.2	42.0	100.0	2.0	53.5	4.5
G11469	P07863//G05241/B04588	79	23.4	35.4	42.0	102.0	2.0	51.5	4.5
G11470	P07863//G05241/B04588	80	23.4	34.1	43.0	103.0	2.0	56.0	5.5
G08163	MATTERHORN/EMP507	10	23.3	42.0	40.0	102.0	2.5	51.0	4.0
G11438	G07309/P08401	48	23.0	41.2	40.0	102.0	1.5	52.0	4.5
G11451	G08274/P08410	61	22.9	37.9	40.0	100.0	1.5	49.0	4.5
G08118	MATTERHORN/EMP507	2	22.8	36.9	45.0	103.0	2.5	55.5	4.5
G08114	MATTERHORN/EMP507	1	22.5	35.6	44.0	105.0	2.0	58.0	4.0
G11402	P07863//G05241/B04588	12	22.5	30.6	40.0	102.0	2.0	56.0	5.0
G11421	G07302//I07130/G05239	31	22.5	36.3	41.0	102.0	2.0	54.0	4.5
G11450	G08274/P08410	60	22.3	38.2	40.0	101.0	2.0	55.0	6.0
G09303	G04207/P05437	82	22.3	36.2	40.0	102.0	2.0	56.0	5.0
G08121	MATTERHORN/EMP507	4	21.8	31.9	43.0	104.0	2.5	54.5	4.5
G08136	MATTERHORN/EMP507	6	21.8	38.8	40.0	100.0	2.0	53.0	4.5
G11449	G08274/P08410	59	21.7	35.2	41.0	101.0	2.0	54.5	6.0
G11427	G07309//G07302/I07158	37	21.6	39.7	40.0	101.0	2.0	54.0	4.0
G11452	G08274/P08410	62	21.5	38.8	40.0	101.0	2.5	48.0	4.5
G11461	G07302//G07302/X07810	71	21.5	30.9	41.0	102.0	2.0	53.5	4.5
G11429	G07309//G05241/B04588	39	21.0	33.6	41.0	102.0	2.0	54.0	5.0
G11441	G07309/P08401	51	20.9	40.8	41.0	102.0	2.0	53.5	4.5
G08138	MATTERHORN/EMP507	7	20.7	36.4	41.0	101.0	3.0	48.5	4.0
G11409	G07302*/X07810	19	20.7	37.3	40.0	101.0	2.0	53.0	5.0
G11463	G07309//G04207/I07130	73	20.6	43.1	40.0	106.0	2.0	54.5	4.5
G11405	G05220//G04207/P05437	15	20.5	37.1	40.0	104.0	1.5	54.5	4.0
G11454	G05239/G07302	64	20.5	42.5	40.0	103.0	2.0	51.5	4.0
G11410	G05220//G04207/P05437	20	20.4	41.5	40.0	102.0	2.0	53.0	5.0
G11416	G05220/X07810	26	20.3	34.1	41.0	104.0	2.0	51.5	4.5
G11417	G05220//G04207/P05437	27	20.3	35.4	41.0	104.0	2.0	57.0	4.5
G11426	G07302//G05220/X07810	36	20.3	37.2	39.0	100.0	1.5	52.0	5.0
G11431	G07309//G05241/B04588	41	20.3	32.9	40.0	103.0	2.0	55.0	5.5
G11424	G07302//G04207/I07130	34	20.2	40.6	40.0	102.0	2.0	53.0	4.5
G11436	G07302/P07406	46	19.8	36.4	40.0	103.0	2.0	57.0	4.5
G11456	G07302/P04205	66	19.7	38.9	40.0	103.0	2.0	53.5	4.5
G11406	MATTERHORN//G04207/P05437	16	19.6	38.1	40.0	103.0	2.0	53.0	4.0
G11420	P05463/X06136	30	19.5	35.5	41.0	103.0	2.0	50.0	4.0
G11411	G05220/X07810	21	19.4	36.4	41.0	103.0	1.0	57.0	5.0
G11459	G08210/P06125	69	19.4	37.0	41.0	102.0	1.5	56.5	5.5
G11418	G05220//G04207/P05437	28	19.3	36.6	40.0	104.0	2.5	52.5	5.0
G11428	G07309//G07302/I07158	38	19.3	39.6	39.0	102.0	2.0	55.0	5.0
G11444	G08217/P08410	54	19.3	39.6	40.0	101.0	1.5	49.0	4.0
G93414	**MATTERHORN**	84	19.3	36.6	40.0	100.0	2.0	49.0	4.5

EXPERIMENT 1110 PRELIMINARY GREAT NORTHERN YIELD TRIAL								PLANTED: 6/3/11	
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE
G11423	G07302//I07130/G05239	33	19.2	39.1	40.0	101.0	2.0	53.5	4.5
G11440	G07309/P08401	50	19.2	42.0	40.0	102.0	1.0	50.0	4.0
G11403	G05220//G04207/P05437	13	19.1	43.1	40.0	102.0	2.0	52.0	4.0
G11425	G07302//G05220/X07810	35	19.1	34.3	41.0	100.0	2.0	53.0	4.0
G11422	G07302//I07130/G05239	32	19.0	40.3	41.0	103.0	2.0	49.0	4.0
G11465	I07144//G04207/I07158	75	19.0	32.7	41.0	102.0	2.0	56.0	6.0
G11445	G08217/P08410	55	18.9	40.3	41.0	102.0	1.0	49.5	4.0
G11455	G07302/P04205	65	18.9	40.0	40.0	101.0	2.0	51.5	4.5
G11439	G07309/P08401	49	18.8	43.0	40.0	102.0	1.5	49.0	4.0
G11453	G05239/G07302	63	18.8	40.2	40.0	102.0	2.0	50.5	5.0
G11467	I07144//G04207/I07158	77	18.8	30.2	41.0	103.0	2.0	55.5	5.0
G11414	G93414//G05463/P05437	24	18.7	38.6	40.0	104.0	2.0	52.0	4.0
G11433	G07302/P07406	43	18.7	35.7	41.0	102.0	2.0	57.5	4.5
G11412	G05220/X07810	22	18.6	32.9	40.0	101.0	1.0	57.0	5.5
G11407	MATTERHORN//G05463/P05437	17	18.5	37.9	40.0	103.0	2.5	50.5	4.0
G11462	G07302//G07302/X07810	72	18.4	31.0	40.0	99.0	2.0	53.0	5.5
G11435	G07302/P07406	45	18.3	36.6	40.0	102.0	1.0	59.0	5.0
G11468	I07144//G04207/I07158	78	18.2	33.0	41.0	104.0	2.0	52.0	4.5
G11447	G08243/P08410	57	18.0	40.1	40.0	100.0	1.5	50.5	4.0
G11413		23	17.9	37.3	40.0	101.0	1.5	53.0	4.0
G11443	G08217/P08410	53	17.7	38.6	41.0	101.0	1.0	47.0	4.0
G11432	G05239/P08410	42	17.4	38.7	40.0	102.0	2.0	48.5	4.0
G11419	P05463/X06136	29	17.2	33.2	41.0	102.0	2.0	50.5	5.0
G11458	G08210/P06125	68	17.1	37.8	41.0	101.0	2.0	54.0	4.5
I09112	NE1-08-16	83	17.0	33.5	40.0	102.0	3.0	48.5	4.0
G11408	G07317/X07808	18	16.9	32.4	39.0	103.0	1.5	52.5	4.5
G11401	P07863//G05241/B04588	11	16.8	28.1	42.0	105.0	1.5	52.0	4.0
G11442	G08215/P07406	52	16.8	38.7	41.0	103.0	2.0	53.0	4.5
G11460	G07302//G07302/X07810	70	16.7	41.0	39.0	104.0	2.5	53.0	4.5
G11446	G08243/P08410	56	16.4	34.5	40.0	102.0	1.0	47.0	4.0
G08128	MATTERHORN/EMP507	5	16.0	41.7	43.0	106.0	2.0	54.0	3.5
G11437	G07302/P07406	47	15.8	38.8	41.0	104.0	1.5	57.0	4.0
G11457	G08210/G08275	67	15.6	38.3	41.0	105.0	2.0	52.5	4.5
G11448	G08243/P08410	58	15.5	34.5	40.0	102.0	1.5	49.5	4.5
G11415	G04207/X07807	25	14.0	30.4	41.0	104.0	1.5	57.0	5.0
G11434	G07302/P07406	44	13.9	35.9	40.0	104.0	1.5	55.0	4.0
G11430	G07309//G05241/B04588	40	13.6	31.4	40.0	104.0	2.0	51.0	4.5
G08146	MATTERHORN/EMP507	8	12.2	37.0	42.0	106.0	2.5	51.5	3.0
G11466	I07144//G04207/I07158	76	10.9	31.3	41.0	101.0	1.0	48.5	4.5
MEAN (84)			19.5	37.0	40.4	102.2	1.9	52.9	4.5
LSD (.05)			3.8	3.4	1.4	2.3	0.7	1.1	1.1
CV (%)			12.2	5.6	1.7	1.1	18.0	1.1	12.8

EXPERIMENT 1111 PRELIMINARY PINTO YIELD TRIAL									PLANTED: 6/3/11
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE
P07863	I02545/P02630	35	27.7	39.0	40.0	105.0	2.0	56.0	4.0
P08166	MATTERHORN/EMP507	33	27.3	39.4	44.0	101.0	1.0	55.0	4.0
P11518	SANTA FE/P07806	20	26.4	44.8	45.0	102.0	1.0	58.0	5.5
P08161	MATTERHORN/EMP507	31	26.4	37.0	43.0	103.0	2.0	56.5	5.5
I07113	PNE-6-94-75/Kodiak, **LAPAZ**	36	26.1	42.7	44.0	105.0	2.0	54.5	4.0
P08162	MATTERHORN/EMP507	32	25.6	33.4	41.0	100.0	2.0	52.0	4.5
P11522	P04203/P06125	24	24.3	36.0	40.0	101.0	1.5	54.0	6.0
P11456	G07302/SANTA FE	18	23.6	37.3	41.0	100.0	2.0	51.0	4.5
P11525	I06228/P04203	27	23.4	39.0	42.0	101.0	2.0	54.5	5.0
P11519	SANTA FE/P07806	21	23.1	42.3	47.0	101.0	1.5	56.5	4.0
P11506	P06121/P05436	6	22.8	39.0	44.0	101.0	1.5	54.0	5.5
P11517	P06131//P06137/P05436	19	22.5	43.5	41.0	101.0	2.0	52.0	5.0
P11510	G08215/P07406	10	21.5	39.0	40.0	104.0	2.0	53.0	4.0
P11526	SANTA FE/P07806	28	21.4	37.1	40.0	103.0	2.0	52.5	4.5
P11507	P04203/AZTEC	7	21.3	36.8	42.0	100.0	2.0	50.5	5.0
P11523	P04203/P06125	25	21.3	38.8	42.0	102.0	1.0	52.5	6.0
P11512	G08215/I06228	12	21.2	40.5	44.0	103.0	1.5	58.0	4.5
P11511	G08215/I06228	11	21.1	41.8	44.0	102.0	1.0	57.5	4.0
P11516	G07302/SANTA FE	16	21.0	37.2	41.0	100.0	2.5	51.0	4.5
P11508	G07302/P07407	8	20.9	40.7	40.0	103.0	1.5	55.5	4.0
P04205	P99119/G99750, **SANTA FE**	34	20.8	38.3	40.0	99.0	3.0	47.0	4.0
P11509	G08215/P07406	9	20.7	40.4	41.0	104.0	2.0	58.0	4.5
P11442	G08215/P07406	17	20.5	38.4	40.0	105.0	2.0	54.0	4.0
P11528	SANTA FE/P07806	30	20.0	38.4	40.0	102.0	2.0	50.0	4.0
P11515	G08217/SANTA FE	15	19.7	37.8	39.0	99.0	2.5	45.0	4.0
P11524	I06228/P04203	26	19.7	40.5	40.0	102.0	2.0	52.5	4.5
P11513	G08217/SANTA FE	13	19.4	43.1	40.0	101.0	2.0	48.5	4.0
P11520	P06131//SANTA FE/I06228	22	19.4	42.0	41.0	99.0	2.0	48.5	4.0
P11504	G04517/P05437	4	18.5	33.6	40.0	101.0	1.5	47.5	3.5
P11514	G08217/SANTA FE	14	18.5	41.1	40.0	99.0	2.5	46.5	4.0
P11505	P06121/P05436	5	18.4	43.3	41.0	104.0	1.0	51.0	4.0
P11501	USPT-CBB-3/SANTA FE	1	17.5	38.2	41.0	102.0	2.5	47.0	4.0
P11521	P06131//SANTA FE/I06228	23	17.4	39.2	43.0	101.0	2.0	48.5	4.0
P11527	SANTA FE/P07806	29	16.8	37.8	40.0	100.0	3.0	46.0	4.0
P11503	USPT-CBB-3/SANTA FE	3	16.5	36.7	41.0	100.0	2.5	47.5	4.0
P11502	USPT-CBB-3/SANTA FE	2	13.5	35.5	40.0	100.0	2.5	46.0	4.0
MEAN (36)			21.3	39.2	41.2	101.3	1.9	51.9	4.4
LSD (.05)			4.6	3.4	2.9	1.7	0.2	2.9	0.6
CV (%)			13.0	5.3	3.4	0.8	6.1	2.7	6.9

EXPERIMENT 1112 PRELIMINARY RED AND PINK YIELD TRIAL (1)									PLANTED: 6/4/11
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE
S00809	R94142/X94076, **SEDONA**	48	28.6	41.7	40.0	102.0	2.0	56.5	5.5
R11623	R08515/R02002	31	27.5	42.3	40.0	102.0	1.0	54.0	4.5
S11708	R06415/I08971	45	27.5	34.6	42.0	103.0	2.5	50.0	4.5
R11610	R06412//S07501/R06422	16	26.7	35.6	42.0	102.0	3.0	48.5	4.0
R11633	R06412//P06121/P05436	44	25.6	44.3	41.0	104.0	1.0	56.0	6.0
R98026	R94037/R94161, **MERLOT**	47	25.5	44.3	40.0	106.0	2.0	55.5	4.5
R11615	R08504/I08962	22	25.4	40.9	41.0	103.0	2.0	53.0	4.5
S11707	S04505//I07119/R06420	42	25.2	42.2	39.0	103.0	2.0	54.0	5.5
S11709	S04505/X08701	46	24.9	43.2	40.0	102.0	1.0	56.0	5.5
S11701	S04504/R06420	10	24.2	36.7	40.0	101.0	2.0	51.5	5.0
S11610	R06412//S07501/R06422	15	24.1	32.5	42.0	102.0	2.5	51.5	4.5
R11608	(X08708 -02)	8	23.8	42.4	40.0	105.0	1.0	55.0	4.5
R11621	R08504/I08962	28	23.4	39.4	41.0	102.0	2.5	47.5	4.0
R11614	R08504/I08962	21	23.0	40.0	41.0	103.0	2.5	49.0	4.5
R11607	S06410/R06422	7	22.9	42.2	39.0	100.0	2.0	53.0	5.0
R11616	R08504/I08962	23	22.7	40.7	40.0	101.0	2.0	50.5	4.0
R11604	R02189//R06414/RAB651	4	22.6	38.3	40.0	102.0	2.0	53.0	5.0
R11624	R08515/R02002	32	22.6	41.6	39.0	104.0	1.0	53.0	4.5
S11705	R06412//R06412/S07809	14	22.5	36.6	40.0	99.0	2.5	47.5	4.0
S11703	R06418/S07809	12	22.2	38.2	39.0	104.0	2.0	53.0	4.5
R11611	R06412//S07501/R06422	17	21.9	38.4	40.0	105.0	2.5	48.5	4.0
S11631	R06412/X08702	40	21.9	32.8	41.0	100.0	2.0	51.5	4.5
R11629	R08504/I08966	37	21.8	41.8	40.0	102.0	1.0	51.0	4.0
R11632	S08406/S07809	43	21.8	44.1	41.0	103.0	1.5	55.0	5.0
R11627	R06427/I07106//R06420	35	21.6	34.6	41.0	101.0	2.5	48.0	4.5
R11617	R08504/I08962	24	21.5	39.3	39.0	105.0	2.0	53.0	4.5
S11621	R08504/I08962	29	21.5	38.5	40.0	101.0	2.5	47.0	4.0
R11630	R08504/I08960	38	21.2	32.5	39.0	101.0	2.0	49.0	4.5
R11618	R08504/I08962	25	21.1	37.5	39.0	104.0	3.0	48.5	3.5
R11619	R08504/I08962	26	21.0	35.0	41.0	102.0	2.5	47.5	4.0
S11706	S04505//I07148/R02002	41	20.8	31.2	39.0	104.0	2.5	52.0	5.0
S11702	S04504/R06420	11	20.4	35.9	40.0	101.0	1.5	53.5	5.0
S11611	R06412//S07501/R06422	18	20.4	37.9	40.0	101.0	2.0	49.5	4.5
R11631	R06412/X08702	39	20.3	32.9	41.0	101.0	2.0	50.0	4.5
R11606	S04504/R06420	6	20.0	34.2	39.0	101.0	2.0	49.0	4.5
R11605	S02753/R06420	5	19.7	34.8	39.0	100.0	2.0	50.5	4.0
S11704	X08707-06	13	19.5	39.5	40.0	105.0	2.0	54.0	4.5
R11620	R08504/I08962	27	19.0	37.6	40.0	102.0	3.0	47.5	4.0
R11613	I07148//R06422/S06410	20	18.8	33.3	42.0	105.0	2.5	50.5	3.5
R11622	R08513/R06420	30	18.0	33.3	40.0	106.0	2.0	51.5	3.5

EXPERIMENT 1112 PRELIMINARY RED AND PINK YIELD TRIAL (1)								PLANTED: 6/4/11	
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE
R11628	R02002/I08959	36	18.0	40.8	40.0	105.0	1.0	53.0	3.5
R11609	(X08708 -05)	9	17.2	52.0	40.0	106.0	2.0	54.0	3.5
R11612	I07148//R06422/S06410	19	16.8	30.2	41.0	104.0	2.0	49.0	4.0
R11626	R06427/I07106//R06420	34	16.6	32.0	40.0	104.0	2.0	48.0	3.5
R11603	MERLOT*/R06420	3	16.5	41.0	40.0	106.0	2.0	56.0	3.0
R11601	MERLOT*/R06420	1	16.4	40.4	41.0	106.0	2.0	54.5	3.5
R11625	I08964/R02002	33	16.4	30.7	39.0	99.0	2.0	49.5	4.0
R11602	MERLOT*/R06420	2	15.9	39.8	39.0	104.0	1.5	49.5	3.5
MEAN (48)			21.6	38.1	39.9	102.6	2.0	51.4	4.3
LSD (.05)			4.0	3.6	1.6	1.2	0.8	2.4	1.3
CV (%)			11.3	5.8	1.9	0.6	18.8	2.3	15.4

EXPERIMENT 1113 PRELIMINARY FLOR DE MAYO YIELD TRIAL									PLANTED: 6/4/11
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE
R11817	X07717/X07710	17	31.5	43.2	43.0	103.0	2.6	47.3	4.0
R11803	X07712/X07721	3	29.7	36.0	40.0	100.0	2.0	49.8	5.0
R11808	X07714/X07710	8	29.0	31.6	45.0	103.0	1.9	55.8	6.0
R08516	R98026/S02753	22	28.7	40.4	40.0	105.0	2.0	56.9	5.5
R11806	X07714/X07710	6	28.1	33.0	44.0	101.0	1.9	55.2	6.0
R98026	R94037/R94161,**MERLOT**	21	26.9	44.4	41.0	104.0	2.0	53.6	5.0
S08418	S02754/S04503	25	26.7	37.8	41.0	102.0	2.0	55.4	5.5
R11804	X07714/X07710	4	25.8	30.4	43.0	101.0	2.0	54.6	5.5
R11809	X07714/X07710	9	25.6	31.2	45.0	101.0	2.0	51.0	5.5
R11802	X07712/X07721	2	25.0	39.3	40.0	101.0	2.0	48.2	4.0
S00809	R94142/X94076,**SEDONA**	23	25.0	38.7	40.0	101.0	2.0	56.5	6.0
R11801	X07712/X07721	1	24.8	38.9	40.0	100.0	1.9	49.6	4.0
R11805	X07714/X07710	5	24.7	31.5	43.0	102.0	2.2	54.4	6.0
R11811	X07714/X07710	11	24.7	35.5	45.0	101.0	1.9	53.0	5.5
R11816	X07717/X07710	16	24.3	31.4	47.0	104.0	1.9	56.2	5.5
R11814	X07714/X07710	14	23.7	32.3	44.0	102.0	2.0	52.5	5.5
R11818	X07717/X07710	18	23.7	43.1	45.0	102.0	3.0	46.2	4.0
R11810	X07714/X07710	10	23.6	30.1	44.0	102.0	1.9	53.5	5.5
S08419	S02754/S04503	24	22.2	40.4	40.0	103.0	2.2	53.3	5.0
R11807	X07714/X07710	7	21.5	30.9	45.0	102.0	2.0	54.8	5.5
R11815	X07717/X07710	15	21.2	32.5	44.0	102.0	1.9	55.7	6.0
R11812	X07714/X07710	12	20.7	31.3	46.0	103.0	1.9	55.4	6.0
I11211	**DESERT ROSE**	26	20.6	36.7	39.0	99.0	2.9	46.3	2.5
I11214	**FM DOLORES**	29	20.0	36.1	42.0	106.0	3.9	43.4	3.5
R11819	X07717/X07710	19	19.8	31.8	45.0	104.0	2.0	52.6	5.0
I11212	**FM M38**	27	19.7	35.6	43.0	105.0	3.9	44.6	3.0
R11813	X07714/X07710	13	19.3	32.0	45.0	104.0	1.9	55.9	5.5
R11820	X07714/X07704	20	18.1	39.0	43.0	104.0	2.0	49.3	4.5
I11215	**FM EUGENIA**	30	16.2	35.8	43.0	104.0	3.6	41.9	3.0
I11213	**FM ANITA**	28	15.1	33.7	42.0	104.0	3.6	41.6	3.0
MEAN (30)			23.5	35.5	42.7	102.2	2.3	51.5	4.9
LSD (.05)			5.2	2.1	2.4	2.3	0.4	3.6	1.1
CV (%)			13.5	3.6	2.7	1.1	7.7	3.4	11.1

EXPERIMENT 1114 PRELIMINARY RED AND PINK YIELD TRIAL (2)									PLANTED: 6/4/11
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE
I11226	PK10-6	26	29.6	39.2	40.0	99.0	3.0	47.1	3.0
S00809	R94142/X94076, **SEDONA**	17	28.8	41.9	40.0	103.0	2.0	60.0	5.0
I09206	PK9-7	23	27.9	40.9	39.0	99.0	2.5	48.0	4.5
I11228	PK10-9	28	26.9	37.6	41.0	103.0	2.5	53.2	5.0
R98026	R94037/R94161, **MERLOT**	2	26.6	41.6	40.0	104.0	2.0	56.4	4.5
I11227	PK10-8	27	26.5	37.1	40.0	99.0	2.0	50.1	4.5
I11231	PK10-24	31	26.5	38.7	39.0	105.0	2.5	54.0	4.5
I04315	**USRM-20**	1	26.2	52.5	40.0	98.0	2.5	45.9	3.0
I11203	PK7-2	18	26.1	39.0	39.0	97.0	2.0	46.3	3.0
R08516	R98026/S02753	32	25.1	39.7	42.0	106.0	2.0	56.2	4.0
I11230	PK10-20	30	24.5	41.7	39.0	104.0	2.0	53.8	5.5
I81098	**ROZA**	16	24.3	40.2	40.0	97.0	5.0	34.2	2.0
I09205	PK9-4	22	24.3	42.0	39.0	99.0	2.5	47.7	4.5
I11225	PK10-4	25	24.1	38.2	40.0	97.0	2.0	47.2	3.5
I11202	PK9-9	24	23.3	41.8	40.0	105.0	4.5	42.7	2.5
I11223	PK7-4	19	22.8	40.8	40.0	96.0	2.0	45.5	3.0
I11224	PK9-3	21	22.7	38.6	39.0	97.0	2.0	48.3	3.5
I11205	SR10-5	8	22.6	39.4	40.0	103.0	3.0	48.1	4.0
I11229	PK10-19	29	22.5	39.5	39.0	100.0	2.5	51.0	4.5
I11218	SR10-12	10	22.3	38.4	39.0	108.0	3.0	52.6	3.0
I11216	SR10-2	6	21.8	45.4	40.0	100.0	2.0	49.7	4.5
I10126	PS02-050-2	15	21.6	38.2	25.0	104.0	2.0	52.9	5.0
I11221	SR10-20	13	21.4	39.6	40.0	101.0	2.0	50.6	4.0
I09204	PK9-1	20	20.8	38.3	39.0	98.0	2.0	47.6	3.5
I11217	SR10-11	9	20.7	36.1	42.0	108.0	2.0	54.0	3.5
I04316	**NW-63**	3	20.5	34.8	39.0	98.0	4.5	34.7	2.5
I11219	SR10-14	11	19.5	42.5	39.0	102.0	2.0	53.0	5.0
I11222	SR10-21	14	18.9	41.9	39.0	106.0	2.0	52.0	4.0
I09201	SR7-3	4	18.2	43.0	40.0	96.0	2.5	40.7	2.5
I11206	SR10-4	7	17.9	44.9	40.0	98.0	2.0	46.2	4.0
I11220	SR10-15	12	16.2	36.4	41.0	109.0	2.5	57.4	3.5
I09203	SR9-5	5	16.1	31.5	41.0	110.0	2.0	45.3	2.5
MEAN (32)			23.0	40.0	39.1	101.5	2.5	49.1	3.8
LSD (.05)			5.8	3.8	7.2	2.8	0.5	7.1	1.0
CV (%)			15.4	5.7	8.9	1.3	9.5	6.8	12.5

EXPERIMENT 1115 COMMERCIAL PINTO BEAN QUALITY TRIAL									PLANTED: 6/4/11
NAME	**PEDIGREE**	**ENTRY**	**YIELD CWT /ACRE**	**100 SEED WT. (g)**	**DAYS TO FLOWER**	**DAYS TO MATURITY**	**LODGING (1-5)**	**HEIGHT (cm)**	**DES. SCORE**
I07113	PNE-6-94-75/Kodiak, **LAPAZ**	6	27.8	48.7	42.0	101.0	2.0	55.0	6.0
I99540	**Bill Z**	9	27.6	42.3	38.0	99.0	5.0	31.5	2.0
I09101	CBB/Matterhorn//Maverick, **ND-307**	7	26.9	47.1	40.0	103.0	2.0	50.5	4.5
I99193	**PONCHO**	8	26.2	45.7	38.0	99.0	4.0	31.5	2.0
I99117	**BUSTER**	3	23.4	42.4	40.0	105.0	3.0	39.0	3.5
I98313	CO51715, **MONTROSE**	13	22.9	42.9	39.0	99.0	5.0	30.5	2.0
I84002	NW410//VICTOR/AURORA, **OTHELLO**	12	22.8	42.9	38.0	96.0	5.0	30.0	2.0
I91119	WM2-89-5, **CHASE**	11	22.7	44.8	41.0	99.0	4.0	31.0	2.0
I06249	ND020069, **LARIAT**	1	22.1	48.4	41.0	106.0	3.0	50.5	4.5
I05834	ND020351, **STAMPEDE**	5	21.2	48.5	39.0	104.0	2.0	54.5	4.5
I95310	88-048-03, **MAVERICK**	4	21.1	46.4	40.0	101.0	3.5	40.5	3.5
P04205	P99119/G99750, **SANTA FE**	14	20.1	46.3	40.0	100.0	2.5	47.0	5.0
I00657	**BUCKSKIN**	10	17.5	41.6	39.0	98.0	4.0	31.0	2.0
I10109	Buster/Matterhorn, **WINDBREAKER**	2	16.9	44.2	40.0	101.0	2.5	46.5	4.5
MEAN (14)			22.8	45.2	39.3	100.6	3.4	40.6	3.4
LSD (.05)			5.3	3.8	1.7	3.9	0.7	5.4	0.8
CV (%)			16.4	5.8	1.9	1.8	8.9	6.2	10.6

