

SWEET CORN HYBRID DISEASE NURSERY – 1999

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Common rust, northern leaf blight (NLB), Stewart's bacterial wilt, southern leaf blight (SLB), maize dwarf mosaic (MDM), and gray leaf spot (GLS) can reduce yields of susceptible and moderately susceptible sweet corn hybrids. Resistance and susceptibility to these diseases differ among commercial hybrids (2). Disease management can be improved if reactions of hybrids are known.

Resistance and susceptibility are the two extremes of a continuum of host reactions to diseases. Resistance is a measure of the ability of the host to reduce the growth, reproduction and/or disease-producing abilities of the pathogen, thus resulting in less severe symptoms of disease. Major genes for resistance (such as *Rp*, *HtN*, *Mdm1*, or *Rpp*) prevent or substantially limit disease development. In the absence of major gene resistance, disease reactions can range from partially resistant to susceptible.

Hybrids with major gene resistance usually are identified by specific phenotypes. Other hybrids can be grouped into broad classes such as: resistant (R), moderately resistant (MR), moderate (M), moderately susceptible (MS), and susceptible (S) based on severity of disease symptoms. This procedure produces statistically "overlapping" groups without clear-cut differences between classes (e.g., the hybrid with least severe symptoms in the MR class does not differ significantly from the hybrid with the most severe symptoms in the R class). Consistent responses over several trials give a good indication of hybrid performance relative to other hybrids, and they can be used to assess the potential for diseases to become severe.

This report summarizes the reactions of 296 sweet corn hybrids to common rust, NLB, Stewart's wilt, SLB, MDM, and GLS based on performance in the 1999 University of Illinois sweet corn disease nursery.

Materials and Methods

Hybrids: Two-hundred-and-ninety-six hybrids were evaluated in 1999 including 170 *sh2* hybrids, 90 *se* hybrids, 35 *su* hybrids, and 1 *bt1* hybrid. Maturity ranged from about 60 to 90 days. Standard hybrids with relatively consistent reactions to rust, Stewart's wilt, and NLB (Table 2) were included to compare the results from the 1999 nursery to those from previous nurseries.

Experimental design and procedures: Each disease was a separate trial with three replicates of hybrids arranged in randomized complete blocks. Each trial was split into two main blocks of *sh2* or *su* and *se* hybrids. Each experimental unit was a single 12-ft. row with about 6 to 20 plants. Five trials (common rust, NLB, Stewart's wilt, SLB, and GLS) were planted May 11 at Champaign, IL. Late trials were planted June 22 (late Stewart's wilt) and July 6 (MDM).

Table 1. Summary statistics for common rust, NLB, Stewart's wilt, MDM, SLB, and GLS ratings.

Disease	n	mean	std. dev.	Range	BLSD	CV (%)
Common rust (w/ <i>Rp</i> hybrids)	296	18 %	13.4 %	0 - 40 %	4.5 %	17.7
Common rust (w/o <i>Rp</i> hybrids)	196	27 %	5.2 %	10 - 40 %	5.8 %	13.3
NLB	296	28 %	6.5 %	4 - 60 %	4.9 %	11.5
Stewart's wilt - seedling ratings	296	3.7	0.74	1.9 - 5.8	1.00	11.0
Stewart's wilt - adult plant ratings	296	5.6	1.32	2.5 - 8.5	1.01	16.7
Stewart's wilt - (incidence)	296	34 %	17.4 %	0 - 87 %	15.1 %	29.6
SLB	294	3.1	0.79	1.5 - 6	0.95	17.8
MDM (incidence)	296	42 %	19.4 %	0 - 91 %	63.1 %	62.4
GLS	286	3.9	0.62	2 - 6	1.06	13.7

