

SUGAR BEET VARIETY EVALUATION

Michigan Sugar Company

J. Stewart, L. Hubbell, D. Wishowski, M. Anderson

The Michigan Sugar Company Variety Improvement Program identifies and evaluates improved sugarbeet varieties from the seed companies and introduces them into the Cooperative in an orderly system. Trials conducted at the Bean and Beet farm in 2007 are included in this report.

Cercospora Variety Trials

Average of 3 Locations - 2007

BB Farm, Blumfield, Richville

No.	Variety	<u>Avg 3 Loc</u> 0-9	No.	Variety	<u>Avg 3 Loc</u> 0-9
5	Crystal 355	1.72	21	HM 27RR(9027RR)	3.08
14	Beta 5451	2.36	11	Beta 5833R	3.10
9	Crystal R442	2.48	26	HM 9056RR	3.14
24	HM 9042RR	2.64	29	HM 9039RR	3.17
6	Crystal 963	2.67	39	HM 90707RR	3.22
12	Beta 5930R	2.75	36	Crystal RR818	3.23
20	HM 2771RZ	2.79	31	HM 9055RR	3.25
7	Crystal 271	2.80	22	HM 29RR(9029RR)	3.28
10	Crystal R509	2.81	27	HM 28RR(9028RR)	3.28
25	HM 9051RR	2.85	34	BTS 17RR52	3.35
30	HM 9050RR	2.86	28	HM 9032RR	3.42
3	HM 7172RZ	2.91	32	BTS 17RR32	3.74
15	Beta 5411R	2.96	35	BTS 17RR62	3.74
4	HM 80RZ	2.97	16	Beta 1643N	3.97
1	HM 81RZ(2781RZ)	3.00	37	Crystal RR827	4.27
8	Crystal R757	3.00	38	Crystal RR836	4.45
13	Beta 5200R	3.05	33	BTS 17RR42	4.89
19	SX 1233	3.08	17	SX 1234	4.97
23	HM 9038RR	3.08	18	SX 1235	5.67
2	HM 79RZ	3.08			
				LSD (P=.05)	0.41
				CV	7.66
				Grand Mean	3.26

Purpose: The Cercospora leafspot nursery is conducted to evaluate resistance in the varieties. This test is inoculated and has a susceptible variety planted every third row, between each entry, to spread the disease evenly. The rating is done on a scale of 1-9 where a lower number indicates more resistance.

Results: The results indicate which varieties have a level of resistance to help with this extensive disease in Michigan. Varieties having a rating of 2.82 or less meet our approval requirement.

Rhizoctonia Nursery
Michigan Sugar Company
 Richville, MI - 2007

No	Variety	Rhizoc Root Rot Rating ¹ 0-7 Scale	Rhizoc Canopy Rating ² % Damaged, Visual Rating	Dead Beet Count ³ Number per Plot
10	Crystal R509	2.61	4.17	0.50
11	Beta 5833R	2.71	7.50	0.67
13	Beta 5200R	3.30	11.67	2.17
3	HM 7172RZ	3.41	11.67	1.33
34	BTS 17RR52	3.61	20.00	6.33
21	HM 27RR(9027RR)	3.71	22.50	4.50
5	Crystal 355	3.74	11.67	2.50
8	Crystal R757	3.82	24.17	6.00
29	HM 9039RR	3.88	31.67	12.00
9	Crystal R442	4.11	20.83	6.83
2	HM 79RZ	4.18	26.67	11.50
26	HM 9056RR	4.28	29.17	11.33
24	HM 9042RR	4.32	24.17	8.50
35	BTS 17RR62	4.38	30.83	10.83
36	Crystal RR818	4.40	26.67	4.83
27	HM 28RR(9028RR)	4.42	32.50	13.83
30	HM 9050RR	4.45	25.83	6.83
32	BTS 17RR32	4.48	25.83	7.17
15	Beta 5411R	4.51	35.00	14.83
33	BTS 17RR42	4.57	26.67	7.00
6	Crystal 963	4.62	27.50	6.00
39	HM 90707RR	4.62	27.50	11.17
7	Crystal 271	4.62	23.33	7.67
22	HM 29RR(9029RR)	4.68	33.33	11.50
38	Crystal RR836	4.71	30.83	10.83
12	Beta 5930R	4.80	24.17	7.17
18	SX 1235	4.82	38.33	12.50
28	HM 9032RR	4.84	21.67	5.67
19	SX 1233	4.88	35.83	13.67
	HM E-17	4.90	35.00	13.50
25	HM 9051RR	5.03	29.17	13.83
16	Beta 1643N	5.09	29.17	9.17
23	HM 9038RR	5.11	37.50	20.33
1	HM 81RZ(2781RZ)	5.13	24.17	11.17
17	SX 1234	5.14	31.67	15.50
14	Beta 5451	5.15	41.67	24.17
4	HM 80RZ	5.16	38.33	17.83
37	Crystal RR827	5.16	28.33	10.83
31	HM 9055RR	5.17	28.33	14.33
LSD (P=.05)		0.79	7.56	5.95
CV		15.5	24.9	53.9
Grand Mean		4.42	26.54	9.65

Root Rot Rating (Rhizoctonia) Sep 28, 2007

0 = No Disease

1 = Superficial, Minor

2 = Shallow lesion, 2-5% rot

3 = Deep dry rot (5-25%)