EXPERIMENT 1116 COMMERCIAL NAVY BEAN QUALITY TRIAL									PLANTED: 6/6/11
NAME	**PEDIGREE**	**ENTRY**	**YIELD CWT /ACRE**	**100 SEED WT. (g)**	**DAYS TO FLOWER**	**DAYS TO MATURITY**	**LODGING (1-5)**	**HEIGHT (cm)**	**DES. SCORE**
I08958	Mayflower/Avanti, **MEDALIST**	5	26.2	23.8	42.0	106.0	2.0	54.5	5.0
I91112	**SCHOONER**	8	25.4	22.1	40.0	103.0	3.0	44.5	4.0
I06271	ND012103, **AVALANCHE**	7	24.4	23.9	41.0	103.0	2.0	55.0	5.0
I08902	**HYLAND T9905**	4	24.0	26.6	43.0	104.0	2.5	52.0	4.5
I10108	**ENSIGN**	2	23.9	26.5	42.0	100.0	3.0	48.0	4.0
I92002	C-20*3//GTS-0801/Seafarer, **VISTA**	6	23.0	24.5	40.0	105.0	3.0	50.5	4.0
I95401	**NAVIGATOR**	1	22.2	24.4	43.0	101.0	1.0	53.0	5.0
I88106	C-20/FLW,NX041 NDSU, **NORSTAR**	3	21.2	23.3	39.0	105.0	2.5	48.5	4.0
MEAN (8)			23.8	24.4	41.0	103.2	2.4	50.8	4.4
LSD (.05)			3.9	1.5	2.8	2.5	0.8	4.2	1.2
CV (%)			11.2	4.3	2.9	1.0	13.8	3.5	11.9

EXPERIMENT 1117 MRPN/CDBN YIELD TRIAL									PLANTED: 6/4/11
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE
I11246	CO 93195-17	12	24.4	38.9	42.0	104.0	2.5	52.5	4.0
I11255	PT8-6	31	23.9	40.3	40.0	104.0	2.0	52.0	5.0
I09101	CBB/Matterhorn//Maverick, **ND-307**	35	23.8	41.6	40.0	101.0	2.5	52.5	4.5
I11245	CO 92838-11	11	23.7	42.8	41.0	101.0	2.0	53.5	5.0
I09114	NE2-08-15	16	23.0	42.9	42.0	101.0	3.0	46.0	4.0
I09109	CO55646, **LONG'S PEAK**	28	22.5	36.8	40.0	100.0	2.0	53.0	6.0
I11256	PT8-15	32	22.4	48.2	40.0	96.0	2.0	46.0	3.0
I84002	NW410//VICTOR/AURORA, **OTHELLO**	27	22.2	41.0	37.0	96.0	3.5	42.0	3.0
I09105	**SEQUOIA**	39	22.2	37.2	39.0	99.0	2.0	52.0	4.5
I06249	ND020069, **LARIAT**	34	21.9	47.0	43.0	103.0	2.5	54.5	5.0
I09116	NE2-08-17	17	21.7	40.7	42.0	104.0	2.5	50.0	4.0
I11257	PT9-6	33	21.7	47.7	42.0	100.0	2.0	48.0	4.0
I99117	**BUSTER**	24	21.5	43.0	40.0	99.0	2.5	47.0	4.5
I11244	CO 91216-15	10	21.4	45.5	40.0	101.0	2.0	50.5	5.0
I98313	CO51715, **MONTROSE**	26	21.2	38.5	39.0	96.0	4.5	35.0	2.5
I11242	CO 90693-5	8	21.1	39.9	40.0	101.0	2.5	48.5	4.0
P07793	I02545/P02647	48	20.8	38.1	39.0	104.0	2.0	48.5	4.0
P07863	I02545/P02630	20	20.4	44.1	40.0	104.0	2.0	52.0	4.5
I11258	**APACHE**	41	20.3	40.3	39.0	97.0	3.5	41.0	3.0
I08919	ND040111-1	2	19.6	35.5	40.0	102.0	2.0	50.5	5.5
I10111	ND060067	3	19.6	45.0	42.0	102.0	2.0	55.5	5.0
I08933	37-2	47	19.4	39.1	40.0	102.0	2.0	53.5	4.5
I07113	PNE-6-94-75/Kodiak, **LAPAZ**	46	19.3	48.9	43.0	102.0	2.0	53.5	5.0
I06251	CO23704,**CROISSANT**	19	19.2	36.4	39.0	102.0	3.0	48.0	5.0
I11260	ND020351-R	37	19.2	46.1	40.0	103.0	2.0	52.5	5.5
I11254	IP09-3	30	18.7	43.4	40.0	104.0	2.5	46.5	4.5
P09420	P02630/I03386	6	18.5	45.3	41.0	101.0	2.0	51.5	4.5
I10106	**ODYSSEY**	40	18.3	39.6	41.0	96.0	3.5	38.0	2.5
G93414	**MATTERHORN**	25	18.1	37.9	40.0	99.0	2.0	48.5	4.5
I11243	CO 90848-2	9	17.9	40.9	40.0	101.0	2.0	50.0	4.5
I05834	ND020351, **STAMPEDE**	36	17.9	46.2	40.0	103.0	2.0	53.0	5.0
I11262	NE1-06-11	13	17.5	39.9	41.0	101.0	2.0	50.5	4.5
G08254	G04514/G93414	23	17.5	38.9	40.0	103.0	2.0	54.5	4.5
I09112	NE1-08-16	14	17.4	36.7	39.0	100.0	3.0	47.5	4.0
I11263	NE2-06-08	18	17.3	47.7	39.0	98.0	2.5	47.0	3.0
G09303	G04207/P05437	22	17.2	39.4	40.0	101.0	2.0	55.0	5.0
I07142	NE-1-06-12,**COYNE**	42	16.1	38.4	39.0	102.0	2.5	48.5	4.0
I09118	ND060197	1	15.9	40.0	39.0	96.0	2.0	42.0	2.5
I09103	IP08-2	29	15.4	35.4	42.0	108.0	2.0	60.5	3.0
P04205	P99119/G99750, **SANTA FE**	45	15.1	43.9	41.0	99.0	3.0	47.5	4.5

EXPERIMENT 1117 MRPN/CDBN YIELD TRIAL									PLANTED: 6/4/11
NAME	**PEDIGREE**	**ENTRY**	**YIELD CWT /ACRE**	**100 SEED WT. (g)**	**DAYS TO FLOWER**	**DAYS TO MATURITY**	**LODGING (1-5)**	**HEIGHT (cm)**	**DES. SCORE**
I09113	NE1-08-29	15	14.7	42.0	39.0	102.0	2.5	50.5	4.0
I11239	NDF09001	5	14.3	39.1	40.0	100.0	2.0	50.0	4.5
I09106	**MAX**	38	14.1	41.5	40.0	95.0	2.5	40.5	2.5
I11238	ND090713	4	13.6	43.7	41.0	102.0	2.0	50.0	4.5
P10502	P06121/P05436	21	13.4	37.6	40.0	100.0	1.5	52.0	5.0
C06808	I01800/C03129, **BELLAGIO**	43	10.2	50.6	40.0	102.0	3.0	50.5	4.0
I11241	CO 54912-7-14	7	6.9	34.8	42.0	108.0	2.5	53.0	3.0
I04317	C93252/Hooter, **CHIANTI**	44	5.8	53.0	39.0	109.0	2.0	48.0	3.0
MEAN (48)			18.5	41.7	40.0	100.9	2.4	49.4	4.2
LSD (.05)			4.0	4.0	2.5	2.5	0.7	4.4	1.2
CV (%)			13.3	5.9	3.1	1.2	15.2	4.4	14.5

EXPERIMENT 1118 BeanCAP Mesoamerican Yield Trial								PLANTED: 6/4/11		
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE	GROWTH HABIT
BC373	UCD 9634	99	34.8	38.0	40.0	105.0	3.5	50.0	3.5	3.0
BC088	Zorro	36	32.2	22.4	43.0	101.0	2.0	54.0	6.0	2.0
BC086	Seahawk	34	32.1	26.5	40.0	103.0	3.0	47.0	4.0	3.0
BC104	115M (Black Rhino)	41	31.2	26.5	41.0	105.0	3.0	49.5	4.0	3.0
BC124	Shania	43	30.9	24.5	45.0	106.0	2.0	55.5	4.5	3.0
BC093	Merlot	107	30.4	41.9	42.0	104.0	2.0	54.5	5.0	2.0
BC066	C-20	24	30.1	24.6	42.0	106.0	2.5	54.0	4.0	2.0
BC145	Midnight	52	30.1	25.9	42.0	105.0	2.0	54.0	4.5	2.0
BC349	Harrowhawk	91	29.9	24.5	42.0	101.0	2.0	51.5	5.0	2.0
BC395	Black Velvet	103	28.4	28.8	45.0	105.0	2.0	55.5	5.0	2.0
BC061	Neptune	20	28.3	23.0	44.0	107.0	3.0	52.5	4.0	2.0
BC287	A801	67	27.9	28.8	44.0	104.0	2.5	52.5	4.0	3.0
BC087	Condor	35	27.5	27.2	44.0	102.0	2.5	49.5	5.0	2.0
BC336	OAC Rex	85	27.5	25.1	40.0	106.0	2.0	52.5	4.0	2.0
BC084	Phantom	32	26.9	25.2	44.0	102.0	1.5	54.5	4.0	2.0
BC053	F04-2801-4-1-2	15	26.6	30.3	40.0	102.0	3.0	50.0	4.5	2.0
BC286	A285	66	26.4	28.3	45.0	103.0	2.5	51.0	4.5	2.0
BC060	Swan Valley	19	26.2	21.0	42.0	108.0	3.0	52.5	4.0	2.0
BC215	A-55	57	26.2	28.4	43.0	106.0	1.0	65.0	4.0	2.0
BC319	Reliant	77	26.1	22.3	43.0	102.0	2.0	51.5	5.0	2.0
BC354	T9905	95	26.0	26.9	42.0	102.0	2.0	54.0	6.0	2.0
BC050	F04-2801-4-6-6	13	25.9	28.4	44.0	99.0	2.0	50.5	5.0	2.0
BC126	Loreto	45	25.9	25.1	43.0	101.0	2.0	54.5	5.0	2.0
BC393	Avanti	101	25.9	22.1	39.0	101.0	2.0	50.5	5.0	2.0
BC130	Seabiskit	49	25.7	21.5	43.0	105.0	3.0	48.0	4.0	3.0
BC027	Xan 176	6	25.4	29.2	44.0	102.0	2.0	50.0	4.0	3.0
BC051	F04-2801-4-5-1	14	25.0	26.9	43.0	101.0	2.0	50.5	5.0	2.0
BC355	T9903	96	24.6	30.2	41.0	103.0	2.0	53.0	4.0	2.0
BC219	ICB-3	61	24.3	25.2	41.0	98.0	4.0	39.5	3.5	3.0
BC030	Morales	7	24.2	30.3	45.0	100.0	3.5	46.0	4.0	3.0
BC127	Schooner	46	24.2	23.5	40.0	102.0	3.0	46.0	4.0	2.0
BC216	I9365-31	58	24.2	31.0	42.0	105.0	3.5	46.5	4.0	3.0
BC085	Jaguar	33	24.1	22.3	42.0	99.0	1.0	51.5	5.5	2.0
BC090	B05055	37	24.1	23.3	43.0	102.0	2.0	53.0	5.0	2.0
BC301	Stampede	105	24.1	50.5	41.0	104.0	2.5	54.0	4.5	2.0
BC339	Nautica	86	23.9	21.7	44.0	102.0	2.0	55.0	6.0	2.0
BC032	DPC-4	9	23.8	25.4	45.0	103.0	1.5	51.5	5.0	2.0
BC273	Orca	65	23.8	39.1	41.0	104.0	3.0	48.5	4.0	2.0
BC372	UCD 96114	98	23.8	26.4	44.0	101.0	1.5	50.0	4.0	2.0
BC125	Bandit	44	23.7	24.9	44.0	104.0	2.0	53.0	5.0	2.0

EXPERIMENT 1118 BeanCAP Mesoamerican Yield Trial								PLANTED: 6/4/11		
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE	GROWTH HABIT
BC350	AC Harblack	92	23.5	22.0	42.0	99.0	2.5	47.0	4.0	3.0
BC033	PR 0443-151	10	23.4	23.0	41.0	99.0	2.5	48.5	5.0	2.0
BC054	Michelite	16	23.4	21.4	43.0	107.0	2.0	49.5	3.5	3.0
BC290	BAT 477	68	23.3	29.1	45.0	103.0	3.5	39.0	3.5	3.0
BC320	Vista	78	23.3	22.7	42.0	103.0	2.0	54.0	4.5	2.0
BC056	Seafarer	18	23.2	20.9	40.0	102.0	2.0	47.5	4.0	1.0
BC133	Medalist	50	23.1	22.3	41.0	104.0	1.5	55.0	5.5	2.0
BC097	N05324	40	22.8	27.6	42.0	102.0	1.5	56.5	5.5	2.0
BC341	Fleetwood	87	22.6	20.3	40.0	106.0	2.0	51.0	4.5	1.0
BC067	Laker	25	22.5	19.8	40.0	106.0	2.0	51.0	4.0	1.0
BC322	Blackjack	80	22.3	25.4	42.0	100.0	3.0	48.0	4.0	2.0
BC343	OAC Gryphon	89	22.2	22.2	40.0	104.0	3.0	49.5	4.0	3.0
BC306	Avalanche	72	22.1	23.7	41.0	101.0	2.0	54.0	5.5	2.0
BC062	Domino	21	21.9	25.1	43.0	103.0	2.0	52.0	3.0	2.0
BC311	ND021574	75	21.8	23.6	44.0	104.0	2.0	53.0	4.5	2.0
BC310	ND021717	74	21.7	23.7	43.0	100.0	2.0	52.0	5.0	2.0
BC024	Croissant	106	21.6	38.0	39.0	101.0	3.0	48.5	4.5	3.0
BC010	AC Black Diamond	4	21.4	31.6	42.0	99.0	3.0	47.5	3.5	3.0
BC128	Ensign	47	21.4	26.0	44.0	100.0	2.0	49.5	4.5	3.0
BC146	Black Knight	53	21.4	22.9	42.0	104.0	1.5	54.5	5.0	2.0
BC304	Arthur	70	21.3	19.9	42.0	100.0	1.0	59.0	5.0	2.0
BC041	Aifi Wuriti	11	21.2	27.9	40.0	103.0	2.5	47.0	4.0	2.0
BC403	McHale	104	21.2	22.5	40.0	102.0	2.0	55.0	5.5	2.0
BC291	SEA 10	69	21.1	40.1	41.0	100.0	4.0	30.0	3.0	3.0
BC134	Navigator	51	21.0	26.6	43.0	100.0	1.5	51.5	5.0	2.0
BC096	Cornell 49-242	39	20.9	26.1	43.0	105.0	3.5	47.5	3.5	3.0
BC260	USWA-50	64	20.8	18.9	39.0	104.0	4.0	37.5	3.0	3.0
BC392	Albion	100	20.8	24.9	38.0	98.0	2.0	45.5	4.5	1.0
BC074	Huron	28	20.5	25.7	39.0	105.0	2.5	48.5	4.0	2.0
BC327	CDC Whitecap	82	20.5	26.6	39.0	102.0	2.0	48.5	4.0	2.0
BC069	Blackhawk	27	20.3	28.2	41.0	104.0	1.5	55.0	4.5	2.0
BC129	Voyager	48	20.2	21.1	38.0	101.0	3.0	49.0	4.0	3.0
BC258	NW-395	62	20.2	24.3	39.0	96.0	3.0	40.0	3.0	3.0
BC068	Mayflower	26	20.1	22.9	43.0	100.0	1.0	55.5	5.5	2.0
BC346	Lightning	90	20.1	23.0	40.0	102.0	2.0	54.0	4.0	2.0
BC075	Raven	29	19.9	19.5	41.0	101.0	1.5	54.5	5.0	2.0
BC031	Verano	8	19.8	26.1	41.0	104.0	3.0	47.5	4.0	2.0
BC077	Newport	30	19.8	24.3	39.0	104.0	2.0	48.5	4.0	1.0
BC063	Black Magic	22	19.5	26.0	40.0	105.0	1.5	50.5	4.0	2.0
BC092	T-39	38	19.4	25.3	44.0	100.0	2.5	48.5	4.0	3.0

EXPERIMENT 1118 BeanCAP Mesoamerican Yield Trial								PLANTED: 6/4/11		
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE	GROWTH HABIT
BC173	UI-911	55	18.6	25.5	41.0	99.0	2.0	47.0	4.0	3.0
BC065	Bunsi	23	18.4	27.9	40.0	103.0	3.0	43.0	3.5	3.0
BC353	AC Compass	94	18.2	18.8	40.0	106.0	3.0	47.5	4.0	2.0
BC259	Hyden	63	18.0	25.7	39.0	98.0	3.5	32.5	3.0	3.0
BC194	Coyne	108	18.0	35.3	39.0	103.0	3.0	48.0	4.0	3.0
BC078	Mackinac	31	17.5	19.9	42.0	106.0	1.5	54.5	4.0	2.0
BC047	F07-004-9-1	12	17.3	23.7	41.0	100.0	2.0	47.5	4.5	2.0
BC332	CDC Jet	84	17.1	25.3	40.0	100.0	2.0	49.5	4.0	2.0
BC356	HY 4181	97	16.9	25.6	44.0	100.0	2.0	50.5	4.5	2.0
BC342	OAC Laser	88	16.8	25.4	40.0	106.0	2.5	49.0	4.0	2.0
BC305	Norstar	71	16.7	23.7	40.0	101.0	3.0	50.0	4.0	2.0
BC317	Crestwood	76	16.5	22.0	41.0	108.0	3.5	40.0	2.0	3.0
BC394	Midland	102	16.3	20.1	39.0	99.0	1.5	48.0	4.0	1.0
BC005	BelMiNeb-RMR-7	1	16.2	30.9	42.0	102.0	2.0	49.0	3.5	3.0
BC324	CDC Nighthawk	81	16.2	25.3	40.0	100.0	1.5	49.5	4.0	2.0
BC172	UI-906	54	15.8	23.4	42.0	98.0	2.0	40.5	3.5	2.0
BC218	ICB-10	60	15.7	22.6	45.0	99.0	3.0	40.5	3.5	3.0
BC217	92BG-7	59	15.3	23.3	44.0	98.0	2.0	41.5	3.0	2.0
BC055	Sanilac	17	15.2	23.0	38.0	100.0	2.0	47.5	4.0	1.0
BC307	Eclipse	73	15.1	22.4	42.0	99.0	1.0	54.0	6.0	2.0
BC331	CDC Expresso	83	14.8	23.8	39.0	97.0	1.5	40.0	3.0	1.0
BC352	OAC Seaforth	93	14.3	26.5	42.0	99.0	2.0	46.5	4.0	1.0
BC008	BelMiNeb-RMR-8	3	13.9	34.1	41.0	103.0	2.5	47.0	4.0	3.0
BC013	AC Polaris	5	13.9	35.1	38.0	101.0	3.0	33.0	3.0	3.0
BC106	Puebla 152	42	13.4	29.6	45.0	110.0	4.5	33.0	3.0	3.0
BC006	BelMiNeb-RMR-4	2	10.7	38.4	43.0	102.0	2.0	52.0	3.5	2.0
BC321	Envoy	79	10.7	21.5	38.0	99.0	2.0	48.0	4.5	1.0
BC213	Morden 003	56	4.9	26.3	38.0	110.0	1.5	43.0	1.5	1.0
MEAN (108)			21.9	26.0	41.4	101.6	2.3	48.9	4.2	2.1
LSD (.05)			4.5	2.0	3.2	14.9	0.9	9.8	1.0	0.6
CV (%)			10.4	3.8	3.9	7.4	20.2	10.0	11.8	14.6

EXPERIMENT 1119 BeanCAP Durango-Jalisco Yield Trial								PLANTED: 6/6/11		
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE	GROWTH HABIT
BC212	AC Scarlet	116	32.4	38.6	37.0	102.0	3.0	45.5	4.0	3.0
BC099	S08418	43	31.9	37.6	40.0	104.0	2.0	56.0	6.0	2.0
BC238	USPT-ANT-1	135	31.8	40.5	45.0	107.0	4.5	38.0	3.0	3.0
BC281	Gloria	153	30.8	35.8	39.0	96.0	4.0	40.0	3.0	3.0
BC232	NW-590	129	30.3	37.1	37.0	98.0	4.0	39.5	3.0	3.0
BC278	Viva	150	29.7	27.6	38.0	104.0	4.0	37.5	2.5	3.0
BC293	PK915	156	29.7	45.7	39.0	102.0	2.0	55.5	6.0	2.0
BC280	Harold	152	29.3	34.9	37.0	104.0	4.0	41.5	3.0	3.0
BC123	Sonora	54	29.2	34.4	39.0	102.0	2.0	50.5	5.0	3.0
BC091	P07863	40	28.7	44.3	39.0	104.0	2.0	55.5	5.0	2.0
BC279	Roza	151	28.6	35.4	40.0	101.0	4.0	38.0	3.5	3.0
BC382	Sequoia	187	28.6	39.0	38.0	101.0	2.0	53.0	4.0	3.0
BC391	Vision	196	28.3	38.3	37.0	108.0	2.5	49.5	4.0	3.0
BC385	Bighorn	190	28.1	42.7	40.0	110.0	3.5	41.0	2.5	3.0
BC093	Merlot	41	27.8	40.9	41.0	105.0	2.0	53.5	5.0	2.0
BC018	Grand Mesa	12	27.7	39.6	38.0	101.0	3.0	48.5	4.0	3.0
BC243	USRM-20	140	27.5	55.0	40.0	100.0	2.0	46.0	3.5	2.0
BC187	GN Star	92	27.3	35.3	40.0	105.0	4.5	37.5	3.0	3.0
BC094	Sedona	42	26.4	38.3	38.0	101.0	2.0	62.0	5.5	2.0
BC195	ABCP-8	99	26.4	38.6	40.0	97.0	4.0	33.0	3.0	3.0
BC233	NW-410	130	26.2	38.6	37.0	96.0	3.5	35.5	3.0	3.0
BC266	6R-42	143	26.2	35.7	38.0	103.0	4.5	35.5	2.5	3.0
BC044	TARS09-RR023	30	26.0	31.5	44.0	102.0	2.0	52.5	4.0	3.0
BC028	PR 0340-3-3-1	21	25.8	35.3	45.0	105.0	2.0	49.0	4.0	2.0
BC300	Lariat	163	25.5	45.2	42.0	102.0	2.0	53.5	5.0	2.0
BC162	Common Red Mexican	72	25.3	32.8	39.0	96.0	4.0	41.0	2.5	3.0
BC164	Kimberly	74	25.2	34.7	39.0	102.0	3.5	46.5	3.5	3.0
BC109	Poncho	44	24.7	42.3	37.0	98.0	3.5	38.0	2.5	3.0
BC292	PK9-7	155	24.7	40.9	38.0	99.0	2.5	49.0	4.0	2.0
BC302	ND-307	165	24.7	44.6	38.0	100.0	2.0	50.0	5.0	2.0
BC389	Mariah	194	24.7	41.1	40.0	99.0	2.0	48.0	4.0	3.0
BC079	Kodiak	37	24.3	46.4	41.0	100.0	2.0	47.5	4.0	2.0
BC120	La Paz	51	24.3	47.1	42.0	101.0	2.0	54.0	5.5	2.0
BC282	URS-117	154	24.2	36.9	38.0	103.0	3.5	42.5	3.0	3.0
BC186	GN Harris	91	24.1	34.2	43.0	104.0	4.5	36.0	2.5	3.0
BC236	USPT-CBB-1	133	24.1	37.6	38.0	100.0	3.0	47.5	3.5	3.0
BC168	UI-196	78	23.9	39.7	38.0	99.0	4.0	38.0	3.0	3.0
BC160	UI-537	70	23.8	44.4	38.0	96.0	4.0	35.5	2.5	3.0
BC073	Aztec	36	23.7	46.8	37.0	97.0	2.5	47.5	4.5	2.0
BC020	Montrose	14	23.5	41.2	37.0	96.0	4.0	37.5	3.0	3.0
BC221	USWA-12	119	23.5	43.3	38.0	109.0	3.5	45.0	2.5	3.0
BC206	NE2-09-8	110	23.4	43.0	39.0	100.0	3.0	39.0	4.0	3.0
BC303	Frontier	166	23.4	47.3	43.0	99.0	2.0	51.0	4.0	3.0
BC025	Arapaho	19	23.3	36.5	39.0	98.0	3.5	38.5	3.5	3.0
BC299	Maverick	162	23.3	38.7	39.0	98.0	2.5	47.5	4.0	3.0

EXPERIMENT 1119 BeanCAP Durango-Jalisco Yield Trial								PLANTED: 6/6/11		
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE	GROWTH HABIT
BC189	Tara	93	23.1	36.1	39.0	109.0	5.0	33.5	2.0	3.0
BC309	ND040494-4	168	23.1	40.0	39.0	101.0	2.5	50.5	5.0	2.0
BC383	Apache	188	23.1	41.3	37.0	97.0	3.0	39.0	2.5	3.0
BC229	Holberg	126	23.0	30.7	37.0	100.0	4.5	38.5	3.0	3.0
BC191	Emerson	95	22.9	54.0	37.0	97.0	4.0	39.0	3.0	3.0
BC268	USWA-61	145	22.7	32.2	38.0	108.0	2.0	60.0	4.0	2.0
BC390	Focus	195	22.7	48.9	37.0	101.0	2.0	49.5	4.0	2.0
BC007	BelNeb-RR-1	4	22.5	37.5	38.0	100.0	4.5	33.5	2.5	3.0
BC242	NW-63	139	22.5	34.3	37.0	97.0	3.5	37.0	2.5	3.0
BC024	Croissant	18	22.3	35.6	40.0	100.0	3.0	48.0	4.5	2.0
BC240	Big Bend	137	22.3	35.3	39.0	95.0	4.0	30.0	2.5	3.0
BC297	GN9-1	160	22.3	40.5	38.0	99.0	3.5	43.5	4.0	3.0
BC048	F07-449-9-3	32	22.1	34.7	44.0	102.0	2.0	56.0	5.5	2.0
BC049	F07-014-22-2	33	22.1	40.3	42.0	104.0	2.0	54.0	5.0	2.0
BC132	Red Ryder	56	22.1	44.9	40.0	100.0	3.0	48.0	4.0	3.0
BC052	I06-2575-17	34	22.0	26.3	40.0	105.0	3.0	48.5	4.0	3.0
BC220	JM-24	118	22.0	40.9	38.0	99.0	3.0	45.0	4.0	2.0
BC323	GTS-900	172	22.0	47.3	40.0	100.0	2.5	49.5	4.5	3.0
BC298	PT9-17	161	21.8	38.2	38.0	99.0	3.0	45.0	4.0	3.0
BC161	Common Pinto	71	21.7	39.4	37.0	97.0	4.5	32.5	2.0	3.0
BC270	I9365-5	147	21.5	34.4	42.0	103.0	2.0	47.5	4.0	3.0
BC237	USPT-CBB-3	134	21.4	43.6	44.0	102.0	1.5	62.5	5.5	2.0
BC019	Fisher	13	20.9	40.6	46.0	106.0	4.0	35.5	3.0	3.0
BC021	Olathe	15	20.9	45.6	37.0	96.0	3.5	39.5	3.0	3.0
BC142	ROG 312	64	20.9	37.7	37.0	97.0	2.5	41.0	2.5	3.0
BC227	Pindak	124	20.9	33.1	37.0	95.0	4.0	30.5	2.5	3.0
BC158	UI-3	68	20.8	38.9	40.0	97.0	4.5	32.5	3.0	3.0
BC320	Vista	197	20.8	22.2	44.0	103.0	2.0	52.5	6.0	2.0
BC022	Shiny Crow	16	20.5	24.5	36.0	102.0	3.0	45.0	4.0	3.0
BC294	SR7-3	157	20.5	40.0	38.0	96.0	2.5	44.5	2.5	2.0
BC380	Jackpot	185	20.5	44.6	40.0	95.0	4.5	32.0	2.5	3.0
BC386	Buster	191	20.5	43.1	38.0	99.0	3.0	42.5	4.0	2.0
BC110	Topaz	45	20.2	37.9	37.0	97.0	3.5	40.5	3.0	3.0
BC267	Victor	144	20.2	36.9	38.0	96.0	3.5	40.0	3.0	3.0
BC163	IP08-2	73	20.1	34.8	42.0	108.0	2.5	53.5	3.0	3.0
BC009	AC Redbond	5	20.0	32.9	37.0	100.0	2.5	46.5	4.0	3.0
BC016	Bill Z	10	20.0	40.1	38.0	98.0	4.0	35.0	3.0	3.0
BC308	NDZ06249	167	19.9	37.3	40.0	99.0	2.0	49.5	4.0	2.0
BC387	Medicine Hat	192	19.9	46.9	38.0	97.0	2.0	45.0	4.0	2.0
BC138	Marquis	60	19.8	30.5	36.0	99.0	3.5	42.0	3.0	3.0
BC157	Shoshone	67	19.8	40.8	38.0	99.0	3.0	41.0	3.5	3.0
BC201	NE1-09-20	105	19.7	40.4	40.0	101.0	2.5	49.5	4.5	2.0
BC316	Hatton	171	19.6	41.9	37.0	96.0	3.5	39.5	3.0	3.0
BC225	JM-126	123	19.5	45.1	38.0	99.0	4.0	39.5	3.0	3.0
BC375	Yolano	183	19.4	37.0	37.0	95.0	3.0	40.5	2.5	3.0