Inoculation and disease assessment: Five of the seven trials were inoculated with one of five pathogens: *Puccinia sorghi* (common rust), *Exserohilum turcicum* (NLB), *Erwinia stewartii* (Stewart's wilt), *Bipolaris maydis* (SLB), or *Cercospora zea-maydis* (GLS). Urediniospore suspensions of *P. sorghi* were sprayed into

plant whorls on June 9, 11, 15, 17, 21 and 25. Plants were inoculated with a mixture of races 0 and 1 of *E. turcicum* on June 9, 11, 15, 18, and 21 by spraying conidial suspensions into whorls. Plants were inoculated with *E. stewartii* on June 8, 11, and 17 by wounding leaves in the whorl and introducing bacteria into wounds. Conidial suspensions of *B. maydis* were sprayed into whorls on June 9, 16, and 18. Conidial suspensions of *C. zea-maydis* prepared from cultures produced on clarified V-8 agar were sprayed into whorls and on undersides of leaves on June 10, 16, and 18. Plants in the MDM trial were infected naturally by aphids vectoring MDM viruses. Plants in the late Stewart's wilt and MDM trials were infected naturally with *E. stewartii* vectored by corn flea beetles.

Disease symptoms were rated in each row by at least two of the co-authors. The percentage of the leaf area infected by common rust was rated from 0 to 100% on July 23-26. Leaf area infected by NLB was rated from 0 to 100% on July 21-22. Stewart's wilt was rated in the inoculated trial on June 23-28 (seedling wilt phase) and August 5-6 (adult plant phase) using a 1 to 9 scale. SLB and GLS were rated from 1 (small, chlorotic lesions; little secondary spread) to 9 (large, necrotic lesions; abundant secondary spread) on July 26-28 and July 29-31, respectively. The number of plants per row with MDM symptoms was counted in the MDM trial on August 12 and converted to a percentage. The number of plants systemically infected with *E. stewartii* were counted in the late Stewart's wilt trial on July 22 and in the MDM trial on August 16 and converted to a percentage.

Data analysis: Disease ratings were analyzed by ANOVA. Hybrid reactions were classified according to standard deviations from the mean (z-scores), Bayesian least significant difference (BLSD) separations (k=100), and the FASTCLUS procedure of SAS using various groupings of 4 to 12 clusters.

Results and Discussion

Hybrid reactions ranged from very little disease to severe symptoms (Table 1). Reactions of standard hybrids to rust, NLB, Stewart's wilt, SLB, and MDM were generally within the expected ranges (Table 2). The criteria for classifying hybrid reactions are listed in Table 3. Table 4 lists reactions and actual ratings of the 296 hybrids **based solely on the 1999** trial. This is the only data available to us for some of these hybrids. For hybrids that we have evaluated in previous years, a more complete assessment of reactions of is presented in another report, "Reactions of sweet corn hybrids to prevalent diseases - 1999" (1).

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Table 2. Reactions of sweet corn hybrids included as standards in the 1999 disease nursery

MDM Hybrid	Common rust			NLB			Stewart's wilt			SLB				
	Prior 99	Rating	%	Prior 99	Rating	%	Prior 99	Early	Late	%	Prior 99	Rating	Prior 99	Rating
Bonus	1	1	0 %	5	5	25 %	1	2	2.6	3.7	17%	7	6	3.8
Day Star	6	5	26	1	1	4	3	4	3.7	3.8	31	1	3	2.0
Green Giant Code 27	3	2	14	3	4	23	2	1	2.1	3.0	12	5	5	3.3
Jubilee	5	4	22	8	7	33	9	9	5.8	6.5	74	5	.	.
Miracle	2	4	21	2	4	23	1	1	2.4	3.7	11	4	4	2.8
Phenomenal	5	6	27	5	7	34	6	4	3.7	4.8	24	5	6	3.7
Snow White	9	7	30	7	8	38	7	8	4.9	6.3	55	2	4	2.5
Summer Sweet 7710	6	6	27	2	2	18	2	3	2.6	4.0	21	2	6	3.8
Ultimate	5	6	27	2	5	26	2	3	3.1	3.8	15	1	3	2.3

Prior - reaction in previous years (1984-1998).