4 = Up to 50% rot

5 = Up to 75% rot

6 = Beet rotted with a few green leaves 7 = Completely rotted or missing beet

visual rating (Sept 10) or Rhizoc symptoms before harvest. 0 = no symptoms, 100 = all beets dead

³ Dead beet counts taken before harvest (Sept 17)

Plots had approx 45 beets before the inoculation

Trial Quality: Good

Root Rot Ratings conducted by Michigan Sugar Agronomists, USDA and Michigan State Scientists

Official Variety Trials
Michigan Sugar Company
Average of 5 Locations - 2007

No	Variety	RWSA	RWST	% Sugar	% Purity	Tons/A	% Emerg	CLS*
32	BTS 17RR32	7666	247.5	17.16	93.97	31.08	70.7	3.74
28	HM 9032RR	7549	239.4	16.95	93.00	31.65	69.4	3.42
33	BTS 17RR42	7346	248.1	17.27	93.75	29.63	71.5	4.89
37	Crystal RR827	7309	253.2	17.64	93.67	28.84	67.6	4.27
39	HM 90707RR	7241	243.8	16.98	93.78	29.65	73.1	3.22
29	HM 9039RR	7137	243.0	17.00	93.61	29.39	68.7	3.17
36	Crystal RR818	7101	234.9	16.60	93.21	30.28	43.7	3.23
26	HM 9056RR	7090	240.5	16.82	93.65	29.56	70.8	3.14
16	Beta 1643N	7089	250.9	17.38	93.99	28.22	76.5	3.97
27	HM 28RR(9028RR)	7086	240.0	16.77	93.65	29.56	72.6	3.28
17	SX 1234	7047	241.0	16.73	94.00	29.17	76.2	4.97
31	HM 9055RR	7014	246.7	17.20	93.70	28.47	64.6	3.25
23	HM 9038RR	7007	239.9	16.82	93.51	29.19	68.0	3.08
30	HM 9050RR	6974	250.2	17.54	93.38	27.91	64.1	2.86
38	Crystal RR836	6951	246.7	17.21	93.64	28.15	61.1	4.45
18	SX 1235	6929	234.5	16.42	93.66	29.60	77.9	5.67
24	HM 9042RR	6907	251.6	17.57	93.57	27.50	62.6	2.64
14	Beta 5451	6899	252.8	17.62	93.64	27.36	58.5	2.36
12	Beta 5930R	6895	254.8	17.88	93.28	27.04	67.8	2.75
4	HM 80RZ	6894	251.4	17.42	93.95	27.41	68.3	2.97
34	BTS 17RR52	6885	225.4	16.01	93.09	30.49	70.2	3.35
7	Crystal 271	6815	251.6	17.45	93.89	27.12	68.9	2.80
21	HM 27RR(9027RR)	6774	236.8	16.70	93.30	28.61	72.6	3.08
15	Beta 5411R	6774	250.9	17.60	93.34	27.04	61.4	2.96
22	HM 29RR(9029RR)	6728	240.3	16.89	93.36	27.94	67.4	3.28
9	Crystal R442	6713	244.9	17.26	93.21	27.57	68.6	2.48
35	BTS 17RR62	6683	251.7	17.51	93.74	26.36	54.8	3.74
8	Crystal R757	6673	243.2	17.05	93.47	27.47	73.9	3.00
1	HM 81RZ(2781RZ)	6669	247.5	17.32	93.52	26.97	65.8	3.00
2	HM 79RZ	6640	242.6	17.11	93.20	27.37	65.3	3.08
13	Beta 5200R	6563	227.8	16.41	92.41	28.84	72.2	3.05
11	Beta 5833R	6559	245.9	17.07	93.91	26.58	68.3	3.10
25	HM 9051RR	6534	246.2	17.31	93.29	26.53	62.7	2.85
19	SX 1233	6499	246.4	17.16	93.73	26.32	70.6	3.08
6	Crystal 963	6467	247.5	17.29	93.63	26.18	64.0	2.67
5	Crystal 355	6455	243.1	17.11	93.30	26.53	65.6	1.72
20	HM 2771Rz	6343	252.7	17.54	93.83	25.07	62.0	2.79
10	Crystal R509	6263	240.1	17.00	93.02	26.10	65.3	2.81
3	HM 7172RZ	6169	243.4	17.17	93.16	25.28	64.3	2.91
LSD (P=.05)		416.3	8.7	0.47	0.53	1.52	6.6	0.41
CV		4.9	2.8	2.20	0.45	4.34	7.9	7.70
Grand Mean		6854.7	244.6	17.13	93.51	28.05	67.1	3.26

Plot Size: 2 row X 35 ft

Row Spacing: 30 inch

Quadrants: 4-6 leaf stage

Cercospora Sprays: 2-3 sprays (controlled well)

* Cercospora (CLS), a lower number indicates more leafspot tolerance.

Michigan Sugar Company Research

Rhizoctonia Nursery: This trial was also conducted at the Bean & Beet Farm but the disease did not develop to be usable.

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. This trial produced good results to use in evaluating those differences.

Official Variety Trial: This trial was planted at eight locations and five were usable for the variety approval process including the location at the Bean & Beet Farm.

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

Results: Rhizomania resistance is relatively new and varieties with resistance to Roundup will be planted for the first time in 2008. The varieties with these new genetic traits may be lacking in some other areas. These trials exposed the differences and shortcomings. Some varieties are low in Recoverable Sugar per Ton or are less resistant to Cercospora than we would like for Michigan. From these variety trials we have the information needed to approve the best varieties to be sold and the growers have the information they need to select the best for their farm.