EXPERIMENT 1119 BeanCAP Durango-Jalisco Yield Trial								PLANTED: 6/6/11		
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE	GROWTH HABIT
BC194	Coyne	98	19.3	40.0	39.0	101.0	2.0	47.0	4.0	2.0
BC070	Sierra	35	19.2	37.3	46.0	103.0	2.0	54.5	5.0	2.0
BC192	Weihing	96	19.2	37.4	38.0	100.0	2.5	48.0	4.5	3.0
BC230	92US-1006	127	19.2	36.2	38.0	98.0	2.5	45.5	4.0	3.0
BC234	PT7-2	131	19.1	41.5	37.0	101.0	2.0	51.5	5.0	2.0
BC170	UI-239	80	19.0	37.1	38.0	97.0	2.5	35.5	2.5	3.0
BC196	Chase	100	19.0	40.9	39.0	99.0	4.0	36.0	3.0	3.0
BC037	IBC 301-204	24	18.9	30.0	42.0	98.0	4.0	34.0	3.5	3.0
BC088	Zorro	199	18.9	23.5	44.0	100.0	2.0	52.0	6.0	2.0
BC014	AC Resolute	8	18.8	40.1	37.0	99.0	3.0	43.5	3.0	2.0
BC143	Desert Rose	65	18.8	34.1	37.0	98.0	3.0	43.0	3.0	3.0
BC204	NE2-09-3	108	18.8	44.4	39.0	100.0	2.0	48.0	4.5	2.0
BC214	ICB-12	117	18.7	25.1	39.0	105.0	3.5	43.0	2.5	3.0
BC231	Othello	128	18.7	37.6	37.0	95.0	2.5	39.0	3.0	3.0
BC080	Matterhorn	38	18.6	37.8	38.0	100.0	2.0	51.0	5.5	2.0
BC210	AC Ole	114	18.6	39.8	37.0	100.0	2.5	49.5	4.0	3.0
BC089	Santa Fe	39	18.5	44.9	40.0	99.0	2.0	48.5	5.0	2.0
BC222	Quincy	120	18.5	40.4	37.0	96.0	3.5	42.5	3.5	3.0
BC177	UI-111	83	18.4	39.2	55.0	97.0	4.0	32.5	3.0	3.0
BC193	ABC-Weihing	97	18.3	38.8	37.0	100.0	3.0	47.5	4.0	2.0
BC374	UCD 9623	182	18.3	35.2	36.0	99.0	2.0	47.0	3.5	2.0
BC112	Flint	47	18.2	36.1	37.0	95.0	3.5	34.5	3.0	3.0
BC166	UI-123	76	18.2	33.1	38.0	100.0	4.5	31.0	2.5	3.0
BC197	ABCP-15	101	18.1	41.5	41.0	97.0	3.5	37.0	2.5	3.0
BC257	USWA-13	142	18.1	48.5	38.0	99.0	3.0	42.5	2.5	3.0
BC271	Rojo Chiquito	148	18.1	26.1	45.0	101.0	2.0	49.0	5.0	2.0
BC029	Amadeus 77	22	18.0	30.5	40.0	99.0	2.0	46.5	4.5	2.0
BC198	ABCP-17	102	18.0	40.0	40.0	96.0	3.0	39.0	3.0	3.0
BC211	Win Mor	115	18.0	44.1	38.0	98.0	2.5	45.0	4.0	3.0
BC384	Fiesta	189	17.9	43.3	37.0	96.0	3.5	39.0	3.0	3.0
BC121	Baja	52	17.8	38.7	37.0	97.0	2.0	48.0	3.5	2.0
BC190	Starlight	94	17.7	44.1	36.0	100.0	3.5	41.0	3.0	3.0
BC200	NE1-09-19	104	17.7	36.5	39.0	100.0	3.0	48.0	4.5	2.0
BC312	ND041062-1	169	17.7	48.5	43.0	102.0	2.0	60.0	5.0	2.0
BC325	CDCWM-2	173	17.7	38.6	37.0	102.0	2.0	44.0	3.0	3.0
BC136	Beryl	58	17.6	27.5	38.0	98.0	3.5	41.5	3.5	3.0
BC176	UI-59	82	17.6	36.3	38.0	96.0	4.5	35.5	2.5	3.0
BC202	NE1-09-22	106	17.6	36.9	38.0	100.0	2.0	48.0	4.5	2.0
BC209	AC Pintoba	113	17.6	38.4	38.0	99.0	2.5	46.5	4.0	3.0
BC235	USPT-WM-1	132	17.5	37.9	38.0	100.0	2.0	51.5	4.5	2.0

EXPERIMENT 1119 BeanCAP Durango-Jalisco Yield Trial								PLANTED: 6/6/11		
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE	GROWTH HABIT
BC128	Ensign	200	17.3	24.5	43.0	102.0	2.5	46.0	4.0	3.0
BC180	BelNeb 2	86	17.2	37.2	38.0	99.0	4.5	33.5	2.5	3.0
BC131	Pink Floyd	55	17.0	37.0	37.0	97.0	3.0	36.0	2.5	3.0
BC301	Stampede	164	17.0	46.7	40.0	102.0	2.0	54.0	5.0	2.0
BC199	NE1-09-13	103	16.8	34.4	38.0	101.0	2.0	50.5	4.5	2.0
BC203	NE2-09-1	107	16.8	43.5	38.0	99.0	3.0	46.0	3.5	2.0
BC207	NE2-09-10	111	16.8	48.2	42.0	102.0	2.0	53.5	4.0	2.0
BC358	Orion	181	16.8	35.2	38.0	101.0	3.0	46.0	4.0	3.0
BC381	Gala	186	16.8	41.6	37.0	96.0	4.0	35.0	2.5	3.0
BC139	Sapphire	61	16.6	33.8	40.0	99.0	4.0	32.5	3.0	3.0
BC167	UI-126	77	16.6	38.3	38.0	98.0	4.0	34.5	3.0	3.0
BC182	BelMiNeb 2	88	16.6	38.1	40.0	103.0	2.0	49.0	4.5	2.0
BC208	NE1-09-9	112	16.5	40.1	39.0	100.0	2.0	51.5	5.0	2.0
BC333	CDC Rosalee	178	16.5	29.9	37.0	98.0	3.0	46.5	3.5	3.0
BC169	UI-228	79	16.4	38.2	37.0	96.0	3.0	35.5	2.5	3.0
BC205	NE2-09-4	109	16.4	45.1	38.0	100.0	2.0	45.0	4.0	2.0
BC388	Windbreaker	193	16.4	40.3	40.0	100.0	3.0	46.5	4.5	3.0
BC165	Sawtooth	75	16.3	43.3	39.0	110.0	4.0	40.0	2.0	3.0
BC122	Durango	53	16.2	49.5	37.0	98.0	3.0	46.0	3.5	3.0
BC181	BelMiNeb 1	87	16.2	32.6	42.0	100.0	2.0	49.5	5.0	2.0
BC295	SR9-4	158	16.1	35.8	39.0	105.0	2.0	54.0	4.5	2.0
BC159	UI-37	69	16.0	34.7	37.0	101.0	4.0	34.5	2.0	3.0
BC179	UI-425	85	16.0	36.6	37.0	97.0	4.0	37.0	2.5	3.0
BC017	Ouray	11	15.8	38.2	38.0	95.0	2.0	47.0	3.0	1.0
BC001	BelMiNeb-RR-2	1	15.7	31.4	40.0	102.0	2.5	48.0	4.0	2.0
BC228	Nodak	125	15.7	38.9	37.0	95.0	3.0	35.0	2.5	3.0
BC357	Gemini	180	15.7	32.0	36.0	96.0	2.5	44.5	3.0	3.0
BC026	DOR 364	20	15.6	27.1	44.0	100.0	2.0	49.0	4.5	2.0
BC296	GN9-4	159	15.6	42.8	39.0	101.0	2.0	51.5	5.5	2.0
BC011	AC Island	6	15.5	38.1	37.0	97.0	2.5	46.0	3.0	3.0
BC038	CENTA Pupil	25	15.4	28.2	44.0	100.0	2.0	50.0	5.0	2.0
BC178	UI-114	84	15.4	35.6	37.0	97.0	4.0	33.5	2.5	3.0
BC141	Garnet	63	15.2	32.9	37.0	95.0	3.5	32.0	2.0	3.0
BC326	CDC Pinnacle	174	15.2	44.1	37.0	97.0	4.0	39.0	3.0	3.0
BC023	San Juan	17	15.1	30.3	42.0	110.0	5.0	30.0	2.0	3.0
BC045	TARS09-RR029	31	15.0	25.0	45.0	100.0	2.5	46.5	4.5	3.0
BC111	Buckskin	46	14.9	38.9	37.0	96.0	3.0	35.0	3.0	3.0
BC115	Remington	50	14.9	38.9	38.0	99.0	3.0	46.5	3.0	3.0
BC307	Eclipse	198	14.7	23.1	43.0	99.0	1.0	53.0	6.0	2.0
BC040	Dehoro	27	14.6	35.3	39.0	100.0	2.0	47.0	4.0	2.0

EXPERIMENT 1119 BeanCAP Durango-Jalisco Yield Trial								PLANTED: 6/6/11		
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE	GROWTH HABIT
BC241	Le Baron	138	14.6	42.8	37.0	95.0	2.0	38.0	2.5	3.0
BC012	AC Early Rose	7	14.3	37.7	37.0	96.0	2.5	41.5	2.5	3.0
BC043	TARS09-RR007	29	14.2	24.4	43.0	100.0	2.5	40.5	4.0	3.0
BC137	Beryl R	59	14.1	30.4	38.0	99.0	3.0	41.5	3.0	3.0
BC272	Indeterminate Jamaica Red	149	13.9	40.8	40.0	104.0	2.0	46.0	3.5	2.0
BC156	SDPI-1	66	13.8	34.3	37.0	99.0	3.5	36.5	3.0	3.0
BC223	Burke	121	13.8	36.9	37.0	98.0	2.5	46.0	3.5	3.0
BC269	I9365-25	146	13.8	29.5	41.0	101.0	3.0	43.0	4.0	3.0
BC113	Fargo	48	13.2	39.9	37.0	97.0	2.5	40.5	2.5	3.0
BC185	GN#1Sel27	90	13.2	31.7	45.0	105.0	5.0	38.5	2.0	3.0
BC334	CDC Camino	179	13.1	38.8	37.0	96.0	2.0	45.5	3.0	1.0
BC140	Ember	62	12.9	39.3	37.0	95.0	2.0	39.0	2.0	3.0
BC042	TARS09-RR004	28	12.8	27.3	41.0	103.0	2.0	49.5	5.0	3.0
BC379	Max	184	12.8	43.9	37.0	95.0	3.0	42.5	3.0	3.0
BC184	BelMiNeb 5	89	12.7	37.4	37.0	101.0	2.0	46.5	4.0	3.0
BC224	TARS-VCI-4B	122	12.6	28.0	48.0	108.0	4.5	37.0	2.5	3.0
BC002	BelMiNeb-RMR-3	2	12.5	41.5	39.0	99.0	3.0	46.0	3.5	3.0
BC003	BelDakMi-RR-5	3	12.5	39.6	38.0	103.0	2.0	47.0	3.5	3.0
BC015	AC Earlired	9	12.2	39.1	37.0	95.0	3.0	37.5	2.5	2.0
BC039	INTA Precoz	26	12.0	28.3	41.0	110.0	3.0	52.5	3.0	3.0
BC330	CDC Pintium	177	11.6	36.1	37.0	95.0	1.0	44.0	3.0	1.0
BC114	Agassiz	49	11.4	41.4	37.0	97.0	2.0	46.5	2.5	1.0
BC174	US-1140	81	11.4	32.9	37.0	95.0	3.0	31.5	2.5	3.0
BC244	Coulee	141	11.2	45.1	39.0	97.0	4.0	32.0	2.0	3.0
BC314	ND060197	170	11.1	40.0	37.0	96.0	3.0	43.0	3.0	3.0
BC135	Ivory	57	10.2	36.4	38.0	95.0	3.0	32.5	2.5	3.0
BC329	CDC Crocus	176	9.6	37.2	37.0	95.0	4.0	33.5	2.5	3.0
BC035	PR 0401-259	23	8.2	24.3	40.0	101.0	2.0	45.0	4.0	2.0
BC239	USPT-CBB-5	136	8.2	34.2	37.0	95.0	2.5	39.0	2.0	3.0
BC328	CDC Nordic	175	5.9	41.0	37.0	94.0	2.0	43.5	2.0	1.0
MEAN (200)			19.4	37.8	38.8	99.5	2.9	43.6	3.5	2.6
LSD (.05)			8.3	4.2	4.2	2.8	0.4	2.8	0.6	0.5
CV (%)			21.6	5.6	5.5	1.4	7.4	3.2	8.9	10.6

EXPERIMENT 1120 NAVY/BLACK ORGANIC YIELD TRIAL-SVREC								PLANTED: 6/09/11		
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE	STAND COUNT
B09175	N05311/B05055	26	18.9	26.4	43.0	98.0	1.0	53.0	6.0	14.3
B04554	B00103*/X00822, **ZORRO**	2	18.8	20.8	44.0	98.0	0.8	50.9	5.5	15.3
B10202	N05311/X06121	30	18.4	22.9	42.0	97.0	1.0	49.4	5.0	13.5
B09199	B05055/B04587	36	18.4	22.3	44.0	98.0	1.1	47.7	4.5	14.0
N09174	N05311/B05055	5	17.5	24.5	42.0	100.0	1.4	52.4	5.5	11.3
B09128	B05055/B05044	25	17.5	18.4	44.0	98.0	0.8	50.5	5.5	16.0
B09188	B05054/B04588	27	17.4	23.0	45.0	99.0	1.4	51.4	5.0	14.3
I08958	Mayflower/Avanti, **MEDALIST**	34	17.4	19.1	42.0	98.0	2.1	53.1	5.5	14.5
N09046	B04554/N05357	10	16.6	17.6	43.0	98.0	0.9	52.0	6.0	12.5
B10201	N05311/B05055	32	16.4	22.1	42.0	99.0	2.0	53.7	5.5	12.8
N09104	N05311/B05055	14	16.2	18.9	43.0	98.0	2.1	52.0	5.5	11.8
B09166	B04554/B04587	28	16.0	21.2	47.0	98.0	1.1	47.7	4.5	15.0
N10108	N05311/B04587	19	15.8	22.9	45.0	100.0	2.1	51.3	4.5	13.8
B09197	B05055/B04588	23	15.8	20.2	44.0	98.0	1.0	46.8	4.0	13.8
N10109	B05055/N05324	18	15.7	18.7	41.0	99.0	1.0	51.7	5.0	14.3
I08907	Midnight/Blackhawk, **BLACK VELVET**	3	15.5	23.7	46.0	102.0	1.6	55.3	5.0	13.5
I92002	C-20*3//GTS-0801/Seafarer, **VISTA**	4	15.4	19.4	41.0	100.0	2.1	53.0	5.0	14.8
B09136	B04316/B05040	21	15.4	21.5	44.0	96.0	1.0	47.1	4.0	14.8
B09135	B04316/B05040	22	15.3	18.9	44.0	98.0	1.1	49.1	4.5	14.0
B09204	B05054/B04588	35	15.3	21.4	42.0	97.0	1.2	48.1	4.5	14.0
N07007	N03614/N00844	15	15.2	17.2	43.0	98.0	1.0	53.8	6.0	13.0
N09045	N05311/B05034	13	15.1	20.6	42.0	101.0	2.1	51.6	4.5	12.0
N09035	B05055/B05070	8	15.0	20.0	41.0	97.0	1.0	50.2	4.0	11.5
B10246	B05039/ZORRO	33	15.0	19.1	44.0	100.0	1.3	52.1	5.0	12.8
B09201	B04444/B05044	24	14.9	16.3	44.0	97.0	1.0	50.0	4.5	15.5
N09041	B05070/B05044	9	14.8	20.8	42.0	98.0	2.0	49.4	4.0	13.3
B10203	B05054/B04588	31	14.7	21.1	46.0	97.0	1.0	46.9	4.0	15.8
N09056	N04152/N05346	11	14.2	20.7	43.0	99.0	1.9	49.7	4.0	10.0
B09129	B05055/B04587	29	14.2	20.1	43.0	96.0	1.1	42.8	4.0	16.0
B09101	N05311/X06121	20	14.1	19.0	45.0	97.0	1.2	47.6	4.5	14.3
N09020	N05319/B04316	6	14.0	19.1	44.0	99.0	0.9	52.8	5.5	11.3
N09178	B04554/N05357	12	13.6	18.0	41.0	97.0	1.0	47.6	5.0	13.0
N09055	N04152/N05346	16	13.3	18.4	42.0	101.0	1.8	51.7	5.0	12.3
N09034	B05055/B05070	7	12.4	20.2	42.0	98.0	1.6	49.9	4.0	12.8
N10101	N04109/B05044	17	12.4	15.0	41.0	98.0	1.1	49.6	4.0	16.3
I07112	**R99 NO NOD**	1	5.3	17.2	40.0	105.0	1.9	48.0	3.5	14.3
MEAN (36)			15.3	20.2	42.9	98.3	1.3	50.3	4.8	13.7
LSD (.05)			2.8	1.3	3.2	1.1	0.5	2.6	0.8	2.6
CV (%)			12.8	4.7	3.7	0.5	17.5	2.5	8.1	9.3

EXPERIMENT 1221 PRELIMINARY KIDNEY YIELD TRIAL								PLANTED: 6/14/11		
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE	CBB (1-5)
K11921	K04604/CHINOOK2000	55	39.1	55.6	35.0	101.0	1.0	49.5	5.0	3.3
K11914	K04604/USWK-CBB-17	48	38.3	59.0	35.0	102.0	1.0	49.5	4.5	1.9
K11920	K04604/CHINOOK2000	54	38.0	59.5	35.0	100.0	1.0	48.5	4.5	2.1
K08961	K04604/USDK-CBB-15	93	37.2	59.8	35.0	98.0	1.0	49.5	5.0	2.9
K11918	K04607/USWK-CBB-17	52	35.9	50.6	35.0	100.0	1.0	48.0	4.5	2.3
K11941	K07926//C06819/X07804	75	35.9	68.8	36.0	100.0	2.0	50.5	4.5	2.6
K11944	K07926//C06819/X07804	78	35.9	62.5	36.0	96.0	2.0	49.0	5.5	1.9
K11803	K07926//C06819/X07804	91	35.5	75.2	35.0	95.0	1.5	47.5	5.0	2.8
K11916	K04607/USWK-CBB-17	50	35.2	53.6	35.0	101.0	1.0	47.0	4.0	1.4
K11712	K06012//K06014/K07715	32	35.1	50.5	35.0	101.0	1.0	49.0	4.0	4.0
I11201	PinkPanther//ZAA/Montcalm, **CLOUSEAU**	107	35.0	66.0	35.0	101.0	2.0	49.5	4.0	2.5
K11303	REDHAWK/X06160	3	34.8	53.7	36.0	102.0	2.0	48.0	4.0	2.2
K11908	K06940/USWK-CBB-17	42	34.5	47.7	35.0	101.0	1.0	47.0	4.5	2.7
K11945	K07926//C06819/X07804	79	34.1	66.9	36.0	98.0	1.5	47.5	4.5	2.4
K11702	K05616/K04604//K03240/JALO LISTRA PRETAS	22	33.8	59.4	37.0	103.0	2.0	49.5	3.5	2.7
K08907	K03244/I05103	94	33.8	54.5	37.0	101.0	1.5	49.5	4.0	1.8
K11714	K08601/K08233	34	33.7	60.3	38.0	103.0	2.5	49.0	4.0	1.5
K11915	K04604/USWK-CBB-17	49	33.7	53.3	36.0	101.0	1.5	47.0	4.5	3.3
K11917	K04607/USWK-CBB-17	51	33.7	50.9	36.0	101.0	1.0	47.5	4.0	2.0
K11710	K06012//K06014/K07715	30	33.6	48.6	36.0	100.0	1.5	49.0	4.0	2.6
K11943	K07926//C06819/X07804	77	33.3	73.4	36.0	102.0	1.5	49.0	4.0	3.4
I11233	OAC07-L1, **OAC INFERNO**	109	33.3	64.1	37.0	108.0	3.0	48.5	3.5	2.7
K11301	K06001/ND02-385-14	1	33.1	61.9	36.0	101.0	2.5	46.5	4.0	2.7
K08228	K03271/USDK-CBB-15	95	33.1	53.7	36.0	102.0	2.5	49.0	4.0	2.7
K11909	K06940/USWK-CBB-17	43	33.0	44.6	36.0	102.0	1.5	47.5	4.0	1.3
K11939	K07929//K06014/K07715	73	32.9	69.4	35.0	100.0	1.0	47.0	4.5	2.8
K11906	K07303/USWK-CBB-17	40	32.6	55.6	36.0	101.0	2.0	49.0	5.0	3.0
K11913	K04604/USWK-CBB-17	47	32.6	55.9	36.0	101.0	1.0	47.0	4.5	1.9
K11926	X06115/X06114	60	32.6	51.6	36.0	100.0	2.0	49.0	4.5	1.4
K11937	K07929//K06014/K07715	71	32.3	70.0	35.0	104.0	2.0	48.5	4.0	1.7
K11804	K07926//C06819/X07804	92	32.3	79.8	35.0	96.0	2.0	48.5	4.5	2.4
I10105	MONTCALM/DRK15, **MAJESTY**	111	32.3	76.9	39.0	101.0	2.5	49.0	4.0	3.4
K11802	K07926//C06819/X07804	90	32.2	75.1	35.0	98.0	2.0	48.5	4.5	3.2
K08222	REDHAWK/USDK-CBB-15	101	32.2	56.7	35.0	102.0	2.0	48.5	4.0	1.7
K11302	K07303/USWK-CBB-17	2	32.1	52.4	35.0	102.0	2.0	49.5	4.5	3.1
K11308	K07716/I07136	8	32.1	45.2	36.0	100.0	2.0	49.5	3.5	1.9
K11306	K06621/USDK-CBB-15	6	32.0	51.7	36.0	102.0	2.5	47.5	4.0	0.8
I07104	Chardonnay/CELRK, **PINK PANTHER**	110	32.0	62.5	35.0	101.0	2.0	47.0	4.0	3.7
K11704	K05616/K05614//REDHAWK/JALO VERMILLO	24	31.9	58.0	37.0	104.0	3.0	47.5	4.0	2.8
K11713	K08601/K08233	33	31.9	57.2	36.0	104.0	1.5	49.5	4.0	1.4
K11919	K04607/USWK-CBB-17	53	31.9	50.4	35.0	102.0	1.0	46.5	4.0	2.1
K11922	K03601/K04607	56	31.8	59.0	35.0	100.0	1.0	48.5	4.5	3.0
K11923	K99974/XANA	57	31.6	101.4	34.0	101.0	2.0	48.0	4.5	2.2
K11942	K07926//C06819/X07804	76	31.5	74.6	37.0	100.0	1.0	48.5	5.0	2.9
K10902	BELUGA SELECTION FROM ADM	96	31.5	56.2	36.0	100.0	2.0	50.0	4.0	3.2

EXPERIMENT 1221 PRELIMINARY KIDNEY YIELD TRIAL								PLANTED: 6/14/11		
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE	CBB (1-5)
K11701	K05616/K04604//K03240/JALO LISTRA PRETAS	21	31.3	56.3	36.0	104.0	2.0	48.0	4.0	2.7
K11938	K07929//K06014/K07715	72	31.3	71.0	35.0	103.0	1.5	48.5	4.0	2.5
K90101	CHAR/2*MONT, **RED HAWK**	103	31.3	54.7	35.0	102.0	1.5	49.0	4.0	3.1
K11319	K08222/CORNELL603	19	31.2	50.9	36.0	99.0	1.0	48.0	5.0	3.0
K11912	REDHAWK/X06167	46	31.2	54.7	35.0	101.0	1.5	49.5	4.5	2.3
K11928	K06012//K06014/K07715	62	31.0	42.2	36.0	100.0	1.0	46.5	4.0	1.6
K06012	REDHAWK/K02601	106	31.0	52.0	36.0	98.0	1.0	46.5	4.5	2.4
K11950	K08929/K08971	84	30.9	46.2	36.0	100.0	1.0	46.5	4.0	3.0
K11924	K03601/K04607	58	30.8	56.7	35.0	100.0	1.0	46.5	4.5	1.4
K11709	K06012//K06014/K07715	29	30.7	48.6	35.0	100.0	1.0	48.5	4.5	3.5
K11911	K05920/K06014	45	30.7	47.7	36.0	101.0	1.5	51.5	5.5	2.7
K11929	K06619//K05920/USWK-CBB-17	63	30.7	50.7	35.0	99.0	1.0	45.5	4.0	2.5
K11940	K07926//C06819/X07804	74	30.6	73.1	35.0	100.0	1.0	48.5	4.5	2.4
K11927	K05920/K06014	61	30.4	47.3	35.0	103.0	2.0	50.5	4.5	1.4
K11936	K07926//K06940/ND02-385-14	70	30.2	60.8	36.0	101.0	1.5	47.0	4.0	2.4
K11946	K08929/K08971	80	30.2	54.4	36.0	102.0	1.0	48.0	4.0	2.4
I90013	**CELRK**	98	30.1	58.3	35.0	100.0	1.0	45.5	4.0	3.7
K11907	K07303/USWK-CBB-17	41	30.0	43.7	36.0	98.0	1.5	48.5	5.5	3.1
K01234	**REDCOAT**	112	30.0	56.3	35.0	101.0	2.0	48.5	4.0	2.2
K11312	K06012//I07135/K07303	12	29.9	54.0	37.0	102.0	1.0	47.0	4.0	2.9
K11904	K06939/WALLACE	38	29.9	45.2	35.0	96.0	1.0	49.0	5.0	2.5
K06619	I00639/K02601	105	29.8	52.1	37.0	102.0	2.0	47.5	4.0	2.2
K11901	K04604/BELUGA	35	29.5	51.4	35.0	100.0	1.5	48.5	4.5	3.9
K11905	K06939/WALLACE	39	29.5	43.8	35.0	97.0	1.0	47.5	4.0	3.9
K11320	K08222/CORNELL603	20	29.4	44.0	35.0	97.0	1.5	46.0	4.0	1.4
K11705	K07716/I07136	25	29.4	52.3	38.0	103.0	2.0	49.0	4.0	2.1
K11305	K03240*/JALO LISTRA PRETAS	5	29.3	46.7	36.0	100.0	2.0	48.0	4.0	2.7
K11314	K06012//I07135/K07303	14	29.3	57.0	36.0	101.0	1.0	47.0	4.0	3.0
K11316	K06012//K06014/K07715	16	29.2	51.8	35.0	101.0	1.5	49.0	4.5	1.3
K11708	CHINOOK2000/USDK-CBB-15	28	28.8	55.2	37.0	104.0	1.5	48.0	4.0	1.2
K11711	K06012//K06014/K07715	31	28.7	51.7	35.0	101.0	1.0	47.5	4.0	1.9
K11952	K08929/K08971	86	28.7	52.7	35.0	98.0	1.0	52.0	4.0	4.0
K11313	K06012//I07135/K07303	13	28.6	53.8	36.0	101.0	1.5	48.0	4.0	3.8
K11910	K05920/K06014	44	28.6	51.4	38.0	100.0	2.0	49.0	4.5	2.0
K11934	K07926//K06940/ND02-385-14	68	28.5	55.9	36.0	100.0	1.5	47.5	4.0	3.3
K11954	K08971/K08233	88	28.3	59.3	36.0	98.0	2.0	46.0	4.0	3.4
K11949	K08929/K08971	83	28.2	48.9	35.0	102.0	1.0	46.5	4.0	2.4
K11948	K08929/K08971	82	27.9	56.1	36.0	101.0	1.0	47.5	4.5	2.5
K08224	REDHAWK/USDK-CBB-15	104	27.9	54.0	35.0	100.0	3.0	47.5	4.0	3.7
K11310	K06014/ND02-385-14	10	27.8	50.5	37.0	101.0	1.5	48.0	4.0	2.9
K11707	K06621/USDK-CBB-15	27	27.8	51.9	37.0	102.0	2.0	47.5	4.0	1.7
K11935	K07926//K06940/ND02-385-14	69	27.8	52.6	36.0	101.0	1.5	48.0	4.0	1.4
I11235	**OAC REDSTAR**	108	27.8	57.9	36.0	102.0	3.0	47.5	4.0	2.9
K11318	K08222/CORNELL603	18	27.6	48.0	37.0	99.0	1.5	46.5	3.5	4.6
K11947	K08929/K08971	81	27.6	57.6	35.0	101.0	1.0	49.0	5.0	2.3