99 - reaction in 1999: 1 - resistant, 3 - moderately resistant, 5 - moderate, 7 - moderately susceptible, 9 - susceptible.

Rating - mean rating in 1999: 0 to 100% for severity of rust and NLB, and incidence of MDM, and Stewart's wilt;

1 to 9 for early (seedling) and late (adult plant) Stewart's wilt ratings and SLB.

Table 3. Criteria for classifying hybrid reactions to diseases in the 1999 nursery

	Classification of reaction								
	1	2	3	4	5	6	7	8	9
Common rust (%)	0	<15	<19	<23	<26	<29	<32	≤35	>35
NLB (%)	<8	<15	<21	≤24	<28	<31	<35	≤40	>40

SLB	<2	<2.5	<3	≤3.5	≤4	≤4.5	<5.5	≥5.5
GLS		<2.5	<3	≤3.8	<4.8		≤5.5	≥5.5
MDM (%)	<5	<10	<15	<30				≥30

Classification: 1 - resistant, 3 - moderately resistant, 5 - moderate, 7 - moderately susceptible, 9 - susceptible.

Stewart's wilt classifications based on a cluster analysis of early and late severity ratings and incidence ratings.

Common rust: Rust ratings ranged from 0 to 40% leaf area infected. Rust pustules were not observed on 100 hybrids which had *Rp*-resistant reactions; **however, *Rp*-resistant hybrids were infected in a greenhouse trial in October 1999 when they were inoculated with a biotype of *P. sorghi* collected in September 1999 from Illinois, Wisconsin and Minnesota. This is the first widespread occurrence in North America of a biotype of *P. sorghi* that is virulent on *Rp*-resistant sweet corn (3).** Of the hybrids that were not *Rp*-resistant, five had less than 15% leaf area infected, including Green Giant Code 27, GG Code 61, GG Code 74, Sugar 73, and Sugar 74bt. Nine hybrids with 15 to 19% leaf area infected were classified as moderately resistant (rxn = 3), including BSS 8142, Esteem, GH 0934 A, GH 2783, GH 3054, GG Code 24, GG Code 75, Merlin, and XP 3123.

Northern leaf blight: NLB ratings ranged from 4 to 60% with a mean of 28%. Four *sh2* hybrids (Day Star, HMX 6364 BS, HMX 8343 BS, and Morning Star) had less than 7% leaf area infected and appeared to have *HtN*-resistance to NLB. Development of NLB lesions on *HtN*-hybrids usually is delayed until after pollination. Three other hybrids (BSS 8142, GH 3054, and Sugar 74bt) had less than 15% NLB severity and were classified as resistant. Nineteen hybrids with NLB severity from 15 to 21% were classified as moderately resistant, including two *su* hybrids (GG Code 62 and HMX 8390) and seventeen *sh2* hybrids (BSS 0977 VP, Chieftan BC, GSS 0954 A, GSS 0966 A, GSS 3381, GSS 5771, GSS 5786, GSS 5859, Headliner, Peter 445B, Prime Plus VP, Sch 65145, Sch 98015, Summer Sweet 7630, Summer Sweet 7631, Summer Sweet 7710, and Trigger).