EXPERIMENT 1221 PRELIMINARY KIDNEY YIELD TRIAL								PLANTED: 6/14/11		
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE	CBB (1-5)
K90902	BEA/50B1807//LASSEN, **BELUGA**	99	27.5	55.9	37.0	103.0	2.0	49.5	4.0	2.4
K11307	K06014/ND02-385-14	7	27.4	48.0	37.0	101.0	3.0	48.0	3.5	2.4
K11311	K06001//K06014/I07136	11	27.3	45.6	36.0	103.0	3.0	47.0	3.0	3.0
K11801	X06115/X06114	89	27.3	60.8	36.0	101.0	1.5	47.0	4.0	2.2
K11309	K06012/USDK-CBB-15	9	27.1	60.0	37.0	100.0	1.5	48.0	4.5	1.9
K11315	K06012//I07135/K07303	15	27.1	52.3	36.0	99.0	1.0	46.5	4.0	3.8
K11925	K99974/XANA	59	27.1	100.7	35.0	102.0	2.0	48.0	4.0	1.7
K11932	K07921/WALLACE	66	27.1	62.4	35.0	97.0	1.5	46.5	4.0	4.7
K94601	CN49242/3*MONT//REDKLOUD, **CHINOOK2000**	102	27.1	49.4	36.0	104.0	2.0	49.0	3.5	3.3
K74002	MDRK/CN(3)-HBR(NEB#1), **MONTCALM**	97	26.9	59.7	38.0	102.0	2.0	47.5	4.0	2.7
K11930	K06619//K05920/USWK-CBB-17	64	26.7	46.7	36.0	105.0	1.5	47.5	3.5	2.2
K11317	K06012//K06014/K07715	17	26.5	48.7	35.0	98.0	1.5	47.5	4.0	3.6
K11931	K06619//K05920/WALLACE	65	26.5	50.7	35.0	100.0	1.0	46.0	4.0	1.6
K11953	K08971/K08233	87	26.5	59.1	36.0	99.0	1.0	43.0	4.0	2.8
K11706	K06014/K07715	26	25.9	50.0	35.0	101.0	2.0	46.5	4.0	2.4
K11903	K06939/WALLACE	37	25.3	43.7	34.0	95.0	1.0	48.0	4.5	4.3
K11304	K06012/USDK-CBB-15	4	24.9	54.1	36.0	99.0	1.0	48.5	5.0	3.0
K11703	K05616/K05614//REDHAWK/JALO VERMILLO	23	24.9	53.6	38.0	106.0	3.0	49.5	3.0	3.2
K11951	K08929/K08971	85	24.9	60.2	35.0	101.0	1.0	47.0	4.0	3.6
K11902	USWK-CBB-17/K07716	36	23.4	44.9	41.0	105.0	2.0	48.0	4.0	3.1
K06001	I99105/X02151	100	23.3	59.0	36.0	102.0	2.5	47.0	4.0	2.7
K11933	K07926//K07303/I07136	67	22.8	53.1	35.0	99.0	1.0	47.5	4.0	4.6
MEAN (112)			30.5	56.4	35.5	101.0	1.6	48.0	4.2	2.6
LSD (.05)			6.5	4.6	1.6	2.7	0.5	1.9	0.9	1.6
CV (%)			13.1	5.0	2.3	1.3	14.4	2.0	10.2	37.4

EXPERIMENT 1222 PRELIMINARY CRANBERRY YIELD TRIAL (1)								PLANTED: 6/14/11		
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE	CBB (1-5)
C11221	C06818/C07411	21	35.0	56.9	35.0	97.0	1.5	47.5	4.5	3.2
C11314	CAPRI/CBB-20	114	35.0	57.0	35.0	99.0	1.5	47.0	4.5	1.3
C11222	C05631/C07411	22	33.7	64.0	35.0	97.0	1.0	48.0	5.5	3.1
C11260	C07401//CBB-20/C05617	60	33.6	61.1	35.0	97.0	2.0	45.5	4.0	1.0
C11201	C03157//C05603/CBB-20	1	32.7	63.5	35.0	96.0	2.0	49.0	6.0	3.2
C11223	CAPRI/X06150	23	32.7	59.4	35.0	100.0	1.5	48.0	4.5	2.0
C11215	C06819/C07411	15	32.3	59.0	36.0	98.0	2.5	47.0	4.0	2.6
C11257	C07401//CBB-20/C05617	57	32.2	63.6	36.0	99.0	2.0	48.0	4.5	2.2
C11241	BELLAGIO//BD1002/BELLAGIO	41	31.9	64.8	36.0	96.0	1.5	49.0	5.0	3.6
C11276	C07403//CBB-20/C06812	76	31.7	63.5	35.0	99.0	2.0	48.0	4.0	1.6
C11204	C05631//C05603/CBB-20	4	31.4	64.1	36.0	97.0	1.0	49.5	5.5	3.2
C11240	BELLAGIO//BD1002/BELLAGIO	40	31.4	63.8	36.0	96.0	1.5	49.5	6.0	3.5
C11219	BELLAGIO/X07801	19	31.3	63.8	35.0	96.0	1.5	47.0	5.0	3.0
C11268	C07401//CBB-20/C05653	68	31.0	59.6	35.0	97.0	2.0	47.0	4.5	2.6
C11274	C07403//CBB-20/C06812	74	30.7	60.5	36.0	97.0	2.0	48.5	5.0	2.1
C11212	C05617/C07411	12	30.6	57.4	36.0	95.0	2.0	49.5	5.5	2.5
C11238	BELLAGIO//BD1002/BELLAGIO	38	30.6	62.7	35.0	98.0	2.0	48.0	4.0	3.9
C11305	C07413//CBB-20/C05617	105	30.6	54.4	34.0	99.0	1.5	48.5	5.5	1.7
C11271	C07401/I08946	71	30.5	65.8	35.0	97.0	2.0	48.5	4.0	2.8
C11273	C07403//CBB-20/C06812	73	30.5	54.7	35.0	98.0	2.0	49.0	5.0	1.2
C11229	C05653/X07805	29	30.4	63.3	35.0	96.0	2.5	46.0	4.0	4.3
C11317	CAPRI/CBB-20	117	30.4	59.2	36.0	98.0	2.0	48.0	4.5	1.8
C11251	BELLAGIO//C05647/X07804	51	30.1	60.9	36.0	100.0	3.0	47.0	3.5	3.5
C11213	C05647/C05617	13	30.0	51.7	35.0	96.0	1.0	47.0	4.5	3.7
C11266	C07401//CBB-20/C05653	66	30.0	55.4	35.0	100.0	2.0	49.0	4.0	1.3
C11269	C07401//CBB-20/C05653	69	30.0	61.9	35.0	99.0	2.0	49.0	4.0	1.7
I92014	**ETNA**	128	29.9	64.0	36.0	96.0	2.0	47.0	4.0	3.9
C11220	BELLAGIO/X07801	20	29.8	58.5	35.0	95.0	1.0	48.0	5.5	4.2
C11261	C07401//CBB-20/C05617	61	29.8	57.4	35.0	97.0	1.0	46.0	5.0	2.0
C11282	C07403//BD1002/BELLAGIO	82	29.8	58.1	35.0	95.0	1.5	46.5	3.5	3.9
C11207	C05631//C05647/CBB-20	7	29.4	56.6	36.0	97.0	1.0	47.0	4.0	2.0
C11210	C06820/BD1002	10	29.4	56.1	35.0	98.0	2.0	47.5	4.0	2.8
C11259	C07401//CBB-20/C05617	59	29.4	59.3	35.0	96.0	2.0	46.0	4.5	1.5
C11214	C05647/C05617	14	29.3	63.8	35.0	98.0	1.5	49.0	4.0	2.6
C11294	C07403/I08949	94	29.2	64.7	35.0	98.0	1.0	46.0	4.0	3.2
C11250	BELLAGIO//C05647/X07804	50	29.1	67.5	36.0	98.0	2.5	47.5	3.5	3.5
C11284	C07403//BD1002/C07403	84	29.1	65.8	37.0	96.0	1.5	46.5	4.5	3.2
C11310	C07413//BD1002/BELLAGIO	110	29.0	55.2	36.0	97.0	1.5	47.0	5.0	2.6
C11315	CAPRI/CBB-20	115	29.0	59.4	35.0	99.0	1.5	48.0	4.0	2.6
C11275	C07403//CBB-20/C06812	75	28.7	60.4	35.0	96.0	2.0	47.0	4.0	1.9
C11320	C05617/CBB-20	120	28.7	55.7	35.0	97.0	1.5	45.5	4.5	1.4
C11325	C08712/CBB-20	125	28.7	61.8	35.0	98.0	1.5	47.5	4.5	4.2
C11258	C07401//CBB-20/C05617	58	28.6	58.3	36.0	95.0	1.0	46.5	5.0	1.9
C11264	C07401//CBB-20/C05653	64	28.5	55.6	34.0	97.0	1.5	47.5	5.0	1.9
C11228	C05653/CBB-20	28	28.4	66.8	35.0	96.0	1.5	49.0	5.0	3.5

EXPERIMENT 1222 PRELIMINARY CRANBERRY YIELD TRIAL (1)								PLANTED: 6/14/11		
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE	CBB (1-5)
C11246	BELLAGIO//X07801/C07403	46	28.4	54.9	36.0	96.0	3.0	46.0	3.5	3.6
C11243	BELLAGIO//BD1002/BELLAGIO	43	28.3	65.1	36.0	48.0	1.0	24.0	2.0	3.3
C11205	C05631//C05603/CBB-20	5	28.2	60.5	36.0	96.0	1.5	49.0	4.5	4.2
C11225	C05603/CBB-20	25	28.2	50.4	37.0	96.0	2.5	46.5	4.5	3.0
C11312	C07413//BD1002/BELLAGIO	112	28.2	56.6	36.0	97.0	2.0	49.0	5.5	3.6
C11233	C05631//C05647/X07804	33	28.1	61.5	36.0	97.0	2.0	47.5	4.5	3.8
C11270	C07401//C05647/X07801	70	28.1	61.7	35.0	97.0	2.0	45.5	4.0	4.0
C11321	C05617/CBB-20	121	28.1	56.4	35.0	95.0	1.0	47.5	5.0	3.4
C11324	C05617/CBB-20	124	28.1	55.6	35.0	49.0	1.0	23.0	2.0	2.9
C11206	C05631//C05603/CBB-20	6	28.0	60.4	36.0	96.0	2.0	48.0	4.5	3.3
C11292	C07403/I08949	92	28.0	55.4	35.0	96.0	1.5	45.0	3.5	4.6
C11326	C08717/C07403	126	28.0	52.8	36.0	98.0	2.5	46.5	3.5	2.7
C11202	C05631//C05603/CBB-20	2	27.9	71.9	37.0	96.0	1.5	50.5	5.5	3.6
C11247	BELLAGIO//X07801/C07403	47	27.9	54.2	36.0	95.0	1.5	48.5	4.5	3.9
C11267	C07401//CBB-20/C05653	67	27.9	61.3	35.0	94.0	2.5	47.0	4.0	2.5
C11319	C05617/CBB-20	119	27.9	58.1	35.0	97.0	2.0	47.5	5.0	2.1
C11285	C07403//C05647/X07801	85	27.7	60.2	36.0	94.0	2.0	47.0	4.0	3.7
C11234	C05631//C05647/X07804	34	27.6	64.5	35.0	96.0	1.0	46.5	5.0	4.2
C11252	BELLAGIO//C05647/X07804	52	27.6	66.7	37.0	96.0	2.0	50.0	4.5	3.9
C11316	CAPRI/CBB-20	116	27.6	55.7	34.0	101.0	2.0	48.5	4.0	1.9
C11208	C05631//CAPRI/Jalo Listra Pretas	8	27.5	64.6	35.0	97.0	2.0	49.0	3.5	3.8
C11239	BELLAGIO//BD1002/BELLAGIO	39	27.5	65.0	35.0	96.0	2.5	48.0	4.0	3.2
C11278	C07403//CBB-20/C06812	78	27.2	63.0	36.0	99.0	3.0	48.0	3.5	3.1
C11216	C06820/C05617	16	27.1	59.7	35.0	96.0	2.0	48.5	4.5	3.2
C11227	C03157/CAPRI	27	27.1	65.7	34.0	97.0	2.0	48.0	4.0	3.9
C11277	C07403//CBB-20/C06812	77	27.1	58.2	35.0	96.0	1.5	46.0	4.0	3.4
C11237	BELLAGIO//BD1002/BELLAGIO	37	27.0	59.5	36.0	98.0	2.0	47.5	4.0	3.2
C99833	CARDINAL/K94803, **CAPRI**	127	27.0	64.8	35.0	99.0	2.0	48.0	4.0	3.1
C11288	C07403//C05647/X07805	88	26.9	67.5	36.0	98.0	3.0	47.0	3.0	3.7
C11309	C07413//BD1002/BELLAGIO	109	26.9	46.5	35.0	98.0	1.0	48.5	5.5	3.8
C11218	C06812/X07801	18	26.7	60.8	36.0	97.0	2.0	48.0	5.0	4.5
C11289	C07403//C05647/X07805	89	26.6	61.8	35.0	97.0	2.5	47.5	4.0	3.2
C11231	C05631//C05647/X07804	31	26.3	61.0	36.0	96.0	1.5	45.0	4.5	2.8
C11263	C07401//CBB-20/C05617	63	26.3	67.2	35.0	96.0	1.0	46.5	4.5	2.0
C11203	C05631//C05603/CBB-20	3	26.2	59.3	35.0	96.0	2.0	48.0	5.0	3.0
C11242	BELLAGIO//BD1002/BELLAGIO	42	26.1	61.2	35.0	95.0	1.5	48.5	5.0	3.4
C11244	BELLAGIO//X07801/C07403	44	26.1	64.2	35.0	95.0	2.5	47.5	3.0	3.7
C11255	C07401//CBB-20/C05617	55	26.1	63.8	36.0	96.0	1.0	46.0	4.5	3.9
C11286	C07403//C05647/X07801	86	26.0	64.2	36.0	96.0	2.0	48.5	4.5	3.4
C11226	C03157/CAPRI	26	25.8	66.3	35.0	96.0	2.0	49.0	4.5	3.4
C11279	C07403//CBB-20/C06812	79	25.8	60.2	36.0	97.0	2.0	47.0	4.5	3.9
C11302	C07413//CBB-20/C05617	102	25.8	51.5	35.0	98.0	1.5	46.5	4.0	3.2
C11296	C07403/I08943	96	25.7	58.7	35.0	95.0	2.0	46.5	3.0	3.6
C11303	C07413//CBB-20/C05617	103	25.7	49.0	35.0	95.0	1.0	44.0	4.0	4.0
C11307	C07413//CBB-20/C05617	107	25.7	52.2	34.0	99.0	1.0	48.5	4.5	2.4

EXPERIMENT 1222 PRELIMINARY CRANBERRY YIELD TRIAL (1)								PLANTED: 6/14/11		
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE	CBB (1-5)
C11249	BELLAGIO//C05647/X07804	49	25.5	62.9	35.0	96.0	1.0	47.5	5.0	4.0
C11256	C07401//CBB-20/C05617	56	25.5	62.4	35.0	98.0	1.0	47.5	4.5	4.4
C11311	C07413//BD1002/BELLAGIO	111	25.5	53.6	35.0	97.0	1.5	50.0	5.0	3.0
C11313	C07413//BD1002/BELLAGIO	113	25.2	53.6	35.0	97.0	1.5	48.5	5.5	3.9
C11245	BELLAGIO//X07801/C07403	45	25.0	70.9	35.0	95.0	3.0	46.0	3.0	4.6
C11253	C07401//CBB-20/C05617	53	25.0	56.9	36.0	96.0	1.0	47.0	4.5	4.2
C11254	C07401//CBB-20/C05617	54	25.0	59.4	36.0	95.0	1.0	44.0	3.5	4.4
C11283	C07403//BD1002/BELLAGIO	83	25.0	51.4	36.0	97.0	2.0	47.5	3.5	4.5
C11299	C07403/I08955	99	24.9	60.0	35.0	97.0	2.5	46.5	3.0	3.3
C11287	C07403//C05647/X07805	87	24.8	65.9	35.0	96.0	2.0	46.5	3.5	4.1
C11293	C07403/I08949	93	24.7	65.1	35.0	96.0	1.5	44.0	3.5	4.4
C11298	C07403/I08955	98	24.7	63.1	35.0	98.0	2.0	46.0	4.0	3.9
C11301	C07413//CBB-20/C05617	101	24.7	49.2	35.0	98.0	2.0	47.5	4.0	4.2
C11306	C07413//CBB-20/C05617	106	24.6	50.9	35.0	98.0	1.5	50.0	4.5	3.0
C11291	C07403/I08949	91	24.4	54.2	35.0	96.0	1.5	45.5	3.5	4.3
C11248	BELLAGIO//C05647/X07804	48	24.3	61.5	36.0	97.0	1.5	48.0	4.5	4.4
C11323	C05617/CBB-20	123	24.3	55.3	35.0	98.0	2.0	47.0	4.5	2.5
C11272	C07401/I08946	72	24.2	64.5	36.0	96.0	2.0	47.5	4.0	2.8
C11297	C07403/I08943	97	24.1	58.8	36.0	97.0	2.5	47.5	3.5	4.3
C11308	C07413//BD1002/BELLAGIO	108	24.1	49.3	36.0	96.0	1.0	47.5	4.5	4.3
C11232	C05631//C05647/X07804	32	24.0	64.2	35.0	96.0	1.5	48.0	4.0	4.9
C11236	C05631//C05647/X07804	36	24.0	59.6	36.0	94.0	1.0	45.5	4.0	5.0
C11280	C07403//BD1002/BELLAGIO	80	23.7	55.6	35.0	94.0	2.0	47.0	3.5	4.6
C11209	C06819/C07403	9	23.5	61.3	35.0	96.0	1.5	47.5	4.0	4.1
C11290	C07403/I08949	90	23.5	53.9	36.0	96.0	1.5	45.5	4.0	4.4
C11211	C05660/X07801	11	23.2	50.2	35.0	95.0	1.5	47.0	4.5	4.6
C11265	C07401//CBB-20/C05653	65	23.2	53.4	35.0	95.0	1.5	47.0	4.0	3.3
C11295	C07403/I08949	95	23.1	64.6	35.0	97.0	1.0	44.0	4.5	3.7
C11217	X07801/C07403	17	22.6	56.4	36.0	96.0	2.0	49.5	5.5	3.5
C11281	C07403//BD1002/BELLAGIO	81	22.4	55.3	35.0	95.0	1.5	47.0	3.5	4.2
C11322	C05617/CBB-20	122	22.4	56.0	35.0	97.0	2.5	47.0	4.5	2.8
C11230	C05631//C07410/I07149	30	21.8	74.0	36.0	98.0	2.0	48.0	3.5	3.2
C11224	CAPRI/CBB-20	24	21.7	49.3	36.0	96.0	2.0	46.5	4.5	3.6
C11300	C07413//CBB-20/C05617	100	20.3	48.0	35.0	98.0	2.0	47.5	4.5	3.5
C11235	C05631//C05647/X07804	35	19.9	54.3	36.0	48.0	0.5	23.0	2.5	4.4
C11262	C07401//CBB-20/C05617	62	19.8	57.5	35.0	95.0	1.0	45.5	4.0	3.6
C11304	C07413//CBB-20/C05617	104	19.4	48.1	35.0	95.0	1.5	45.5	3.0	4.9
C11318	CAPRI/CBB-20	118	17.5	52.9	36.0	96.0	2.5	46.5	3.0	4.2
MEAN (128)			27.2	59.4	35.1	95.3	1.7	46.8	4.3	3.3
LSD (.05)			6.4	5.3	1.3	17.2	0.8	8.6	1.3	1.0
CV (%)			14.6	5.5	1.8	9.1	23.0	9.3	15.5	18.5

EXPERIMENT 1223 PRELIMINARY CRANBERRY YIELD TRIAL (2)								PLANTED: 6/14/11		
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE	CBB (1-5)
C11369	C99833/C08716	43	32.2	49.8	35.0	99.0	2.0	47.0	4.0	3.0
C11370	C99833/C08716	44	30.1	44.7	35.0	97.0	2.0	48.0	4.0	2.9
C11383	I06209/C07414	57	29.7	51.4	34.0	98.0	1.0	48.0	5.0	2.7
C11368	C99833/C08716	42	29.6	47.5	34.0	97.0	3.0	50.0	4.5	3.6
I92014	**ETNA**	71	29.6	63.4	36.0	95.0	1.0	46.5	4.0	4.4
C11347	C08706/I06209	21	29.4	52.1	35.0	98.0	1.0	47.5	4.5	1.8
C11378	C08712/C08716	52	29.1	46.6	36.0	96.0	1.0	48.0	5.5	3.0
C11388	C08712/C07403	62	29.0	52.6	35.0	97.0	2.0	48.5	4.0	2.6
I11232	**RED RIDER**	72	29.0	60.3	37.0	103.0	2.0	48.5	3.5	3.7
C11367	C08716/I06209	41	28.7	39.9	35.0	100.0	2.0	48.5	4.0	1.4
C11379	C08712/C08716	53	28.7	58.5	36.0	95.0	1.0	46.5	5.0	3.4
C11380	C08712/C08716	54	27.9	45.1	36.0	96.0	2.0	47.5	4.0	4.0
C07411	X03516/C99804	68	27.7	44.1	35.0	97.0	2.0	49.0	4.5	3.6
C11337	C07414/C07403	11	27.6	45.7	35.0	95.0	1.0	48.0	4.5	4.0
C11349	C08716/C07403	23	27.5	40.4	35.0	102.0	3.0	47.5	3.5	2.4
C11373	C08706/C08712	47	27.3	50.4	36.0	96.0	1.0	48.0	5.5	3.3
C11346	C08706/I06209	20	27.2	52.6	35.0	98.0	1.5	47.5	5.0	2.7
C11360	C08712/C08717	34	27.0	45.5	34.0	95.0	1.5	46.0	3.5	3.7
C11390	C07403/C08717	64	26.8	47.3	35.0	96.0	1.0	49.0	4.5	2.6
C11392	C07403/C08717	66	26.8	55.3	35.0	98.0	2.0	48.5	4.0	2.6
C11366	C08716/I06209	40	26.6	44.3	37.0	94.0	1.0	46.5	4.5	3.9
C11371	C07414/C08706	45	26.4	59.1	35.0	98.0	1.5	50.0	5.5	3.7
C11344	C08706/I06209	18	26.3	48.8	35.0	99.0	1.5	47.5	4.0	2.1
C11374	C08706/C08712	48	26.2	51.4	35.0	96.0	1.5	47.5	5.0	3.0
C11393	C07403/C08717	67	26.2	52.7	35.0	98.0	2.0	47.0	4.5	3.0
C11386	C08706/C08716	60	26.0	57.2	35.0	98.0	3.0	46.5	3.5	2.8
C11387	C08717/C07414	61	26.0	54.2	35.0	96.0	1.5	48.5	4.5	3.4
C11339	C08706/C07403	13	25.9	53.8	35.0	97.0	1.5	46.5	4.0	2.4
C11375	C08706/C08712	49	25.8	46.6	36.0	96.0	1.5	48.5	5.5	2.7
C11389	C07403/C08717	63	25.8	40.6	35.0	97.0	2.0	50.0	5.0	2.9
C11391	C07403/C08717	65	25.6	49.5	36.0	99.0	2.0	47.0	4.0	2.6
C11329	C08717/C07403	3	25.5	44.6	35.0	96.0	1.5	47.0	4.0	2.9
C11343	C08706/I06209	17	25.3	57.7	35.0	99.0	1.5	47.5	4.0	1.6
C11348	C08706/I06209	22	25.3	51.4	36.0	96.0	1.0	46.5	4.0	3.3
C11328	C08717/C07403	2	25.1	38.8	36.0	97.0	2.0	44.5	4.0	3.1
C11335	C07403/I07132	9	25.1	51.7	35.0	96.0	1.5	47.0	4.0	3.8
C11359	C08712/C08717	33	25.1	52.2	36.0	96.0	1.5	48.0	4.0	3.1
C11336	C07414/C07403	10	25.0	58.9	35.0	95.0	1.0	46.0	4.0	3.3
C11381	C08712/C08716	55	25.0	54.1	35.0	94.0	1.5	47.0	4.5	4.3
C11385	I06209/C07414	59	25.0	31.8	35.0	97.0	1.0	48.0	5.0	3.9

EXPERIMENT 1223 PRELIMINARY CRANBERRY YIELD TRIAL (2)								PLANTED: 6/14/11		
NAME	**PEDIGREE**	**ENTRY**	**YIELD CWT /ACRE**	**100 SEED WT. (g)**	**DAYS TO FLOWER**	**DAYS TO MATURITY**	**LODGING (1-5)**	**HEIGHT (cm)**	**DES. SCORE**	**CBB (1-5)**
C11341	C08706/I06209	15	24.8	49.2	34.0	98.0	1.5	49.0	4.5	2.4
C11350	C08717/C99833	24	24.8	49.3	35.0	97.0	1.5	46.5	4.0	3.3
C11353	C08717/C99833	27	24.8	70.5	35.0	99.0	2.0	46.5	4.0	2.8
C11363	C08712/C08717	37	24.8	63.8	35.0	95.0	1.0	48.5	5.5	3.0
C11364	C08712/C08717	38	24.8	61.3	35.0	97.0	1.5	47.0	4.0	2.9
C11372	C07414/C08706	46	24.8	51.4	34.0	98.0	1.5	49.5	5.0	3.6
C11351	C08717/C99833	25	24.6	60.3	35.0	99.0	2.0	47.5	4.0	2.6
C11355	C08717/C08716	29	24.6	36.1	35.0	97.0	1.0	44.5	4.0	4.3
C11340	C08706/C07403	14	24.5	53.0	36.0	96.0	1.0	48.0	4.5	3.0
C11382	I06209/C07414	56	24.5	45.6	35.0	101.0	1.5	49.0	4.0	3.0
C99833	CARDINAL/K94803, **CAPRI**	70	24.5	51.4	36.0	99.0	2.0	48.5	3.5	3.4
C11361	C08712/C08717	35	24.2	46.0	35.0	95.0	1.5	45.5	4.0	3.7
C11357	C08717/C08716	31	24.1	42.7	35.0	98.0	2.0	46.0	4.0	3.3
C11327	C08717/C07403	1	23.8	39.9	35.0	97.0	2.0	45.5	4.0	3.0
C11352	C08717/C99833	26	23.8	53.3	35.0	99.0	2.0	47.5	4.0	2.7
C11358	C08717/C08716	32	23.8	48.9	35.0	96.0	1.5	46.5	5.0	2.9
C11333	C07403/I07132	7	23.6	57.1	36.0	98.0	2.0	45.5	3.5	4.0
C11376	C07414/C99833	50	23.6	48.1	35.0	98.0	1.5	47.0	4.5	4.3
C11331	C99833/C08717	5	23.5	61.7	35.0	95.0	1.0	48.0	4.5	3.2
C11354	C08717/C99833	28	23.3	54.0	36.0	98.0	2.0	45.0	4.0	2.7
C11345	C08706/I06209	19	23.2	56.1	36.0	96.0	1.0	47.0	4.5	3.2
C11332	C99833/C08717	6	22.7	55.1	35.0	97.0	2.0	47.0	4.5	2.7
C11334	C07403/I07132	8	22.6	53.0	36.0	97.0	1.5	46.5	4.0	3.7
C11338	C07414/C07403	12	22.4	47.1	36.0	95.0	1.0	47.0	4.5	4.0
C11362	C08712/C08717	36	22.4	56.2	35.0	95.0	1.0	47.0	4.5	3.7
C11365	C08712/C08717	39	22.2	44.8	36.0	95.0	1.5	45.5	4.0	4.3
C11384	I06209/C07414	58	22.2	45.8	35.0	96.0	1.0	48.0	4.5	4.3
C11377	C07414/C99833	51	21.7	49.7	34.0	98.0	2.0	48.0	4.5	4.4
C11356	C08717/C08716	30	21.5	46.9	35.0	97.0	1.5	46.0	4.0	3.0
C11342	C08706/I06209	16	20.9	46.5	35.0	97.0	1.5	48.0	4.5	3.0
I11259	**UCD0801**	69	18.3	35.3	39.0	110.0	3.0	51.5	1.0	3.3
C11330	C99833/C08717	4	18.2	50.3	35.0	96.0	2.0	46.5	4.0	2.9
MEAN (72)			25.4	50.3	35.1	97.0	1.6	47.4	4.3	3.2
LSD (.05)			5.2	14.2	1.1	1.8	0.7	1.8	0.9	1.1
CV (%)			12.6	17.4	1.5	0.9	23.1	1.9	10.1	21.4

EXPERIMENT 1224 PRELIMINARY MAYACOBA YIELD TRIAL								PLANTED: 6/14/11	
NAME	**PEDIGREE**	**ENTRY**	**YIELD CWT /ACRE**	**100 SEED WT. (g)**	**DAYS TO FLOWER**	**DAYS TO MATURITY**	**LODGING (1-5)**	**HEIGHT (cm)**	**DES. SCORE**
K08961	K04604/USDK-CBB-15	11	33.1	53.8	34.0	92.0	0.9	48.8	6.1
X11405	FR-07-AZP-14-06	5	25.6	39.5	39.0	99.0	1.9	47.9	4.6
X11403	FR-07-AZP-14-04	3	25.5	36.1	41.0	99.0	2.7	49.8	4.6
X11401	FR-07-AZP-14-02	1	25.1	43.4	39.0	98.0	1.5	48.1	4.9
X11406	FR-07-AZP-16-01	6	23.7	40.5	38.0	94.0	2.2	46.0	3.7
X11402	FR-07-AZP-14-03	2	23.6	42.9	40.0	98.0	1.5	49.2	5.6
X11404	FR-07-AZP-14-05	4	23.6	39.6	39.0	98.0	2.0	48.5	5.2
X11407	FR-07-AZP-16-02	7	22.3	42.2	39.0	95.0	1.9	48.0	4.6
I11237	**UC CANARIO 707**	12	21.8	38.5	40.0	110.0	2.9	49.4	2.3
I11236	**MYASI**	9	20.5	27.1	37.0	94.0	3.6	46.5	1.6
X11408	FR-07-AZP-16-05	8	20.1	37.1	39.0	92.0	1.9	46.8	3.9
I06275	**HIGUERA**	10	17.7	25.2	35.0	94.0	2.0	46.0	1.4
MEAN (12)			23.5	38.8	38.5	96.7	2.1	47.9	4.0
LSD (.05)			5.5	8.6	2.1	2.1	1.0	3.3	1.5
CV (%)			13.7	12.4	2.1	1.0	19.1	2.7	14.4

EXPERIMENT 1225 NATIONAL WHITE MOLD YIELD TRIAL								PLANTED: 6/14/11			
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE	WM (1-9)	WM (%)
I08933	37-2	4	41.4	44.2	41.0	98.0	2.0	53.9	5.0	4.0	44.4
I10125	ND080547	8	41.3	34.9	42.0	101.0	4.0	48.5	3.5	4.0	44.4
B09204	B05054/B04588	35	39.1	25.7	43.0	99.0	1.0	57.1	6.0	2.3	25.9
B09135	B04316/B05040	29	39.0	24.4	43.0	102.0	2.5	52.3	5.5	2.7	29.6
B10201	N05311/B05055	36	38.5	22.9	43.0	102.0	2.0	50.6	4.0	3.3	37.0
P07863	I02545/P02630	1	38.2	47.1	44.0	105.0	2.5	53.6	4.5	2.3	25.9
B10202	N05311/X06121	37	38.2	27.4	44.0	101.0	2.0	55.3	5.5	2.7	29.6
I10126	PS02-050-2	6	37.7	40.4	41.0	101.0	2.5	53.1	5.0	2.7	29.6
B04554	B00103//B00103/X00822, **ZORRO**	25	37.5	25.3	44.0	101.0	2.0	52.3	5.5	3.0	33.3
I07113	PNE-6-94-75/Kodiak, **LAPAZ**	50	37.3	40.1	42.0	99.0	2.5	54.4	5.0	4.7	51.8
G09330	G04514/G02647	44	37.1	43.8	43.0	98.0	1.5	54.0	6.0	4.0	44.4
B09128	B05055/B05044	28	36.8	21.3	45.0	101.0	1.5	57.0	6.0	1.3	14.8
B09203	B05054/B04588	34	36.8	26.4	43.0	101.0	2.0	55.8	5.0	2.3	25.9
G08254	G04514/G93414	40	36.6	42.9	43.0	98.0	2.5	48.9	5.0	3.7	40.7
B09184	B04349/B05001	31	36.5	22.2	44.0	100.0	2.0	54.8	6.0	2.3	25.9
I03390	ND9902621-2, **ECLIPSE**	26	36.1	22.9	43.0	97.0	2.0	52.4	5.0	4.7	51.8
B09194	B05055/B05044	32	36.1	22.7	44.0	101.0	2.5	53.4	5.5	3.0	33.3
I06249	ND020069, **LARIAT**	49	35.6	45.3	41.0	101.0	3.5	49.3	4.0	6.0	66.6
B09197	B05055/B04588	33	35.5	24.0	44.0	100.0	1.5	54.3	5.5	1.7	18.5
B95556	B90211/N90616, **JAGUAR**	23	35.3	21.0	44.0	99.0	1.0	57.4	6.0	2.3	25.9
P07793	I02545/P02647	3	35.2	46.2	42.0	102.0	2.0	49.0	4.0	2.0	22.2
P08312	I04324/P02646	51	34.9	49.2	42.0	100.0	2.5	49.3	5.0	4.0	44.4
P04205	P99119/G99750, **SANTA FE**	47	34.4	53.0	41.0	95.0	2.0	48.8	5.5	2.7	29.6
B00101	PHANTOM/BLACKJACK, **CONDOR**	24	34.2	21.9	45.0	101.0	3.0	47.7	4.0	4.7	51.8
S08418	S02754/S04503	56	34.2	38.0	44.0	101.0	2.5	52.6	5.0	2.3	25.9
R08516	R98026/S02753	2	33.8	43.0	42.0	100.0	2.0	54.8	5.0	3.3	37.0
B09175	N05311/B05055	30	33.8	27.2	45.0	99.0	1.5	55.5	5.0	3.0	33.3
S00809	R94142/X94076, **SEDONA**	55	33.4	41.0	42.0	100.0	3.0	48.3	4.5	5.0	55.5
S08419	S02754/S04503	57	33.3	44.2	44.0	101.0	2.0	52.3	6.0	2.7	29.6
I11201	Pink Panther//ZAA/Montcalm, **CLOUSEAU**	59	32.9	63.6	37.0	101.0	2.0	49.3	3.5	4.3	48.1
R98026	R94037/R94161, **MERLOT**	54	32.4	42.5	45.0	101.0	3.0	52.0	4.5	5.0	55.5
P08329	X05129/P02646	52	31.9	45.5	42.0	99.0	2.0	51.2	5.5	4.0	44.4
G10411	G05220/X07810	46	31.8	39.7	43.0	99.0	3.0	48.5	4.5	7.0	77.7
P08339	X05129/P02646	53	31.8	46.9	43.0	100.0	2.0	51.5	4.5	4.3	48.1
G93414	**MATTERHORN**	39	31.5	37.1	42.0	97.0	3.0	47.0	5.0	7.3	81.4
G09320	G04514/G02647	43	30.9	43.7	42.0	98.0	2.0	51.6	5.0	4.0	44.4
I81066	SEL-BTS,**T39**	22	30.7	22.6	45.0	99.0	4.0	47.4	4.0	6.3	70.3
N10108	N05311/B04587	21	30.3	23.4	46.0	103.0	2.0	53.7	5.5	2.7	29.6
I10124	ND060514	9	29.9	23.4	43.0	98.0	2.0	49.5	5.0	4.0	44.4
K08222	RED HAWK/USDK-CBB-15	60	29.7	64.9	39.0	102.0	2.5	46.6	4.0	2.7	29.6

EXPERIMENT 1225 NATIONAL WHITE MOLD YIELD TRIAL								PLANTED: 6/14/11			
NAME	**PEDIGREE**	**ENTRY**	**YIELD CWT /ACRE**	**100 SEED WT. (g)**	**DAYS TO FLOWER**	**DAYS TO MATURITY**	**LODGING (1-5)**	**HEIGHT (cm)**	**DES. SCORE**	**WM (1-9)**	**WM (%)**
G08256	G04514/G93414	41	29.5	42.8	41.0	96.0	1.5	51.8	5.0	3.3	37.0
I05834	ND020351, **STAMPEDE**	48	29.5	42.9	43.0	100.0	1.5	51.4	5.0	5.0	55.5
G09303	G04207/P05437	42	29.0	39.2	42.0	98.0	3.0	49.8	4.5	6.3	70.3
C07411	X03516/C99804	64	29.0	63.7	36.0	99.0	2.0	48.8	4.0	5.3	59.2
K08228	K03271/USDK-CBB-15	61	28.9	59.9	38.0	101.0	2.0	46.6	4.0	2.3	25.9
I09129	PR0443-151	27	28.5	19.4	46.0	103.0	3.0	47.6	4.0	4.3	48.1
I08958	Mayflower/Avanti, **MEDALIST**	13	28.1	17.3	44.0	101.0	2.0	52.2	5.0	3.7	40.7
N09046	B04554/N05357	16	28.0	19.7	46.0	103.0	3.0	49.7	5.0	2.3	25.9
G10409	G05220/X07810	45	27.9	32.9	44.0	97.0	2.0	52.7	6.0	5.0	55.5
B10244	B04610/N05346	38	27.6	22.4	43.0	100.0	2.0	54.9	5.5	2.0	22.2
N09175	N05311/B05055	18	27.5	25.3	45.0	102.0	2.0	52.5	5.5	2.0	22.2
N10104	N05319//N05311/N04109	20	27.1	20.5	44.0	97.0	1.0	55.9	6.5	2.7	29.6
K08961	K04604/USDK-CBB-15	62	27.0	65.3	36.0	99.0	1.0	48.3	5.5	3.0	33.3
K90902	BEA/50B1807//LASSEN, **BELUGA**	58	26.8	60.5	40.0	103.0	2.0	48.6	4.0	1.7	18.5
I96417	G122 MAGNUSON	12	26.4	43.9	37.0	110.0	2.0	51.1	2.0	1.0	11.1
N08007	N01792/N03614	15	26.4	21.4	44.0	102.0	3.0	51.5	4.0	4.0	44.4
I89011	RB,**BERYL**	10	26.3	36.5	41.0	97.0	3.5	41.5	2.5	9.0	99.9
C99833	CARDINAL/K94803, **CAPRI**	63	25.4	66.1	35.0	100.0	2.0	46.5	4.0	3.0	33.3
I10103	OAC 7-2, **OAC REXETER**	14	24.9	22.3	44.0	106.0	3.0	53.5	4.0	1.3	14.8
I81010	JAPON3/MAGDALENE, **BUNSI**	11	24.6	24.2	41.0	101.0	3.0	46.1	4.0	5.3	59.2
I11261	Z0726-9-54	5	20.8	35.2	41.0	97.0	2.0	40.3	2.5	4.0	44.4
N09056	N04152/N05346	17	19.6	22.7	43.0	101.0	2.0	53.2	5.0	2.0	22.2
N10101	N04109/B05044	19	18.9	18.3	43.0	100.0	2.5	48.2	4.0	4.0	44.4
I06217	A195	7	8.9	53.5	43.0	110.0	2.0	49.6	2.0	1.0	11.1
MEAN (64)			31.5	36.2	42.2	100.4	2.3	51.1	4.7	3.6	39.5
LSD (.05)			5.8	2.7	2.3	3.0	0.2	2.5	0.6	1.2	13.1
CV (%)			11.3	4.6	2.8	1.5	5.4	2.4	6.0	20.4	20.4

EXPERIMENT 1226 GENETIC WHITE MOLD YIELD TRIAL (AP647)								PLANTED: 6/14/11			
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE	WM (1-9)	WM (%)
P07721	I02545/P02647	23	45.6	40.3	45.0	101.0	3.0	56.5	2.5	6.0	66.6
P07773	I02545/P02647	69	40.6	42.4	44.0	102.0	3.5	55.5	3.0	2.5	27.8
P07782	I02545/P02647	77	39.8	43.7	43.0	96.0	3.5	52.5	2.5	5.0	55.5
P07774	I02545/P02647	70	39.3	37.7	44.0	99.0	2.5	56.0	3.0	5.0	55.5
P07748	I02545/P02647	44	39.2	50.4	44.0	98.0	3.5	50.0	2.5	4.5	50.0
P07767	I02545/P02647	63	39.2	49.2	41.0	95.0	1.0	52.0	1.5	3.5	38.9
P07763	I02545/P02647	59	38.8	49.4	39.0	93.0	2.0	56.0	3.5	3.5	38.9
P07798	I02545/P02647	93	38.5	41.0	44.0	98.0	3.5	56.0	3.0	4.5	50.0
P02647	G99750/P97803	2	38.1	50.4	42.0	98.0	3.0	55.0	2.5	5.0	55.5
P07762	I02545/P02647	58	37.3	38.3	41.0	95.0	3.0	57.0	2.5	3.0	33.3
P07786	I02545/P02647	81	37.1	39.6	42.0	97.0	2.0	55.5	2.5	5.0	55.5
P07788	I02545/P02647	83	37.1	50.6	42.0	99.0	1.5	58.0	3.0	5.0	55.5
P07742	I02545/P02647	38	36.7	49.5	43.0	95.0	1.5	55.0	3.0	3.5	38.9
P07751	I02545/P02647	47	36.7	41.4	42.0	97.0	1.5	57.5	2.5	4.0	44.4
P07704	I02545/P02647	6	36.6	48.7	43.0	95.0	3.5	57.0	2.0	7.5	83.3
P07771	I02545/P02647	67	36.5	47.9	45.0	98.0	1.5	60.0	4.0	3.5	38.9
P07706	I02545/P02647	8	36.2	41.3	42.0	99.0	2.0	57.5	3.0	3.0	33.3
P07712	I02545/P02647	14	36.1	42.5	41.0	100.0	4.5	55.5	2.0	5.5	61.1
P07783	I02545/P02647	78	36.1	39.9	44.0	102.0	3.5	53.5	1.5	6.5	72.2
P07776	I02545/P02647	72	36.0	42.8	42.0	96.0	3.0	55.0	3.5	4.0	44.4
P07730	I02545/P02647	31	35.9	40.7	44.0	96.0	3.5	50.5	2.0	3.5	38.9
P07760	I02545/P02647	56	35.9	41.3	43.0	99.0	4.5	57.0	3.5	5.5	61.1
P07789	I02545/P02647	84	35.9	40.4	41.0	96.0	1.0	54.0	4.0	3.0	33.3
P07765	I02545/P02647	61	35.8	40.8	42.0	97.0	2.5	51.0	3.5	3.0	33.3
P07715	I02545/P02647	17	35.7	48.4	43.0	96.0	3.0	54.5	4.0	5.5	61.1
P07716	I02545/P02647	18	35.6	40.2	42.0	96.0	1.5	55.0	3.0	2.5	27.8
P07744	I02545/P02647	40	35.6	40.4	43.0	101.0	2.5	52.5	2.0	4.0	44.4
P07794	I02545/P02647	89	35.5	43.4	42.0	104.0	3.0	51.0	2.5	4.5	50.0
P07746	I02545/P02647	42	35.4	48.8	41.0	98.0	2.0	58.0	3.0	4.0	44.4
P07757	I02545/P02647	53	35.4	39.4	44.0	100.0	1.5	56.5	3.0	4.0	44.4
P07785	I02545/P02647	80	35.4	41.6	43.0	97.0	3.0	58.0	2.0	4.5	50.0
P07791	I02545/P02647	86	35.4	40.2	43.0	96.0	2.0	52.0	2.5	2.5	27.8
P07792	I02545/P02647	87	35.1	37.8	43.0	96.0	3.5	52.5	3.5	4.0	44.4
P07772	I02545/P02647	68	34.6	47.2	42.0	97.0	2.5	57.0	3.5	6.0	66.6
P07796	I02545/P02647	91	34.5	38.4	42.0	102.0	3.0	56.0	2.5	3.0	33.3
P07725	I02545/P02647	27	34.4	37.8	42.0	99.0	2.5	52.5	2.0	4.0	44.4
P07768	I02545/P02647	64	34.2	38.5	42.0	98.0	2.5	54.5	3.0	4.0	44.4
P07702	I02545/P02647	4	34.0	39.3	42.0	93.0	3.0	52.0	2.5	7.0	77.7
P07719	I02545/P02647	21	34.0	42.9	42.0	95.0	2.0	52.5	3.0	5.5	61.1
P07711	I02545/P02647	13	33.4	45.9	42.0	98.0	4.0	57.5	2.5	6.5	72.2

EXPERIMENT 1226 GENETIC WHITE MOLD YIELD TRIAL (AP647)								PLANTED: 6/14/11			
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE	WM (1-9)	WM (%)
P07797	I02545/P02647	92	33.4	36.2	43.0	101.0	3.5	50.0	2.5	5.5	61.1
P07770	I02545/P02647	66	33.2	39.8	43.0	95.0	3.0	55.0	2.0	3.5	38.9
P07800	I02545/P02647	95	33.2	41.4	43.0	97.0	2.5	56.5	4.5	4.5	50.0
P07799	I02545/P02647	94	33.1	40.3	44.0	99.0	3.0	54.5	2.5	5.0	55.5
P07709	I02545/P02647	11	33.0	34.6	44.0	95.0	2.0	54.5	2.5	3.5	38.9
P07795	I02545/P02647	90	33.0	40.8	44.0	102.0	2.5	54.5	2.0	5.5	61.1
P07754	I02545/P02647	50	32.9	39.5	37.0	96.0	2.5	55.0	2.5	6.0	66.6
P07759	I02545/P02647	55	32.6	42.5	42.0	96.0	2.0	55.5	3.5	3.0	33.3
P07707	I02545/P02647	9	32.4	47.1	41.0	93.0	3.0	57.0	3.5	3.0	33.3
P07750	I02545/P02647	46	32.3	39.1	44.0	95.0	3.0	55.0	2.5	7.0	77.7
P07720	I02545/P02647	22	32.2	42.0	43.0	97.0	2.5	55.0	2.5	4.0	44.4
P07734	I02545/P02647	34	32.2	40.0	44.0	96.0	1.5	51.0	2.5	7.0	77.7
P07755	I02545/P02647	51	32.0	35.8	46.0	97.0	2.0	50.0	1.5	2.5	27.8
P07708	I02545/P02647	10	31.9	42.7	42.0	98.0	3.5	58.0	2.5	3.5	38.9
P07778	I02545/P02647	74	31.8	43.3	42.0	98.0	2.5	54.0	2.5	3.0	33.3
P07777	I02545/P02647	73	31.6	42.1	42.0	99.0	4.0	60.5	3.0	1.5	16.7
P07761	I02545/P02647	57	31.5	42.4	39.0	96.0	2.0	52.5	1.5	2.5	27.8
P07769	I02545/P02647	65	31.3	39.1	42.0	95.0	2.0	54.0	2.5	4.5	50.0
P07726	I02545/P02647	28	31.0	40.4	44.0	98.0	3.5	54.0	3.0	3.5	38.9
P07731	I02545/P02647	32	31.0	36.2	43.0	98.0	4.0	51.0	1.5	4.5	50.0
P07756	I02545/P02647	52	30.9	40.4	43.0	98.0	2.5	60.0	2.5	2.5	27.8
P07722	I02545/P02647	24	30.4	38.6	42.0	96.0	2.5	56.5	2.5	5.0	55.5
P07723	I02545/P02647	25	30.1	37.2	42.0	93.0	4.5	50.0	1.5	6.5	72.2
P07764	I02545/P02647	60	30.0	35.8	44.0	100.0	3.0	57.5	2.0	3.0	33.3
P07787	I02545/P02647	82	29.8	44.4	43.0	98.0	3.0	56.0	2.5	4.0	44.4
P07779	I02545/P02647	75	29.7	38.6	43.0	97.0	2.5	54.5	2.5	5.5	61.1
P07745	I02545/P02647	41	29.6	41.0	42.0	95.0	2.5	55.5	3.0	5.0	55.5
P07758	I02545/P02647	54	29.3	38.9	44.0	101.0	2.0	50.5	2.5	4.0	44.4
P07727	I02545/P02647	29	29.2	38.4	41.0	95.0	1.5	53.5	1.5	4.0	44.4
P07775	I02545/P02647	71	28.7	44.3	43.0	96.0	3.0	52.5	2.5	5.0	55.5
P07703	I02545/P02647	5	28.6	39.8	41.0	101.0	2.0	56.5	3.0	4.5	50.0
P07737	I02545/P02647	36	28.5	42.3	42.0	97.0	2.5	53.5	2.5	3.5	38.9
P07738	I02545/P02647	37	28.5	42.6	38.0	96.0	4.5	55.0	1.5	7.5	83.3
P07735	I02545/P02647	35	28.3	43.5	43.0	98.0	1.5	51.0	3.5	3.0	33.3
P07747	I02545/P02647	43	28.1	38.0	42.0	94.0	3.0	53.0	2.5	3.0	33.3
P07718	I02545/P02647	20	27.9	41.1	43.0	101.0	2.5	52.0	2.0	4.0	44.4
P07790	I02545/P02647	85	27.5	39.3	40.0	99.0	3.0	58.5	2.5	2.0	22.2
I02545	AZTEC/ND88-106-04, **AN 37**	1	27.4	40.0	43.0	97.0	1.0	58.5	4.0	2.0	22.2
P07784	I02545/P02647	79	27.4	38.7	41.0	98.0	3.5	56.0	2.0	6.5	72.2
P07733	I02545/P02647	33	27.3	39.3	41.0	99.0	2.0	54.0	1.5	5.0	55.5

EXPERIMENT 1226 GENETIC WHITE MOLD YIELD TRIAL (AP647)								PLANTED: 6/14/11			
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE	WM (1-9)	WM (%)
P07793	I02545/P02647	88	27.2	37.5	41.0	96.0	1.5	54.5	3.0	3.0	33.3
P07743	I02545/P02647	39	27.1	37.3	40.0	98.0	2.0	53.0	2.0	3.5	38.9
P07701	I02545/P02647	3	26.9	37.8	45.0	98.0	1.5	51.0	3.5	3.5	38.9
P07781	I02545/P02647	76	26.6	40.3	41.0	96.0	3.5	56.0	2.5	7.0	77.7
P07766	I02545/P02647	62	26.4	35.8	42.0	96.0	2.5	53.5	2.5	6.0	66.6
P07724	I02545/P02647	26	26.2	39.8	41.0	97.0	1.5	52.0	3.5	2.5	27.8
P07753	I02545/P02647	49	26.1	38.8	40.0	96.0	3.0	53.0	2.0	4.5	50.0
P07713	I02545/P02647	15	25.9	33.8	42.0	97.0	3.0	54.0	3.5	5.5	61.1
P07705	I02545/P02647	7	25.8	37.7	41.0	98.0	2.0	55.0	3.0	4.5	50.0
P07717	I02545/P02647	19	25.3	36.8	41.0	94.0	3.0	52.5	1.5	5.0	55.5
P07752	I02545/P02647	48	25.2	42.4	43.0	95.0	2.0	50.5	3.0	4.5	50.0
P07710	I02545/P02647	12	25.0	33.2	41.0	94.0	2.0	51.0	3.5	5.0	55.5
P07749	I02545/P02647	45	24.8	40.7	41.0	97.0	2.0	56.5	3.0	5.0	55.5
P07801	I02545/P02647	96	24.5	41.6	43.0	98.0	2.0	53.5	4.5	4.0	44.4
P07728	I02545/P02647	30	23.8	37.4	40.0	98.0	2.5	54.0	2.5	3.5	38.9
P07714	I02545/P02647	16	23.4	41.7	37.0	94.0	2.0	50.0	2.0	3.5	38.9
MEAN (96)			32.2	41.0	42.0	97.1	2.6	54.5	2.7	4.3	48.0
LSD (.05)			6.9	3.3	2.5	4.6	2.1	5.9	2.2	4.1	45.2
CV (%)			13.3	5.0	3.0	2.4	40.3	5.4	40.7	47.3	47.3

EXPERIMENT 1227 BeanCAP Drought Yield Trial								PLANTED: 6/15/11				
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE	BIOMASS Kg	HARVEST INDEX	GROWTH HABIT
BC080	Matterhorn	23	43.2	41.1	40.0	97.0	2.0	48.0	5.0	4.4	46.8	2.0
BC093	Merlot	28	42.8	42.3	41.0	108.0	2.0	53.0	5.0	5.1	42.4	2.0
BC089	Santa Fe	26	42.2	49.5	40.0	97.0	2.5	47.5	4.5	4.6	43.6	2.0
BC286	A285	78	41.6	24.0	45.0	104.0	2.5	46.5	4.5	5.0	38.8	2.0
BC300	Lariat	86	40.4	46.9	40.0	106.0	3.0	49.0	4.5	4.5	44.4	2.0
BC120	La Paz	34	39.9	41.3	42.0	104.0	2.5	53.0	5.0	4.0	46.8	2.0
BC358	Orion	93	38.5	45.4	39.0	100.0	3.5	45.0	4.0	5.0	36.9	3.0
BC088	Zorro	25	38.4	23.6	44.0	100.0	1.0	55.0	6.0	4.2	45.1	2.0
BC037	IBC 301-204	11	38.3	31.6	41.0	99.0	4.0	42.0	3.5	3.9	47.3	3.0
BC041	Aifi Wuriti	13	38.3	29.0	43.0	101.0	2.0	48.0	4.5	4.7	38.9	2.0
BC307	Eclipse	90	38.2	23.4	41.0	99.0	1.0	54.0	6.0	4.7	41.2	2.0
BC234	PT7-2	67	38.0	47.1	37.0	100.0	2.5	48.5	4.0	4.9	39.7	3.0
BC296	GN9-4	82	37.8	45.0	40.0	107.0	2.0	48.5	4.0	5.1	36.6	2.0
BC048	F07-449-9-3	14	37.7	29.3	44.0	105.0	2.0	53.5	5.0	5.3	37.5	2.0
BC109	Poncho	31	37.7	45.5	35.0	98.0	4.0	37.0	2.0	5.8	33.7	3.0
BC124	Shania	35	37.1	21.5	46.0	106.0	1.5	54.0	4.5	5.3	33.6	2.0
BC062	Domino	17	36.8	21.7	44.0	105.0	2.0	56.5	5.0	4.5	36.7	2.0
BC134	Navigator	39	36.4	22.8	42.0	104.0	1.5	56.0	5.5	4.6	36.5	2.0
BC222	Quincy	62	36.4	44.5	36.0	97.0	3.0	40.5	3.5	4.5	37.5	3.0
BC387	Medicine Hat	96	36.3	49.1	40.0	97.0	1.5	50.5	5.0	3.6	47.7	2.0
BC174	US-1140	50	36.2	40.7	35.0	96.0	5.0	35.0	2.0	3.5	53.0	3.0
BC386	Buster	95	35.8	46.8	40.0	95.0	2.5	46.5	4.0	3.3	53.0	2.0
BC038	CENTA Pupil	12	35.5	26.5	44.0	101.0	2.0	48.5	5.0	3.8	45.2	2.0
BC127	Schooner	36	35.4	20.8	41.0	102.0	3.0	48.0	4.0	4.6	35.7	2.0
BC161	Common Pinto	45	35.3	40.3	35.0	103.0	4.5	39.5	2.5	4.8	34.2	3.0
BC298	PT9-17	84	34.6	48.4	37.0	102.0	3.5	39.0	3.5	4.3	39.8	3.0
BC031	Verano	9	34.5	27.5	45.0	106.0	2.0	48.0	4.0	4.2	39.5	2.0
BC145	Midnight	43	34.2	22.5	44.0	110.0	2.0	57.5	4.5	4.4	37.3	2.0
BC228	Nodak	64	34.2	41.7	35.0	97.0	4.5	32.5	3.0	3.0	54.0	3.0
BC053	F04-2801-4-1-2	15	34.1	25.6	44.0	100.0	2.0	52.0	6.0	3.9	39.7	2.0
BC070	Sierra	20	34.1	36.2	45.0	104.0	3.0	48.5	5.0	4.6	38.5	2.0
BC215	A-55	60	33.4	28.4	46.0	109.0	1.5	65.0	4.0	5.2	31.8	2.0
BC301	Stampede	87	33.2	43.4	41.0	100.0	2.0	55.0	5.5	3.9	40.3	2.0
BC357	Gemini	92	33.2	38.2	35.0	97.0	3.0	39.5	3.5	3.4	46.1	3.0
BC302	ND-307	88	33.1	47.6	42.0	101.0	2.5	49.0	5.0	4.7	33.0	2.0
BC279	Roza	75	32.7	35.9	42.0	105.0	4.0	38.5	3.0	5.0	31.0	3.0
BC094	Sedona	29	32.4	42.3	44.0	99.0	2.0	54.5	5.5	4.1	39.4	2.0
BC056	Seafarer	16	32.3	21.6	40.0	101.0	2.0	48.0	4.0	4.3	36.8	1.0
BC068	Mayflower	19	32.3	21.4	42.0	105.0	2.0	53.0	5.0	5.2	29.2	2.0
BC131	Pink Floyd	37	31.9	36.4	36.0	96.0	3.5	40.0	3.0	3.9	40.1	3.0

EXPERIMENT 1227 BeanCAP Drought Yield Trial								PLANTED: 6/15/11				
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE	BIOMASS Kg	HARVEST INDEX	GROWTH HABIT
BC216	I9365-31	61	31.9	26.4	45.0	101.0	3.5	43.0	4.0	5.0	29.6	3.0
BC085	Jaguar	24	31.7	21.3	44.0	100.0	1.0	52.5	6.0	3.7	42.4	2.0
BC075	Raven	21	31.6	22.8	45.0	102.0	2.0	56.0	5.0	4.1	35.9	2.0
BC142	ROG 312	42	31.6	39.6	35.0	97.0	4.0	35.5	3.5	4.0	37.5	3.0
BC028	PR 0340-3-3-1	79	31.4	31.4	43.0	100.0	1.5	48.5	4.0	4.0	39.7	2.0
BC016	Bill Z	2	31.1	39.4	38.0	99.0	5.0	33.0	2.0	5.7	30.8	3.0
BC020	Montrose	4	31.1	40.8	40.0	95.0	5.0	30.0	2.0	4.2	34.8	3.0
BC160	UI-537	44	31.1	43.3	36.0	97.0	4.5	33.5	2.5	4.2	37.6	3.0
BC138	Marquis	41	31.0	41.1	39.0	98.0	4.0	40.0	3.0	4.2	38.0	3.0
BC375	Yolano	94	31.0	36.2	35.0	103.0	4.0	41.0	3.0	3.9	35.8	3.0
BC231	Othello	65	30.8	47.8	36.0	95.0	3.5	40.0	3.5	4.0	38.0	3.0
BC026	DOR 364	8	30.7	26.7	45.0	102.0	2.5	48.5	4.5	3.8	36.9	3.0
BC281	Gloria	77	30.7	38.4	41.0	103.0	4.5	41.0	2.5	5.9	26.5	3.0
BC239	USPT-CBB-5	69	30.6	39.3	35.0	94.0	3.0	34.0	3.0	3.1	44.0	3.0
BC291	SEA 10	81	29.8	41.2	41.0	96.0	3.5	40.5	3.5	3.4	43.8	3.0
BC306	Avalanche	89	29.8	22.6	44.0	100.0	2.5	50.5	5.0	4.1	33.8	2.0
BC164	Kimberly	47	29.5	40.7	42.0	101.0	3.5	43.0	3.5	3.5	40.8	3.0
BC236	USPT-CBB-1	68	29.1	37.5	37.0	105.0	3.0	47.5	3.5	5.9	24.8	3.0
BC007	BelNeb-RR-1	1	28.8	41.2	39.0	95.0	4.5	33.5	2.5	3.6	37.4	3.0
BC299	Maverick	85	28.8	41.1	39.0	94.0	2.5	45.5	4.0	2.7	48.1	3.0
BC272	Indeterminate Jamaica Red	72	28.7	45.9	42.0	104.0	3.0	46.5	3.0	4.3	33.6	3.0
BC243	USRM-20	71	28.6	49.1	39.0	97.0	3.0	43.0	4.0	3.3	40.9	3.0
BC204	NE2-09-3	59	28.5	49.2	39.0	97.0	2.0	47.5	4.0	3.2	43.9	3.0
BC137	Beryl R	40	28.3	35.6	39.0	97.0	4.0	40.0	3.5	3.6	38.6	3.0
BC110	Topaz	32	28.2	41.8	36.0	94.0	4.0	36.0	2.5	3.2	43.9	3.0
BC170	UI-239	49	28.1	38.7	37.0	100.0	4.0	36.5	3.0	4.4	31.6	3.0
BC079	Kodiak	22	27.8	46.6	41.0	96.0	3.0	46.5	4.0	3.0	44.3	2.0
BC242	NW-63	70	27.8	34.2	37.0	105.0	5.0	37.5	2.5	6.2	20.3	3.0
BC290	BAT 477	80	27.8	27.0	43.0	102.0	3.5	42.0	4.0	4.0	32.8	3.0
BC092	T-39	27	27.5	23.1	45.0	99.0	2.5	45.0	4.0	3.6	37.4	3.0
BC104	115M (Black Rhino)	30	27.5	19.4	43.0	107.0	3.5	47.5	4.0	11.3	15.3	3.0
BC022	Shiny Crow	5	27.3	26.9	42.0	100.0	4.0	44.5	4.0	4.2	30.9	3.0
BC024	Croissant	7	27.3	41.5	41.0	99.0	3.0	48.0	5.0	3.2	40.5	3.0
BC133	Medalist	38	27.3	20.4	43.0	104.0	2.0	54.0	5.0	3.7	34.6	2.0
BC066	C-20	18	27.1	22.0	45.0	109.0	2.0	48.5	4.5	5.1	25.4	2.0
BC178	UI-114	52	26.8	37.9	36.0	97.0	5.0	33.5	2.5	3.8	36.1	3.0
BC297	GN9-1	83	26.6	44.8	40.0	103.0	3.0	44.0	3.5	4.4	30.5	3.0
BC195	ABCP-8	57	26.5	36.6	43.0	102.0	4.5	38.5	2.5	5.1	28.9	3.0
BC196	Chase	58	26.4	41.4	42.0	100.0	4.0	36.5	3.0	3.4	35.8	3.0
BC194	Coyne	56	26.0	40.7	42.0	101.0	3.0	47.0	4.0	3.9	34.4	3.0

EXPERIMENT 1227 BeanCAP Drought Yield Trial										PLANTED: 6/15/11		
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	DAYS TO MATURITY	LODGING (1-5)	HEIGHT (cm)	DES. SCORE	BIOMASS Kg	HARVEST INDEX	GROWTH HABIT
BC192	Weihing	55	25.6	45.9	41.0	101.0	2.5	45.0	4.0	3.8	31.5	3.0
BC329	CDC Crocus	91	25.1	47.5	35.0	95.0	5.0	33.5	2.0	2.9	39.2	3.0
BC033	PR 0443-151	10	24.8	21.8	46.0	107.0	3.0	47.5	4.5	4.2	27.2	3.0
BC162	Common Red Mexican	46	24.8	35.7	37.0	105.0	4.5	42.0	2.5	3.7	32.4	3.0
BC232	NW-590	66	24.7	40.0	36.0	104.0	5.0	37.5	2.5	4.9	22.7	3.0
BC111	Buckskin	33	23.2	39.9	35.0	95.0	4.5	38.0	3.0	3.5	32.0	3.0
BC179	UI-425	53	21.9	39.1	37.0	99.0	5.0	34.0	2.0	3.8	28.7	3.0
BC267	Victor	73	19.8	36.0	36.0	107.0	4.5	37.0	2.0	5.6	21.7	3.0
BC019	Fisher	3	18.5	39.4	47.0	110.0	4.5	43.0	2.5	4.4	13.0	3.0
BC176	UI-59	51	17.9	37.7	42.0	96.0	5.0	33.0	2.5	3.2	26.0	3.0
BC280	Harold	76	17.4	32.7	44.0	109.0	4.5	40.5	3.0	9.0	8.5	3.0
BC023	San Juan	6	13.9	28.7	52.0	109.0	5.0	36.5	2.0	9.4	5.2	3.0
BC224	TARS-VCI-4B	63	13.1	26.5	48.0	110.0	5.0	43.0	2.5	10.5	8.1	3.0
BC278	Viva	74	12.4	31.0	39.0	110.0	5.0	37.0	2.0	12.7	6.6	3.0
BC165	Sawtooth	48	5.6	34.2	43.0	110.0	4.5	48.0	2.5	6.8	3.7	3.0
BC185	GN#1Sel27	54	5.2	32.7	45.0	110.0	5.0	35.5	2.0	10.1	3.9	3.0
MEAN (96)			30.3	35.7	40.4	101.1	3.2	44.3	3.7	4.6	34.7	2.6
LSD (.05)			9.3	3.5	3.2	1.8	0.7	2.2	0.7	2.5	11.7	0.3
CV (%)			15.4	4.9	4.0	0.9	10.5	2.5	10.0	26.8	16.9	6.3

EXPERIMENT 1429 PLH YIELD TRIAL								PLANTED: 6/13/11		
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	LODGING (1-5)	HEIGHT (cm)	LEAF CURL	LEAF BURN	PLH COUNT
G08158	Matterhorn/EMP 507	58	37.7	38.4	43.0	4.0	42.0	2.0	0.0	5.9
G08114	Matterhorn/EMP 507	14	37.4	41.9	42.0	4.0	42.0	2.3	0.0	5.7
G08149	Matterhorn/EMP 507	49	36.5	39.3	46.0	-	50.8	2.0	0.0	2.3
P08153	Matterhorn/EMP507	53	36.0	36.7	42.0	2.5	38.0	2.0	0.3	1.6
G08171	Matterhorn/EMP 507	71	34.9	41.1	45.0	4.0	40.6	1.7	0.3	5.2
P08166	Matterhorn/EMP 507	66	34.7	44.5	41.0	2.5	40.0	1.7	0.0	3.2
G08131	Matterhorn/EMP 507	31	34.6	36.3	46.0	4.0	40.0	2.0	0.3	3.8
G08159	Matterhorn/EMP 507	59	34.3	41.8	43.0	3.0	38.1	2.3	0.3	3.1
P08151	Matterhorn/EMP507	51	33.7	45.4	41.0	3.0	38.0	1.0	0.7	3.0
P08161	Matterhorn/EMP 507	61	33.6	42.2	42.0	3.0	40.6	2.0	0.3	5.1
G08118	Matterhorn/EMP 507	18	33.1	41.3	43.0	2.0	40.6	2.7	1.0	4.6
G08152	Matterhorn/EMP 507	52	33.0	36.4	40.0	4.0	30.5	2.0	0.0	2.5
G08107	Matterhorn/EMP 507	7	32.7	45.1	42.0	2.0	35.0	3.0	0.7	2.7
G08139	Matterhorn/EMP507	39	32.1	41.8	41.0	2.0	33.0	2.0	0.3	3.4
P08169	Matterhorn/EMP 507	69	31.9	44.6	41.0	3.0	40.0	2.3	0.0	2.2
G08132	Matterhorn/EMP 507	32	31.7	43.2	41.0	3.0	38.1	2.3	0.3	2.4
P86299	**SIERRA**	80	31.7	42.5	40.0	2.5	38.0	1.0	0.0	2.2
G08119	Matterhorn/EMP 507	19	31.6	41.3	45.0	4.0	38.1	1.7	0.0	2.8
G08117	Matterhorn/EMP 507	17	31.4	42.4	41.0	3.5	38.0	2.0	0.3	5.9
G08128	Matterhorn/EMP507	28	31.2	48.3	41.0	3.0	35.6	1.7	1.0	3.6
G08113	Matterhorn/EMP 507	13	30.4	38.6	41.0	5.0	25.0	3.7	1.3	3.9
G08115	Matterhorn/EMP 507	15	30.0	45.9	41.0	2.5	36.0	2.7	1.0	5.0
G08138	Matterhorn/EMP 507	38	29.8	40.3	42.0	4.0	30.0	2.7	0.0	6.2
G08108	Matterhorn/EMP 507	8	29.7	39.7	42.0	3.0	38.1	2.8	2.0	6.3
G08111	Matterhorn/EMP507	11	29.6	37.8	43.0	3.0	33.0	3.0	1.0	4.9
P08104	Matterhorn/EMP 507	4	29.5	42.2	42.0	3.0	36.0	2.0	0.7	4.1
P08135	Matterhorn/EMP 507	35	29.4	36.1	42.0	3.0	38.0	1.3	0.0	3.0
I07152	**EMP 507**	77	29.3	28.9	47.0	4.0	40.6	1.0	0.0	2.3
P08142	Matterhorn/EMP507	42	29.2	40.6	46.0	3.0	38.1	1.0	0.3	5.1
P08162	Matterhorn/EMP 507	62	28.7	43.6	41.0	2.0	35.0	3.0	1.0	3.0
G08136	Matterhorn/EMP 507	36	28.1	45.5	41.0	2.0	38.1	3.3	2.3	4.4
G08106	Matterhorn/EMP 507	6	28.0	44.5	42.0	4.0	35.6	1.7	0.7	5.7
G08121	Matterhorn/EMP 507	21	28.0	33.5	49.0	4.0	40.6	2.3	0.0	4.1
G08109	Matterhorn/EMP 507	9	27.9	40.4	42.0	1.5	40.0	2.7	0.7	6.2
G08129	Matterhorn/EMP507	29	27.8	32.2	46.0	4.0	35.0	3.3	1.0	4.6

EXPERIMENT 1429 PLH YIELD TRIAL								PLANTED: 6/13/11		
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	LODGING (1-5)	HEIGHT (cm)	LEAF CURL	LEAF BURN	PLH COUNT
G08160	Matterhorn/EMP 507	60	27.6	44.4	41.0	1.5	40.0	1.7	0.0	3.2
G08112	Matterhorn/EMP507	12	27.3	45.3	41.0	3.0	33.0	3.7	2.7	8.3
P08116	Matterhorn/EMP 507	16	27.3	38.9	42.0	2.5	40.0	3.0	0.7	2.1
G08156	Matterhorn/EMP 507	56	27.3	46.6	42.0	3.5	35.0	2.3	1.3	3.8
G08170	Matterhorn/EMP 507	70	27.2	43.8	41.0	2.0	33.0	3.7	1.7	6.0
G08101	Matterhorn/EMP 507	1	27.1	41.5	46.0	2.5	35.0	1.7	0.0	2.8
G08126	Matterhorn/EMP 507	26	27.1	43.2	42.0	5.0	20.3	2.3	1.0	5.7
I07153	**EMP 509**	78	27.1	29.2	43.0	2.5	38.0	1.3	0.3	3.7
G08130	Matterhorn/EMP 507	30	26.1	47.0	42.0	3.0	38.1	2.7	1.0	5.0
P08150	Matterhorn/EMP 507	50	25.6	45.0	41.0	3.0	40.0	1.3	0.0	3.0
G08164	Matterhorn/EMP 507	64	25.6	38.3	41.0	1.0	40.6	2.7	0.7	2.7
G08157	Matterhorn/EMP 507	57	25.3	42.2	41.0	3.0	41.9	4.0	1.3	3.3
G08173	Matterhorn/EMP 507	73	25.2	42.3	40.0	2.0	35.6	3.3	1.7	2.9
G08124	Matterhorn/EMP 507	24	25.0	38.1	41.0	4.0	25.4	2.0	0.3	2.5
G08145	Matterhorn/EMP507	45	25.0	39.1	43.0	2.5	40.0	2.0	1.3	4.8
G08103	Matterhorn/EMP507	3	24.9	34.6	41.0	3.5	33.0	4.0	1.3	4.0
P08125	Matterhorn/EMP 507	25	24.8	46.8	43.0	2.0	42.0	1.3	0.3	4.2
G08154	Matterhorn/EMP 507	54	24.1	39.2	41.0	3.5	32.0	2.3	1.0	4.1
P08175	Matterhorn/EMP507	75	24.0	39.3	41.0	2.0	40.0	1.3	0.0	5.9
G08127	Matterhorn/EMP 507	27	23.8	39.9	40.0	2.0	35.6	4.0	2.7	5.3
G08165	Matterhorn/EMP 507	65	23.7	42.0	41.0	3.0	30.5	4.3	4.3	7.1
G08102	Matterhorn/EMP 507	2	23.5	38.8	41.0	3.0	34.0	3.7	2.0	5.3
G08133	Matterhorn/EMP 507	33	23.3	44.7	41.0	3.0	33.0	3.0	1.3	6.7
G08147	Matterhorn/EMP 507	47	23.1	37.1	41.0	4.0	33.0	2.3	0.7	3.5
G08110	Matterhorn/EMP 507	10	23.0	42.9	42.0	2.0	40.6	2.7	1.0	5.7
G08140	Matterhorn/EMP507	40	22.8	42.8	41.0	2.5	35.0	3.7	2.3	6.2
G93414	**MATTERHORN**	76	22.6	44.4	40.0	4.5	30.0	3.3	0.7	4.1
G08168	Matterhorn/EMP507	68	22.3	42.0	42.0	1.5	35.0	3.0	3.0	7.0
P08172	Matterhorn/EMP 507	72	22.3	40.2	41.0	2.5	35.0	2.0	0.3	1.2
G08134	Matterhorn/EMP 507	34	22.0	47.0	41.0	3.0	33.0	1.7	0.7	3.4
G08163	Matterhorn/EMP 507	63	21.9	44.5	41.0	1.0	40.0	3.3	2.0	3.5
G08143	Matterhorn/EMP 507	43	21.6	40.8	42.0	2.0	35.0	2.0	0.0	2.3
G08174	Matterhorn/EMP 507	74	21.3	37.1	41.0	2.5	35.0	3.7	2.7	8.0
P08120	Matterhorn/EMP 507	20	20.7	40.1	46.0	3.5	40.0	2.0	0.0	2.8
G08167	Matterhorn/EMP 507	67	20.7	38.2	40.0	1.0	33.0	3.0	1.0	4.4

EXPERIMENT 1429 PLH YIELD TRIAL								PLANTED: 6/13/11		
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	LODGING (1-5)	HEIGHT (cm)	LEAF CURL	LEAF BURN	PLH COUNT
G08137	Matterhorn/EMP 507	37	20.6	37.4	42.0	2.0	40.6	4.0	2.3	5.9
G08123	Matterhorn/EMP 507	23	20.0	41.5	40.0	1.0	38.0	2.7	0.7	1.2
G08122	Matterhorn/EMP507	22	19.8	33.5	40.0	2.5	35.6	3.0	0.7	5.2
G08141	Matterhorn/EMP 507	41	19.6	44.9	42.0	3.0	35.6	3.0	0.7	3.4
P08144	Matterhorn/EMP507	44	19.3	43.4	41.0	2.0	42.0	3.0	1.3	4.9
G08105	Matterhorn/EMP 507	5	18.8	41.3	40.0	2.5	34.0	3.3	2.3	3.5
G08146	Matterhorn/EMP 507	46	18.7	40.1	42.0	1.5	38.0	3.0	2.0	5.2
G08148	Matterhorn/EMP 507	48	18.5	42.6	41.0	2.0	40.0	3.7	3.3	6.9
G08155	Matterhorn/EMP 507	55	18.5	44.0	41.0	1.5	35.0	2.7	1.0	4.3
I10130	**SWEDISH BROWN**	79	12.5	48.0	39.0	2.5	35.0	5.0	3.7	12.4
MEAN (80)			26.8	41.1	41.7	2.8	36.6	2.5	1.0	4.3
LSD (.05)			6.7	2.3	3.2	-	-	0.7	0.8	2.6
CV (%)			15.4	3.5	3.8	-	-	16.9	54.3	36.8

EXPERIMENT 1431 BNF YIELD TRIAL (PZ)								PLANTED: 6/13/11		
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	LODGING (1-5)	DES. SCORE	BIOMASS (Kg)	HARVEST INDEX	VIGOR (1-5)
B11611	I82054/B07554	111	38.3	26.6	50.0	2.0	3.3	4.0	45.3	2.0
B11567	I82054/B07554	67	35.8	26.0	52.0	2.7	2.7	4.1	41.2	2.0
B11588	I82054/B07554	88	35.7	28.3	48.0	2.0	4.3	3.8	44.7	3.0
B11552	I82054/B07554	52	34.7	24.2	52.0	2.0	3.3	4.4	36.8	3.0
B11615	I82054/B07554	115	34.7	24.5	46.0	2.7	2.7	4.2	39.6	2.0
B11586	I82054/B07554	86	34.3	22.3	48.0	3.7	2.3	3.9	36.4	3.0
B11529	I82054/B07554	29	33.8	27.7	51.0	3.0	2.7	5.2	32.9	3.0
B11536	I82054/B07554	36	33.8	23.3	47.0	3.0	3.0	3.4	46.6	3.0
B11502	I82054/B07554	2	33.5	30.4	44.0	3.0	3.0	3.6	43.5	2.0
B11621	I82054/B07554	121	33.5	26.4	44.0	2.3	3.3	4.5	36.3	3.0
B11516	I82054/B07554	16	33.4	25.7	46.0	2.7	2.7	3.5	45.5	3.0
B11519	I82054/B07554	19	33.3	19.8	49.0	1.3	5.0	3.7	43.4	2.0
B11602	I82054/B07554	102	33.1	30.6	48.0	2.3	3.3	3.6	42.5	2.0
B11600	I82054/B07554	100	33.0	27.7	47.0	2.7	2.0	5.2	29.9	3.0
B11610	I82054/B07554	110	32.8	28.7	46.0	2.3	2.7	4.4	35.4	3.0
B11571	I82054/B07554	71	32.4	26.4	47.0	1.7	4.0	4.2	36.6	3.0
B11603	I82054/B07554	103	32.3	26.9	45.0	3.0	2.7	4.1	36.7	2.0
B11561	I82054/B07554	61	31.8	23.0	47.0	1.7	4.0	3.5	43.7	3.0
B11580	I82054/B07554	80	31.7	25.3	48.0	3.3	2.0	3.9	38.3	2.0
B11619	I82054/B07554	119	31.4	28.1	47.0	2.3	2.3	4.0	35.8	3.0
B11594	I82054/B07554	94	31.2	25.8	49.0	2.3	3.7	3.3	44.9	4.0
B11521	I82054/B07554	21	31.0	21.2	56.0	3.3	2.3	7.2	21.1	2.0
B11570	I82054/B07554	70	30.8	25.7	45.0	2.0	2.3	4.0	37.3	2.0
B11614	I82054/B07554	114	30.7	23.4	47.0	2.0	3.7	3.0	48.3	3.0
B11506	I82054/B07554	6	30.6	21.8	41.0	2.3	2.0	3.6	40.1	2.0
B11551	I82054/B07554	51	30.6	33.2	51.0	2.7	2.7	4.1	34.3	2.0
B11515	I82054/B07554	15	30.3	25.0	51.0	3.0	1.7	4.0	35.9	3.0
B11543	I82054/B07554	43	30.3	22.7	45.0	2.7	3.3	4.9	28.7	3.0
B11583	I82054/B07554	83	30.1	26.9	44.0	1.7	4.3	4.0	36.5	2.0
B11534	I82054/B07554	34	29.8	31.2	45.0	3.0	2.0	4.6	30.6	3.0
B11522	I82054/B07554	22	29.7	26.1	44.0	3.0	2.7	5.0	28.8	3.0
B11622	I82054/B07554	122	29.7	24.0	49.0	1.3	4.7	3.5	39.8	4.0
B04554	B00103*/X00822, **ZORRO**	128	29.7	23.8	51.0	1.0	5.0	3.0	45.9	3.0
B11533	I82054/B07554	33	29.6	28.0	48.0	2.3	4.0	3.3	42.4	2.0
B11587	I82054/B07554	87	29.6	25.5	44.0	2.3	3.0	3.6	38.2	2.0

EXPERIMENT 1431 BNF YIELD TRIAL (PZ)									PLANTED: 6/13/11	
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	LODGING (1-5)	DES. SCORE	BIOMASS (Kg)	HARVEST INDEX	VIGOR (1-5)
B11507	I82054/B07554	7	29.1	28.9	49.0	2.7	3.0	3.6	37.5	3.0
I09129	**PR0443-151**	130	29.1	21.9	47.0	2.7	4.0	3.5	39.6	3.0
B11589	I82054/B07554	89	29.0	25.1	43.0	1.7	4.0	4.3	31.5	3.0
B11572	I82054/B07554	72	28.9	23.9	53.0	2.0	3.3	5.2	26.1	3.0
B11584	I82054/B07554	84	28.9	21.6	45.0	2.0	3.7	5.1	26.5	3.0
B11559	I82054/B07554	59	28.8	24.6	47.0	2.0	3.3	4.5	29.7	3.0
B11617	I82054/B07554	117	28.7	23.0	43.0	1.7	4.7	1.8	50.5	3.0
B11523	I82054/B07554	23	28.6	30.9	45.0	2.3	3.0	3.2	43.9	3.0
B11554	I82054/B07554	54	28.6	26.0	51.0	3.3	3.0	5.2	26.5	3.0
B11563	I82054/B07554	63	28.5	25.9	46.0	2.0	3.0	4.1	32.0	3.0
B11582	I82054/B07554	82	28.5	20.0	48.0	1.0	5.0	3.3	41.5	3.0
B11544	I82054/B07554	44	28.3	26.9	45.0	2.7	3.3	3.3	40.0	3.0
B11530	I82054/B07554	30	28.2	25.0	50.0	2.3	2.3	3.7	36.0	3.0
B11545	I82054/B07554	45	28.2	25.3	45.0	1.7	2.7	4.1	32.1	3.0
B11579	I82054/B07554	79	28.2	27.4	42.0	2.7	3.3	2.8	47.9	3.0
B11616	I82054/B07554	116	28.2	23.9	43.0	1.3	3.0	4.2	31.0	3.0
B11540	I82054/B07554	40	28.0	30.7	44.0	3.3	2.7	4.2	31.3	3.0
B11592	I82054/B07554	92	28.0	25.9	45.0	2.3	3.7	4.2	31.4	2.0
B11539	I82054/B07554	39	27.9	24.2	45.0	1.0	4.0	3.0	45.1	3.0
B11623	I82054/B07554	123	27.7	25.7	47.0	1.7	4.0	2.7	34.3	3.0
B11526	I82054/B07554	26	27.6	24.0	44.0	2.7	3.3	3.5	36.7	3.0
B11576	I82054/B07554	76	27.6	26.7	44.0	1.3	4.0	3.3	39.6	3.0
B11549	I82054/B07554	49	27.3	26.5	43.0	2.0	4.3	4.2	30.5	3.0
B11613	I82054/B07554	113	27.3	23.5	44.0	1.7	4.3	3.9	32.9	3.0
B11538	I82054/B07554	38	27.2	26.5	46.0	2.7	2.0	4.7	27.9	2.0
B11555	I82054/B07554	55	27.1	26.9	45.0	2.7	2.7	4.5	28.6	2.0
B11596	I82054/B07554	96	27.1	22.9	46.0	2.0	4.3	4.0	32.5	3.0
B11597	I82054/B07554	97	27.1	23.0	45.0	1.3	5.0	3.5	34.9	2.0
B11625	I82054/B07554	125	27.0	24.2	46.0	3.0	2.3	3.7	34.8	2.0
B11520	I82054/B07554	20	26.9	25.0	46.0	3.7	2.3	3.3	36.9	3.0
B11547	I82054/B07554	47	26.7	25.4	48.0	3.0	2.3	2.6	46.9	2.0
I07112	**R99 NO NOD**	129	26.7	19.5	41.0	2.3	3.0	3.5	35.2	3.0
I08958	Mayflower/Avanti, **MEDALIST**	41	26.6	21.6	48.0	3.0	2.7	3.2	39.5	2.0
B11569	I82054/B07554	69	26.6	23.1	51.0	2.3	3.0	4.0	31.8	3.0
B11508	I82054/B07554	8	26.5	29.7	52.0	3.3	2.7	5.5	23.7	2.0

EXPERIMENT 1431 BNF YIELD TRIAL (PZ)									PLANTED: 6/13/11	
NAME	PEDIGREE	ENTRY	YIELD CWT /ACRE	100 SEED WT. (g)	DAYS TO FLOWER	LODGING (1-5)	DES. SCORE	BIOMASS (Kg)	HARVEST INDEX	VIGOR (1-5)
B11509	I82054/B07554	9	26.4	24.3	47.0	2.0	4.7	4.8	28.2	2.0
B11609	I82054/B07554	109	26.3	24.9	45.0	2.0	2.7	3.5	35.4	2.0
B11620	I82054/B07554	120	26.3	22.7	44.0	3.3	2.0	3.3	37.7	2.0
B11514	I82054/B07554	14	26.2	20.8	48.0	3.0	3.0	3.2	38.6	3.0
B11518	I82054/B07554	18	26.2	34.5	48.0	3.0	2.7	3.3	35.0	3.0
B11542	I82054/B07554	42	26.2	29.0	47.0	3.0	2.7	4.0	30.7	2.0
B11553	I82054/B07554	53	26.2	28.0	50.0	3.3	2.7	4.8	25.7	2.0
B11505	I82054/B07554	5	26.1	23.0	49.0	1.7	4.3	3.1	39.3	2.0
B11581	I82054/B07554	81	25.9	24.5	50.0	3.3	3.0	4.1	30.2	3.0
B11598	I82054/B07554	98	25.9	28.0	46.0	2.7	3.0	2.8	43.2	3.0
B11593	I82054/B07554	93	25.7	23.0	49.0	2.0	3.7	3.4	37.0	2.0
B11604	I82054/B07554	104	25.7	26.4	48.0	2.0	2.3	4.5	26.3	4.0
B11564	I82054/B07554	64	25.4	24.4	46.0	2.0	3.3	4.1	29.3	2.0
B11503	I82054/B07554	3	25.2	22.7	48.0	3.0	2.7	4.0	30.3	4.0
B11510	I82054/B07554	10	24.9	25.2	55.0	3.0	2.3	3.6	27.9	2.0
B11556	I82054/B07554	56	24.8	24.3	46.0	2.0	3.7	3.8	30.8	2.0
B11558	I82054/B07554	58	24.8	27.6	46.0	3.7	2.0	4.3	26.9	3.0
B11565	I82054/B07554	65	24.8	26.4	49.0	3.0	2.0	3.2	36.4	3.0
B11525	I82054/B07554	25	24.7	27.9	50.0	2.7	3.0	3.5	32.7	2.0
B11550	I82054/B07554	50	24.6	32.2	44.0	3.7	2.3	3.4	29.2	2.0
B11560	I82054/B07554	60	24.6	30.5	17.0	1.0	1.0	0.7	31.5	1.0
B11513	I82054/B07554	13	24.5	28.8	44.0	2.7	2.0	3.7	31.0	3.0
B11599	I82054/B07554	99	24.5	22.5	49.0	3.3	3.0	5.1	23.5	3.0
B11626	I82054/B07554	126	24.5	26.0	48.0	3.3	2.7	4.3	26.5	2.0
B11528	I82054/B07554	28	24.3	26.7	45.0	2.0	2.7	3.2	35.4	3.0
B11566	I82054/B07554	66	24.3	22.0	45.0	2.3	2.7	3.4	32.8	3.0
B11590	I82054/B07554	90	24.3	21.5	49.0	1.0	4.0	3.5	32.8	3.0
B11591	I82054/B07554	91	24.3	27.1	44.0	2.7	2.3	3.3	34.1	3.0
B11577	I82054/B07554	77	24.0	25.8	48.0	2.7	2.7	3.0	38.0	3.0
B11606	I82054/B07554	106	23.8	27.1	47.0	1.7	3.7	3.5	32.2	3.0
B11527	I82054/B07554	27	23.7	27.4	49.0	3.3	2.3	3.3	33.6	3.0
B11605	I82054/B07554	105	23.7	23.2	57.0	3.0	2.3	7.4	15.5	3.0
B11575	I82054/B07554	75	23.6	25.0	49.0	2.0	3.0	3.4	32.2	3.0
B11537	I82054/B07554	37	23.3	25.0	49.0	3.7	2.3	4.4	26.8	3.0
B11624	I82054/B07554	124	23.2	25.3	50.0	3.3	2.7	4.0	28.9	2.0

EXPERIMENT 1431 BNF YIELD TRIAL (PZ)									PLANTED: 6/13/11	
NAME	**PEDIGREE**	**ENTRY**	**YIELD CWT /ACRE**	**100 SEED WT. (g)**	**DAYS TO FLOWER**	**LODGING (1-5)**	**DES. SCORE**	**BIOMASS (Kg)**	**HARVEST INDEX**	**VIGOR (1-5)**
B11501	I82054/B07554	1	23.1	29.9	47.0	2.7	2.7	4.2	26.0	3.0
B11612	I82054/B07554	112	23.1	23.8	46.0	2.0	2.7	4.4	23.7	3.0
B11585	I82054/B07554	85	23.0	19.2	46.0	1.0	4.7	3.2	34.8	3.0
B11608	I82054/B07554	108	22.7	26.0	45.0	2.3	3.3	4.7	23.5	2.0
B11511	I82054/B07554	11	22.6	23.9	50.0	2.3	3.7	3.4	32.2	3.0
B11531	I82054/B07554	31	22.6	24.1	51.0	2.7	2.3	6.7	16.7	2.0
B11546	I82054/B07554	46	22.4	22.2	50.0	2.7	2.7	3.8	26.8	3.0
B11504	I82054/B07554	4	22.2	23.5	48.0	3.3	2.0	5.8	19.8	2.0
B11532	I82054/B07554	32	21.7	25.3	52.0	3.0	2.7	3.2	25.9	3.0
B11548	I82054/B07554	48	21.7	21.3	54.0	2.0	4.0	3.7	28.0	2.0
B11574	I82054/B07554	74	21.5	23.3	51.0	2.7	3.0	4.7	21.2	3.0
B11601	I82054/B07554	101	21.2	26.1	44.0	3.0	2.7	3.9	24.7	3.0
B11535	I82054/B07554	35	20.9	26.9	44.0	3.0	2.7	3.4	28.9	3.0
B11568	I82054/B07554	68	20.9	25.8	51.0	3.0	3.0	4.5	22.4	3.0
B11524	I82054/B07554	24	20.6	20.9	59.0	2.3	2.7	8.8	12.1	2.0
B11557	I82054/B07554	57	20.6	21.8	48.0	3.0	2.7	4.4	22.0	3.0
B11573	I82054/B07554	73	20.6	17.9	49.0	2.0	3.3	3.7	28.1	2.0
B11607	I82054/B07554	107	20.6	21.3	43.0	1.0	4.7	2.6	38.2	2.0
B11595	I82054/B07554	95	20.0	29.0	49.0	3.3	1.7	3.5	27.1	3.0
I82054	**PUEBLA 152 MX**	127	19.6	32.6	54.0	4.0	2.3	8.6	12.6	3.0
B11517	I82054/B07554	17	19.3	29.2	44.0	3.7	2.3	4.0	22.6	3.0
B11618	I82054/B07554	118	19.2	27.4	42.0	2.7	2.3	3.2	27.8	3.0
B11562	I82054/B07554	62	19.0	20.4	56.0	3.0	2.0	6.4	15.0	3.0
B11578	I82054/B07554	78	19.0	31.8	30.0	2.3	1.3	2.7	22.2	1.0
B11512	I82054/B07554	12	17.3	21.9	17.0	1.3	0.7	3.2	9.3	1.0
MEAN (130)			26.9	25.4	46.9	2.5	3.0	4.0	32.8	2.7
LSD (.05)			6.9	2.5	7.4	1.2	1.3	1.6	5.9	1.3
CV (%)			16.0	6.1	9.9	30.3	25.9	24.6	11.1	30.8

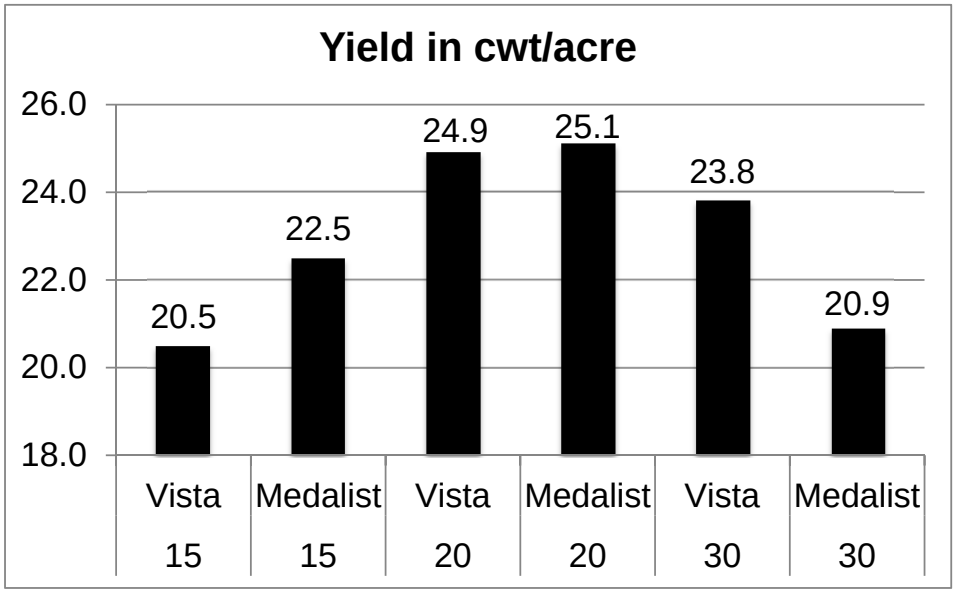
EXPERIMENT 1932 NAVY/BLACK ORGANIC YIELD TRIAL-Sattelberg-Tuscola County							PLANTED: 6/20/11		
NAME	**PEDIGREE**	**ENTRY**	**YIELD CWT /ACRE**	**100 SEED WT. (g)**	**DAYS TO FLOWER**	**DAYS TO MATURITY**	**LODGING (1-5)**	**DES. SCORE**	**STAND COUNT**
B04554	B00103//B00103/X00822, **ZORRO**	2	27.2	21.1	50.0	94.0	2.0	5.0	15.3
B09135	B04316/B05040	22	25.5	21.5	52.0	92.0	2.0	4.0	14.0
B09166	B04554/B04587	28	25.5	21.0	46.0	92.0	2.0	5.0	14.8
B09197	B05055/B04588	23	25.2	20.7	45.0	92.0	1.0	4.5	13.5
B09101	N05311/X06121	20	24.7	19.3	50.0	92.0	1.5	6.0	13.8
B09129	B05055/B04587	29	24.7	19.8	45.0	95.0	2.0	4.5	13.8
B09175	N05311/B05055	26	24.5	26.6	48.0	94.0	2.0	4.5	13.3
B10203	B05054/B04588	31	23.5	21.8	43.0	91.0	2.0	5.0	12.8
N09045	N05311/B05034	13	23.4	21.7	53.0	95.0	3.0	3.5	9.5
N10108	N05311/B04587	19	23.3	23.0	53.0	95.0	2.5	3.5	12.8
B09136	B04316/B05040	21	23.3	21.0	48.0	91.0	2.0	4.5	14.5
N09104	N05311/B05055	14	22.8	19.8	50.0	97.0	3.0	2.0	9.5
B09128	B05055/B05044	25	22.7	18.4	53.0	95.0	1.5	4.0	14.0
I08907	Midnight/Blackhawk, **BLACK VELVET**	3	22.6	25.0	53.0	97.0	2.5	4.0	12.3
B09204	B05054/B04588	35	21.8	21.9	43.0	92.0	2.0	4.0	12.8
N09174	N05311/B05055	5	21.7	25.1	51.0	93.0	3.0	3.0	10.0
I92002	C-20*3//GTS-0801/Seafarer, **VISTA**	4	21.5	20.4	48.0	92.0	3.5	2.5	12.0
B10201	N05311/B05055	32	21.4	22.4	56.0	92.0	1.5	4.5	14.3
B10246	B05039/ZORRO	33	21.4	19.5	50.0	94.0	2.5	3.5	12.5
B09199	B05055/B04587	36	21.1	24.4	40.0	91.0	2.0	4.0	14.3
N10109	B05055/N05324	18	20.3	18.2	53.0	92.0	3.0	4.5	13.3
N07007	N03614/N00844	15	19.9	17.2	40.0	93.0	3.0	3.0	9.5
N09046	B04554/N05357	10	19.7	17.5	45.0	95.0	3.5	2.0	12.5
B09188	B05054/B04588	27	19.6	22.6	48.0	94.0	1.5	3.5	13.5
B10202	N05311/X06121	30	18.8	25.1	47.0	93.0	1.0	5.0	13.0
N09020	N05319/B04316	6	18.0	18.8	49.0	92.0	2.5	3.5	10.5
N09035	B05055/B05070	8	17.6	20.9	38.0	93.0	3.0	2.5	10.8
N09034	B05055/B05070	7	17.5	22.0	45.0	92.0	3.5	2.0	10.0
N10101	N04109/B05044	17	17.5	15.9	48.0	90.0	2.0	4.5	14.5
B09201	B04444/B05044	24	16.9	16.9	50.0	93.0	1.5	5.5	15.8
N09055	N04152/N05346	16	16.8	20.0	45.0	96.0	4.5	1.0	7.5
N09041	B05070/B05044	9	15.4	20.5	53.0	91.0	3.0	2.5	9.0
N09056	N04152/N05346	11	15.3	21.4	45.0	95.0	3.5	2.5	7.5
N09178	B04554/N05357	12	15.1	20.2	38.0	90.0	2.5	3.5	13.3
I08958	Mayflower/Avanti, **MEDALIST**	34	13.3	20.1	49.0	92.0	3.0	3.0	12.8
I07112	**R99 NO NOD**	1	10.6	20.3	43.0	94.0	3.0	2.5	13.8
MEAN (36)			20.6	20.9	47.3	92.8	2.4	3.7	12.4
LSD (.05)			3.9	1.2	13.4	3.1	1.5	2.5	2.7
CV (%)			13.6	4.0	13.8	1.7	30.1	33.5	10.5

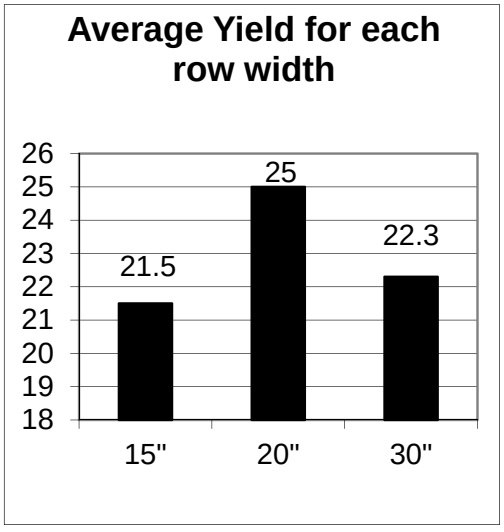
Navy Row Width
MSU Saginaw Valley Research and Extension Center
Frankenmuth, MI

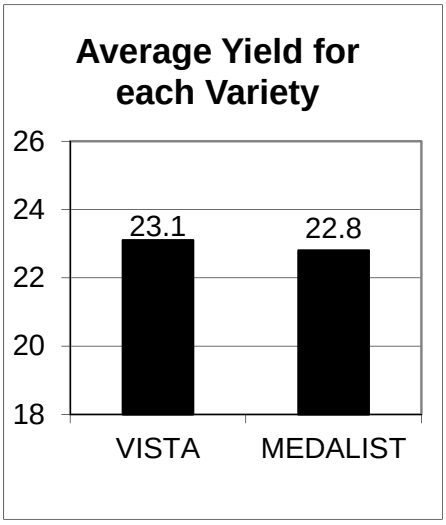
Row width	Variety	Yield	Height	Population
15	Vista	20.5	20.8	137,069
15	Medalist	22.5	21.4	126,614
20	Vista	24.9	21.2	119,354
20	Medalist	25.1	21.6	117,612
30	Vista	23.8	22.4	102,802
30	Medalist	20.9	22.6	104,544

LSD=3.87

C.V.= 11%

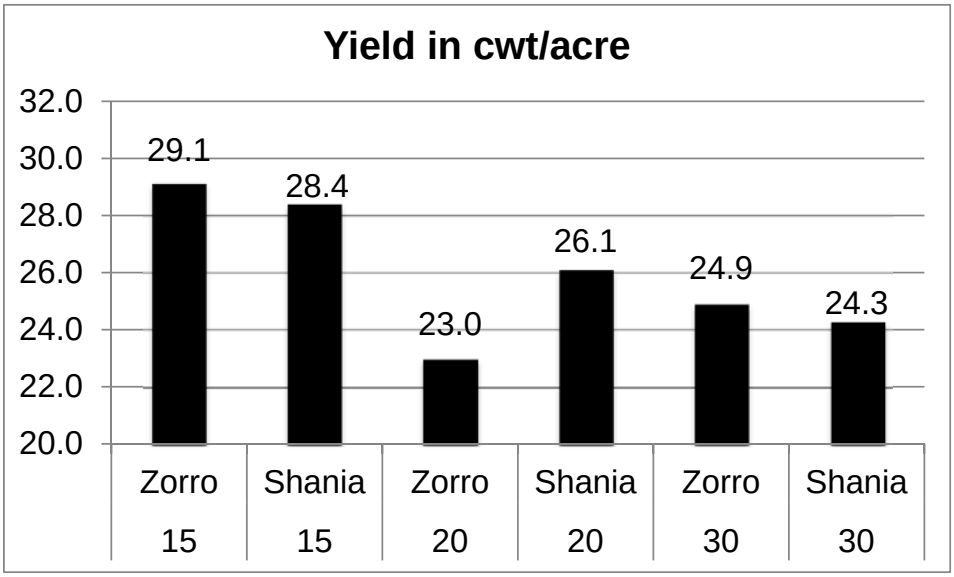


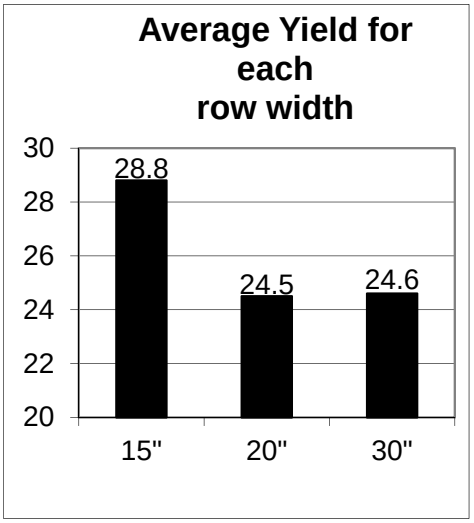


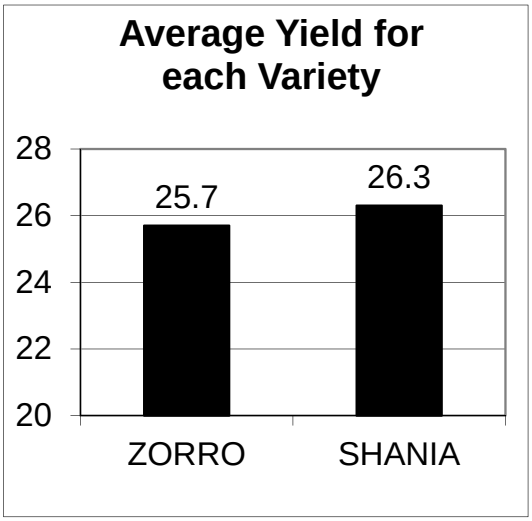


Black Row Width
MSU Saginaw Valley Research and Extension Center
Frankenmuth, MI

Row width	Variety	Yield	Height	Population
15	Zorro	29.1	20.2	130,099
15	Shania	28.4	20.6	130,099
20	Zorro	23.0	21.0	117,612
20	Shania	26.1	21.1	114,998
30	Zorro	24.9	21.8	102,802
30	Shania	24.3	22.1	97,574
		LSD=2.50		
		C.V.=6%		

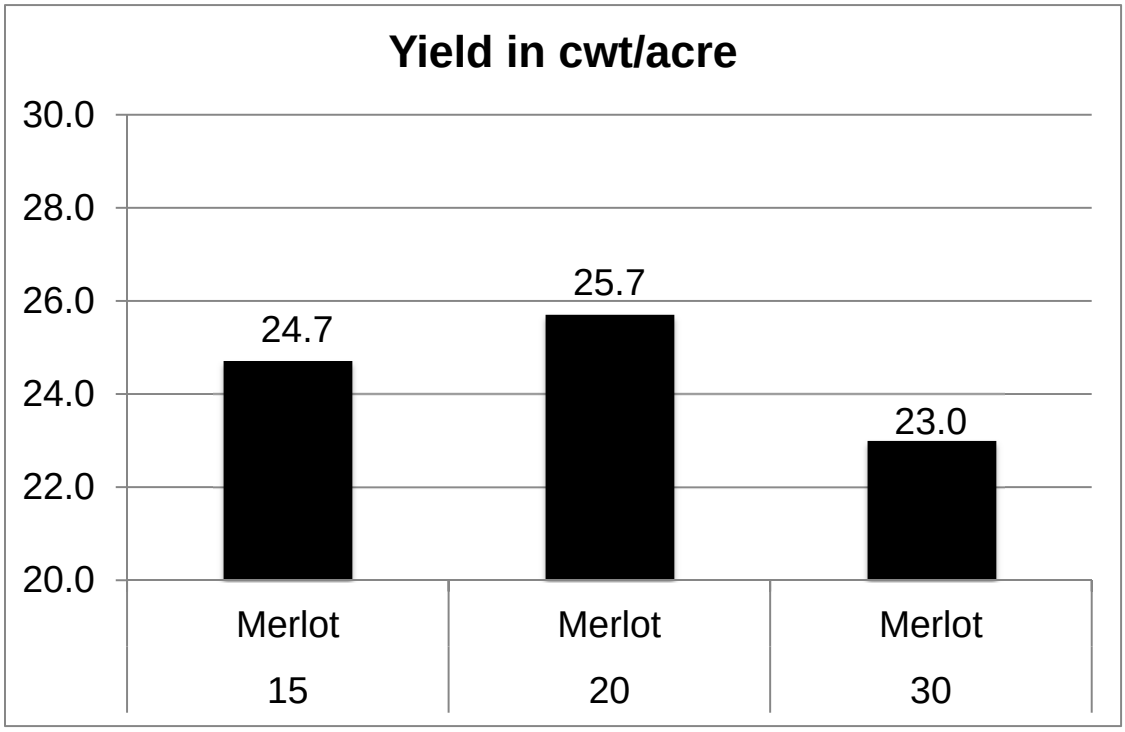






Small Red Row Width
MSU Saginaw Valley Research and Extension Center
Frankenmuth, MI

Row width	Variety	Yield	Height	Population
15	Merlot	24.7	24.6	117,322
20	Merlot	25.7	25.2	101,930
30	Merlot	23.0	25.9	84,215
		LSD=1.89		
		C.V.=4%		

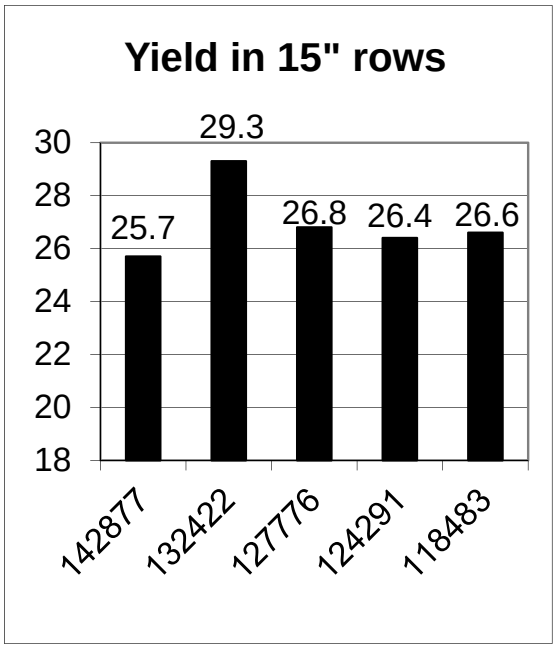


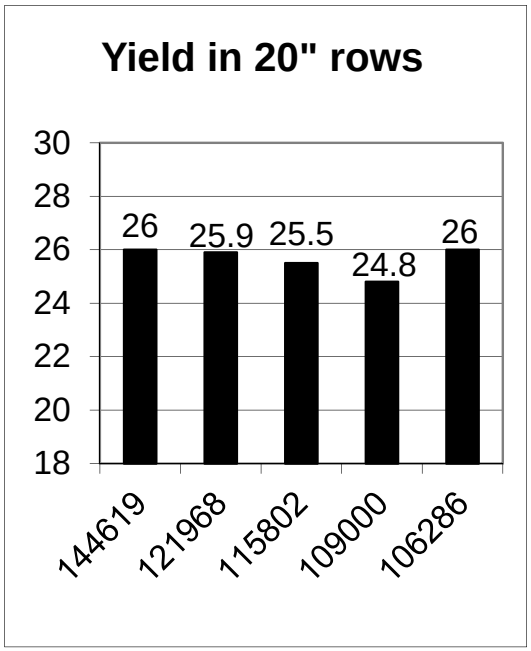
Black Row Width/Population
MSU Saginaw Valley Research and Extension Center
Frankenmuth, MI

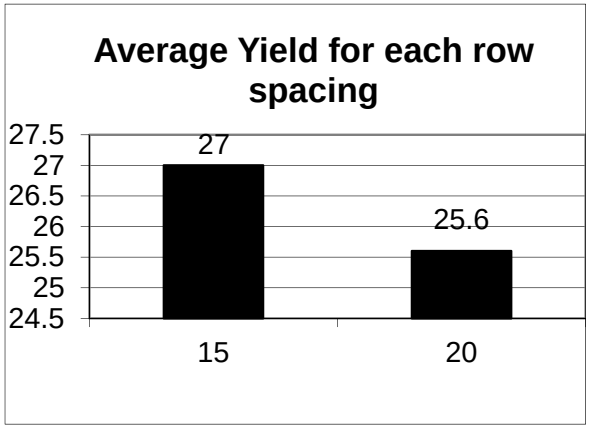
Row width	Variety	Yield	Height	Population
15	Zorro	25.7	17.9	142,877
15	Zorro	29.3	18.1	132,422
15	Zorro	26.8	18.2	127,776
15	Zorro	26.4	18.4	124,291
15	Zorro	26.6	18.5	118,483
20	Zorro	26.0	18.3	144,619
20	Zorro	25.9	18.8	121,968
20	Zorro	25.5	18.7	115,802
20	Zorro	24.8	19.1	109,000
20	Zorro	26.0	19.4	106,286

LSD=3.74

C.V.=10%

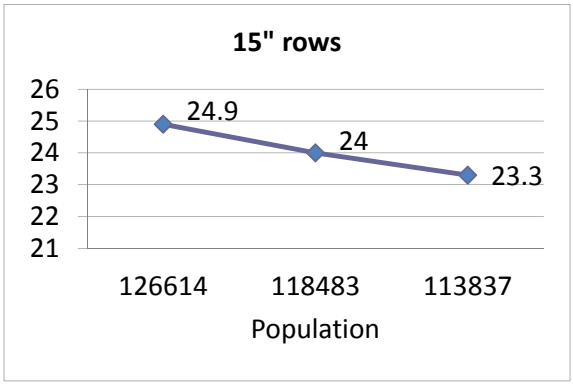


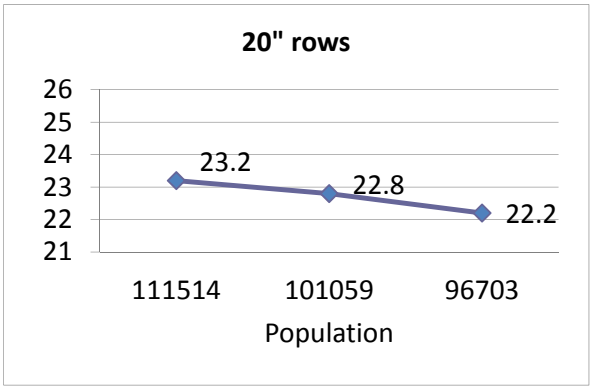


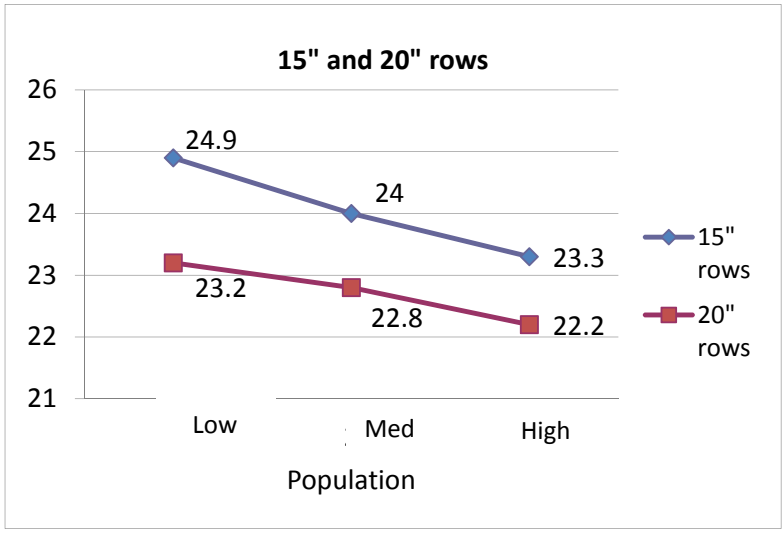


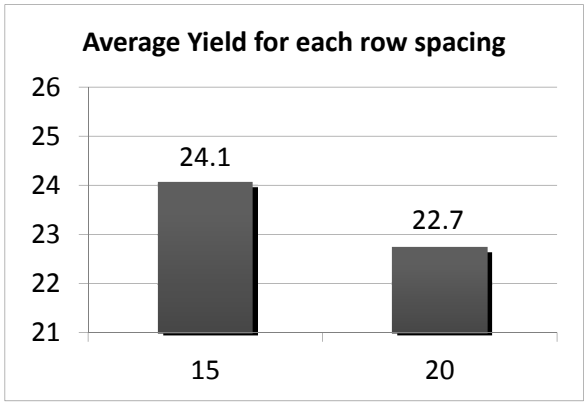
Small Red Row Width/Population
MSU Saginaw Valley Research and Extension Center
Frankenmuth, MI

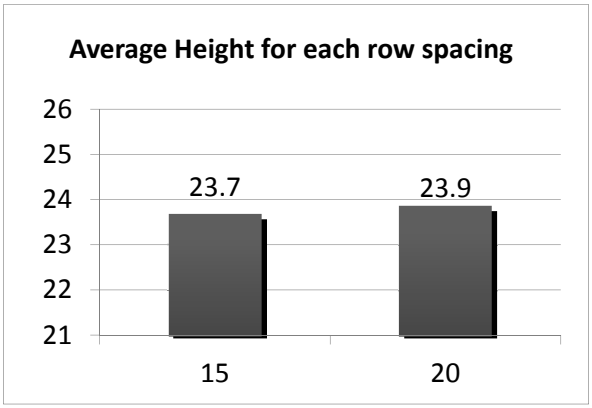
Row width	Variety	Yield	Height	Population
15	Merlot	24.9	23.6	126614
15	Merlot	24	23.9	118483
15	Merlot	23.3	23.5	113837
20	Merlot	23.2	23.6	111514
20	Merlot	22.8	24.2	101059
20	Merlot	22.2	23.8	96703
		LSD=3.17		
		C.V.=9%		











2011 White Mold Fungicide Trial

Montcalm Research Farm, Entrican, Michigan

Treatment	Rate	Application Code	% Pick	Incidence %infection	Severity %severity	YIELD	BU/AC
UTC			3.3	54	38	2747	45.8
Omega	13.7 oz	AB	1.8	33	21	3236	53.9
Endura	8 oz	AB	2.2	35	21	2978	49.6
Omega	8 oz	AB	2.3	38	24	3202	53.4
PROPULSE+INDUCE	8.6 oz	A	2.1	29	16	3413	56.9
PROPULSE+INDUCE	8.6 oz	AB	2.5	25	16	3126	52.1
PROPULSE+INDUCE	10.3 oz	A	2.6	25	15	3071	51.2
PROPULSE+INDUCE	10.3 oz	AB	2.3	24	13	3265	54.4
PROLINE+INDUCE	5.7 oz	A	2.8	32	21	2899	48.3
PROLINE+INDUCE	5.7 oz	AB	3	27	17	2875	47.9
APPROACH+INDUCE	9 oz	AB	2.9	42	28	2974	49.6
		LSD@.05	0.6			400	6.7
		C.V. Value	18.50%			9.30%	9.30%

Application Code:A=100% or first bloom, B=7 days after 100% bloom
Rating - % infection "rating" on September 26, % Incidence, %severity
Merlot Small Red Beans planted in 20" rows. Irrigation of two .5 inch per week
Planted:June 15 Harvested: October 7
First Spray: July 30 Second Spray: August 6 Approach: August 9
Sprayed with 4 row bicycle-wheel CO2 sprayer using 36 gpa at 65 psi.
Twin-Jet nozzle placed directly over the row.
Plot size sprayed was 4 Rows by 30 feet.
Harvest area was middle 2 Rows by 15 feet.

Canning Quality and Color Retention in Black Beans

Karen Cichy, Scott Shaw, and Tim Duckert

USDA-ARS, Sugarbeet and Bean Research Unit; Crop and Soil Sciences Dept, MSU, East Lansing, MI

Black beans are Michigan's most important dry bean seed type. There is a strong demand for Michigan grown black beans domestically and internationally (USDA-ERS 2011). Black bean processing presents unique challenges because of the nature of black bean color. Atypical of other bean market classes, black beans are rich in anthocyanins which impart their black color. Since anthocyanins are water soluble, they readily leach out of seeds during soaking and thermal processing. This processing quality issue affects consumer acceptance of beans such that the cooked or canned product no longer appears black, but instead a shade of brown. There is significant genetic variability for color leaching in black beans and how beans withstand the canning process, including seed color retention, plays an important role in determining the adoption of a variety (Figure 1). Characterization of genetic variability for black bean color will aid in the development of black bean varieties with improved processing quality and consumer appeal. Improved consumer acceptance will further increase the black bean production opportunities for Michigan farmers.

Materials and Methods

A recombinant inbred line population of 93 lines was developed from a cross between two black bean lines with contrasting canning quality. Black magic is a dull seeded black bean with average canning quality but poor color retention. Shiny crow is a shiny seeded black bean with superior canning quality and color retention. This population exhibits variability for color leaching in thermally processed beans (Wright and Kelly, 2008). Three replications of this population along with parents and check varieties was planted at the Saginaw Valley research farm in 4-row plots 6.4 m in length with 0.5 m row spacing in a randomized complete block design. The center two rows contained the line of interest and the outer two rows were a uniform border, the black bean Jaguar. Seed was direct harvested and yield per plot was measured and used to calculate yield in lbs/acre. Following harvest and yield determination seed from two replications of each variety were canned according to Hosfield et al. (1984). Visual appeal of the

canned beans subjectively rated on a scale of 1 to 7 where one is least desirable and 7 is most desirable and takes into account whole bean integrity, uniformity of size and brine color (Wright and Kelly, 2011). Color of canned bean samples was measured subjectively on a scale of 1 to 7 where 7 was most appealing and 1 was least appealing. Color was also measured with a Hunter Lab Colorimeter Lab scan XE. The L value measures white/black level of a sample with 0 being black and 100 white.

Results

Maturity ranged from 92 to 105 days and seed yields were from 1489 to 3130 lbs/acre (Table 1). There were numerous lines that exhibited exceptional color retention and overall canning quality. The line BS1260 had the highest overall canning quality score at 4.35, but this was not significantly different than the score of Shiny Crow. However BS1260 has a dull seed coat, which is preferred by the canning industry. There were also a handful of lines with superior canning quality and color retention that were relatively high yielding (Table 1). Color rating by a sensory panel and color L score were correlated (R=-0.77) (Figure 2). The seed coat luster did not appear to give any advantages to the lines in canned bean color retention (Figure 3). This is in contrast to earlier studies which suggested that lines with shiny seed coats have superior color retention due primarily to the seed coat shine.

Figure 1: Black beans with contrasting color retention after canning.

Table 1: Yield and canning quality measurement of a black bean recombinant inbred line population (RIL) parents, and check varieties grown at the Saginaw Valley Research Farm in 2011. Color L scores indicated blackness of a bean sample such that the lower the value the blacker the color. Appearance and color scores were evaluated subjectively by ~15 people on a scale of 1 -7 where 1 is inferior and 7 is exceptional.

					Canned bean evaluation		
Name	Type	maturity (days)	Yield (lbs/acre)	seed coat	Color (L)	appearance score	color score
BS1265	RIL	99	3130	shiny	16.2	3.16	2.65
BS1341	RIL	100	2785	shiny	14.5	3.11	3.06
115M	Check	100	2750	dull	15.9	2.73	2.24
BlackVelvet	Check	96	2735	dull	14.6	3.37	3.21
BS1302	RIL	99	2669	shiny	11.7	3.07	4.79
BS1261	RIL	95	2647	dull	12.8	3.53	4.12
B04644	Check	95	2582	dull	13.3	3	4.68
BS1284	RIL	103	2578	dull	12.9	3.26	4.09
BS1283	RIL	97	2535	shiny	12.3	3.34	3.62
BS1293	RIL	99	2528	shiny	12	3.22	5.03
BS1243	RIL	95	2506	shiny	12.1	3.93	4.76
BS1268	RIL	100	2490	d/s	11.9	3.62	3.94
BS1275	RIL	99	2451	dull	14.4	3.04	4.03
Zorro	Check	93	2449	dull	13.4	3.78	3.56
BS1244	RIL	95	2439	shiny	13.7	3.51	3.53
BS1321	RIL	95	2425	shiny	14.7	2.73	3
BS1314	RIL	96	2425	dull	15.3	3.39	2.74
BS1239	RIL	101	2401	shiny	11.6	3.62	4.32
BS1311	RIL	95	2400	shiny	12.7	3.65	4.32
BS1263	RIL	97	2390	shiny	11.9	3.65	3.79
BS1264	RIL	97	2385	dull	15.6	3.01	3.35
BS1298	RIL	97	2366	shiny	11.9	3.27	4.71
BS1287	RIL	96	2365	shiny	13	3.33	3.94
BS1323	RIL	97	2352	dull	14.4	3.6	3.82
BS1273	RIL	94	2351	d/s	13.6	3.96	4.59
BS1340	RIL	96	2342	dull	13.9	3.4	2.82
B09135	MSU line	95	2336	dull	13.7	3.81	3.41
BS1306	RIL	100	2320	dull	15	2.84	3.09
BS1262	RIL	101	2306	shiny	11.9	3.41	4.38
BlackMagic	Parent	99	2299	dull	14.1	3.68	3.53
BS1338	RIL	99	2298	shiny	14.5	3.25	3.06
BS1320	RIL	95	2282	shiny	14	3.25	3.5
BS1336	RIL	95	2282	dull	13.3	3.95	4.18
BS1266	RIL	95	2271	dull	14.7	3.07	2.94

Table 1 continued

Name	Type	maturity (days)	Yield (lbs/acre)	seed coat	Color (L)	appearance score	color score
BS1289	RIL	95	2269	shiny	13.4	3.85	4.26
BS1305	RIL	97	2266	shiny	12.5	4.12	4.29
BS1304	RIL	96	2246	d/s	11	3.98	4
BS1337	RIL	94	2242	shiny	13.2	3.6	3.32
BS1315	RIL	101	2239	shiny	14.1	2.57	2.79
Condor	Check	94	2236	dull	14.7	3.76	3.38
BS1281	RIL	97	2235	dull	12.8	3.67	3.94
BS1333	RIL	101	2229	shiny	16.3	2.91	2.76
BS1335	RIL	98	2222	dull	13.3	3.71	4.15
B09119	MSU line	95	2222	dull	12.2	4.03	3.65
BS1280	RIL	97	2202	shiny	12.9	3.39	4.18
BS1251	RIL	95	2190	dull	13.2	3.16	3.41
BS1276	RIL	93	2189	dull	14.7	3.23	2.97
BS1319	RIL	94	2185	dull	13.3	3.76	4.41
BS1250	RIL	96	2184	dull	13.9	3.32	3.41
BS1274	RIL	101	2184	dull	15	3.17	3.09
BS1253	RIL	97	2183	dull	14.2	3.56	3.82
BS1278	RIL	98	2182	dull	13.6	3.27	3.91
BS1255	RIL	97	2179	dull	15.9	2.47	2.5
BS1245	RIL	95	2177	dull	13.2	3.63	3.74
BS1277	RIL	95	2175	shiny	12.8	3.87	4.09
BS1295	RIL	94	2168	shiny	12.8	3.96	4.15
BS1271	RIL	94	2162	d/s	14.6	3.13	3.32
BS1312	RIL	97	2142	dull	13.5	3.79	4.15
BS1285	RIL	95	2131	dull	12.6	4.08	4.53
BS1308	RIL	99	2130	shiny	12.4	3.98	4.65
BS1256	RIL	95	2124	dull	13.2	3.64	3.65
BS1236	RIL	101	2123	shiny	13.9	3.23	3.34
BS1327	RIL	95	2122	shiny	13.4	3.23	3
BS1322	RIL	96	2120	dull	14	3.89	4.09
BS1269	RIL	97	2108	dull	13	4.08	4.35
BS1288	RIL	93	2107	shiny	12.9	3.43	4.06
BS1339	RIL	97	2105	dull	13	3.82	3.56
ShinyCrow	Parent	96	2099	shiny	11.6	4.27	4.74
BS1296	RIL	95	2090	shiny	11.7	3.48	3.85
BS1267	RIL	95	2082	dull	15.8	2.76	2.35
BS1301	RIL	97	2060	d/s	13.7	3.81	4.32
BS1290	RIL	95	2049	dull	12.2	3.82	4.5
BS1313	RIL	95	2041	d/s	12.4	3.97	4.21
BS1292	RIL	99	2032	shiny	12.6	3.43	3.82

Table 1 continued

Name	Type	maturity (days)	Yield (lbs/acre)	seed coat	Color (L)	appearance score	color score
BS1297	RIL	99	2020	dull	14.3	3.23	2.79
BS1316	RIL	100	2006	shiny	12.1	3.74	4.18
BS1252	RIL	96	1987	shiny	13.6	2.76	3.21
BS1310	RIL	101	1970	dull	13	4	4.85
BS1279	RIL	97	1955	dull	14.2	3.33	2.74
BS1342	RIL	95	1954	dull	14.9	3.48	3
BS1246	RIL	93	1936	dull	11.1	4.11	4.5
BS1303	RIL	96	1921	shiny	13.2	3.42	3.5
BS1299	RIL	93	1917	dull	13	3.22	3.79
BS1307	RIL	96	1917	dull	13.4	4.01	4.62
BS1272	RIL	93	1908	dull	15.8	3.15	2.84
BS1286	RIL	97	1894	dull	12	4.14	5.18
BS1260	RIL	99	1867	dull	14.1	4.35	4.29
BS1325	RIL	99	1855	shiny	13.2	3.87	3.88
BS1332	RIL	103	1853	shiny	14.5	3.57	3.26
BS1294	RIL	97	1842	shiny	13.4	3.63	3.79
Puebla152	Check	105	1836	shiny	16.8	3.25	2.24
BS1318	RIL	97	1817	dull	15.2	2.78	2.56
BS1248	RIL	93	1816	shiny	13.3	3.71	4.56
BS1270	RIL	99	1802	shiny	11	3.52	4.26
BS1326	RIL	101	1781	dull	12.7	3.9	4.21
BS1331	RIL	95	1722	d/s	14.9	3.23	2.88
BS1328	RIL	93	1720	dull	13.6	3.11	3.35
BS1324	RIL	94	1711	shiny	13.2	3.3	3.35
BS1329	RIL	93	1679	dull	13.3	2.78	2.97
BS1309	RIL	98	1674	dull	12.4	4.23	4.38
BS1291	RIL	93	1643	shiny	13	3.25	3.32
BS1249	RIL	94	1536	dull	14.7	3.46	2.97
BS1300	RIL	92	1489	dull	12.6	3.87	3.44
	Mean	**97**	**2168**	**.**	**13.5**	**3.49**	**3.72**
	CV	**2.2**	**14**	**.**	**7.6**	**9.4**	**9.3**
	LSD	**3**	**473**	**.**	**2.1**	**0.65**	**0.68**

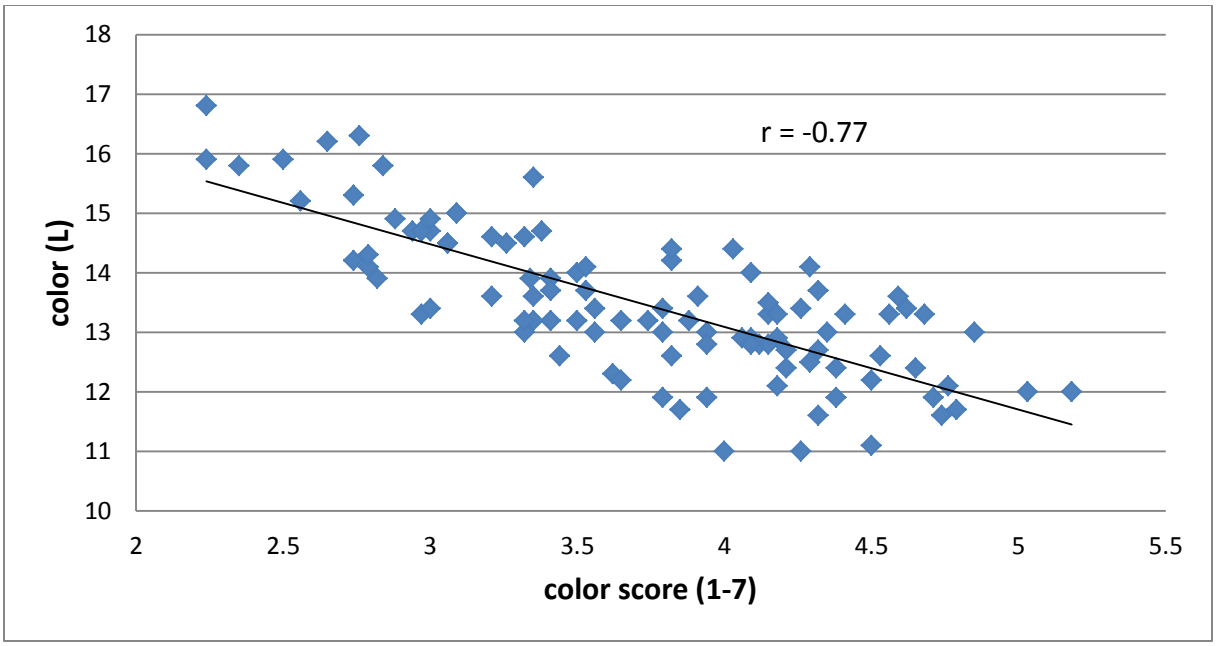


Figure 2: Relationship between canned seed color rated by a sensory panel and canned bean color as determined by a colorimeter.

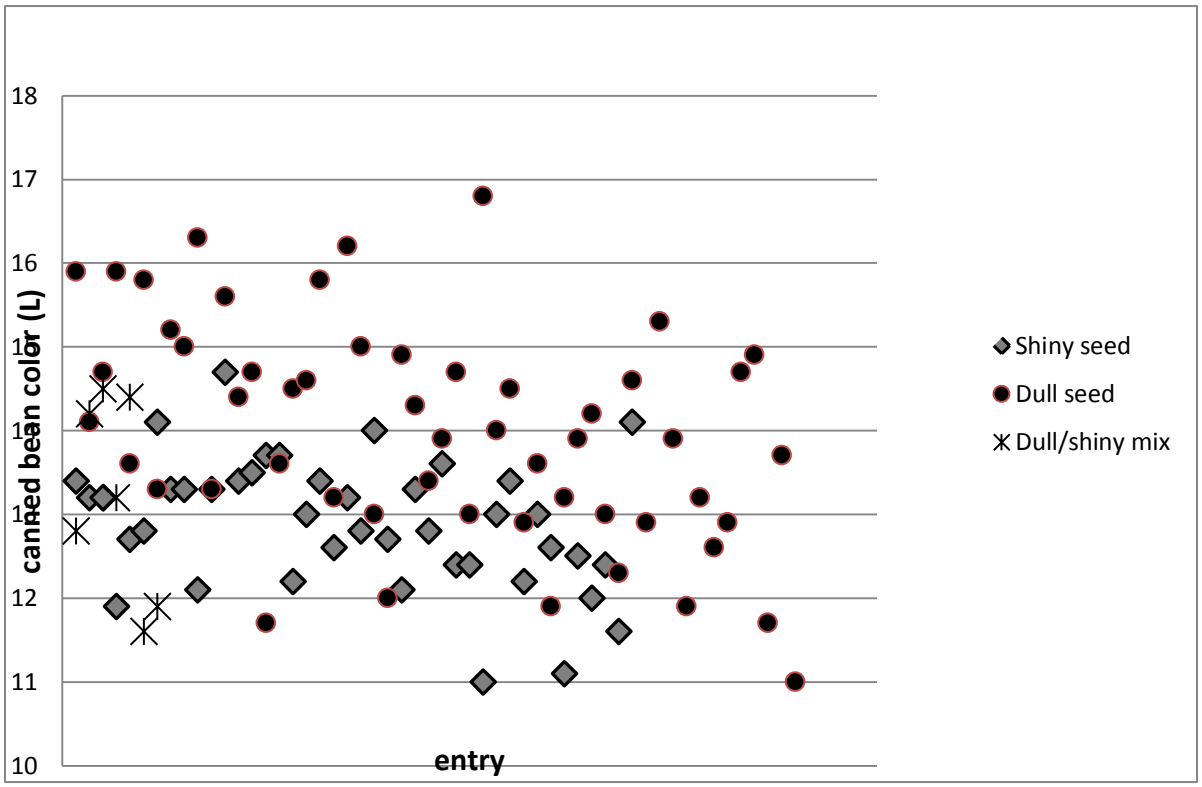


Figure 3: Canned bean color (L) by seed coat shine. The L value is on a scale of 1 -100 and the lower the value the blacker the color.

References

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Date of Harvest Trial
Saginaw Valley Research Farm

Trial Quality:	Good	**Spacings:**	Rows-30", Seeds-46,000	**Harv/Sample:**	See Treatments
Location:	Tuscola County	**Fertilizer:**	PPI 125# N by Urea	**Herbicides:**	2x + Dual
Planted:	May 6	**Soil Type:**	Loam	**Replicated:**	4x
Variety:	C-RR827	**Tillage:**	Moldboard; Spring-2x S Tine	**Fungicide:**	42 DSV - Proline 63 DSV - Headline 111 DSV - Eminent 141 DSV - Headline
Previous Crop:	Corn				

Harvest Date	RWSA	RWST	T/A	% Sugar	% CJP	Revenue				
						Adjust %	Early Dig Charge	Net Payment - Base $60	Revenue	Diff. from Oct. 22
9/21/11	5890	310	19.0	21.1	94.3	143.4%	$0.00	$98.39	$1,866	$264
9/29/11	6406	313	20.5	21.3	94.2	132.2%	$0.00	$91.43	$1,871	$269
10/10/11	6537	312	21.0	21.21	94.2	116.8%	$0.00	$80.50	$1,688	$86
10/24/11	7788	322	24.2	21.71	94.5	100.0%	$2.74	$68.32	$1,655	$53
10/22/11	7519	320	23.6	—	—	100.0%	$2.74	$68.00	$1,602	$0

Revenue: Revenue per acre assuming a $60 payment and company average RWST=271.48.

Net Payment: Calculated by dividing RWST by company average RWST, then multiply by Adjust %, and then by $60.

Diff. from Oct. 22: The values for October 22 were not measured as part of the trial. These values are from the trendlines for tons and RWSA and are supplied for revenue comparison purposes due to this being considered the first day of permanent pile.

Emergence:	Good	**Cerc Leaf spot:**	Good Control
Rhizoctonia:	Low / Moderate	**Nematodes:**	Not Detected
Quadris App:	6-8 Leaf	**Weather:**	—

Comments:

This study was done by opening two lands in a large block of beets, and harvesting 4 strips for each harvest date. Prior to the first harvest date, soil moisture was very low with less than 1 inch of rainfall in the previous 18 days. In between the first and second harvest date, approximately 0.7 inches of precipitation was received. From the second to the last harvest date almost 3 inches of rainfall occurred. The trendline for tonnage indicates the increase per week was 1.05 tons per acre. When comparing revenue, keep in mind the reduction in cost to truck less tons in early delivery would econimically favor the early delivery dates. The difference in trucking cost is not accounted for in the revenue calculation.

2011 Saginaw Valley Research Farm - Date of Harvest Trial