Stewart's wilt: Stewart's wilt ratings in the inoculated trial ranged from 1.9 to 5.8 at the seedling stage and from 2.5 to 8.5 at the adult plant stage. Means were 3.7 and 5.6, respectively. Incidence of systemically infected plants in the two naturally-infected, late-planted trials (Stewart's wilt and MDM) ranged from 0 to 92% with a mean of 42%. Severity of Stewart's wilt (means of seedling and adult plant ratings) was highly correlated with incidence of systemically infected plants (Fig. 1). All three ratings were used in a cluster analysis to classify hybrid reactions. Fourteen hybrids formed the most resistant group (Buckeye, Eliminator, GH 0937 A, GG Code 27, GG Code 59, GG Code 67, GG Code 75, HMX 8389, Miracle, Seneca Nation, Sugar 74bt, Trigger, Xtra Tender 179A, and 20242). These hybrids had ratings below 3.0 at the seedling stage except for Xtra Tender 179A which was rated 3.0. They were rated below 3.5 at the adult plant stage except for Miracle, Xtra Tender 179A, and Trigger that were rated 3.7. Incidence of systemically infected plants was less than 15% in this group except for Eliminator for which incidence was 17%. Twenty-two hybrids formed a group that was resistant to moderately resistant (rxn = 2). Seedling ratings for this group were below 3.3, adult plant ratings were below 4.5, and incidence of systemically infected plants was less than 20%.

Southern leaf blight: SLB ratings ranged from 1.5 to 6 with a mean of 3.1. Twelve hybrids with SLB ratings below 2 were classified as resistant, including one *su* hybrid (GG Code 61), three *se* hybrids (EX 8410017, Seneca Sensation, and XP 8410347) and eight *sh2* hybrids (Assure, Crisp n Sweet 711, Morning Star, Seneca Sugarburst, Summer Sweet 7901, Summer Sweet 8100, Summer Sweet 8100R, and Summer Sweet 8102). Forty hybrids with ratings between 2 and 2.5 were classified as moderately resistant, including 25 *sh2* hybrids, 8 *se* hybrids, 6 *su* hybrids, and 1 *brittle* hybrid.

Maize dwarf mosaic: Incidence of MDM-infected plants averaged 42% for the entire trial and ranged from 0 to 92% among hybrids. Incidence varied considerably among replicates. The coefficient of variation for this trial and the mean separation value (BLSD) were 63 and 62%, respectively. Five hybrids with fewer than 2% infected plants (GH 3054, HMX 8343BS, Swiftly, Sugar 74bt, and Topacio) were classified as resistant. Thirteen hybrids with fewer than 10% infected plants (Bonus, Candy Corner, El Toro, Eliminator, GG Code 59, HMX 5371, HMX 6364 BS, HMX 6383 S, HMX 8344 BS, Ice Queen, Sugar 73, Suregold, and Xtra Tender 171A) were classified as resistant/moderately resistant. These hybrids probably carry the gene *Mdm1*

or other major genes for MDM-resistance. Nine hybrids with 10 to 15% incidence of MDM-infected plants were classified as moderately resistant. Some of these 9 hybrids also may carry MDM-resistance genes, including seven that were classified as resistant or moderately resistant in previous trials (Esteem, GH 0934 A, GH 0937 A, GH 2783, HMX 3392 S, HMX 5348 BES, and Snow White).

Gray leaf spot: This is the first year that hybrids in the disease nursery have been screened for GLS. Ratings ranged from 2 to 6 with a mean of 3.9. Four hybrids with ratings below 2.5 were classified as resistant (BSS 8142, Day Star, Morning Star, and Sugar 73). Eleven hybrids with ratings between 2.5 and 3 were classified as moderately resistant (Crisp n Sweet 710A, GH 0990, GH 3054, GG Code 27, GSS 3381, HMX 8343 BS, Precious Gem, Sugar 74bt, Summer Sweet 8100, Summer Sweet 8100 R, and Xtra Tender 182A). While these hybrids had less severe symptoms in this nursery, additional trials are necessary to confirm reactions of hybrids to GLS and to determine if these reactions will control GLS adequately.

References

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2. Pataky, J. K., and D. M. Eastburn. 1993. Using hybrid disease nurseries and yield loss studies to evaluate levels of resistance in sweet corn. *Plant Disease* 77:760-765.
3. Pataky, J. K., and W. F. Tracy. 1999. Widespread occurrence of common rust, caused by *Puccinia sorghi*, on Rp-resistant sweet corn in the midwestern United States. *Plant Dis.* (in press).

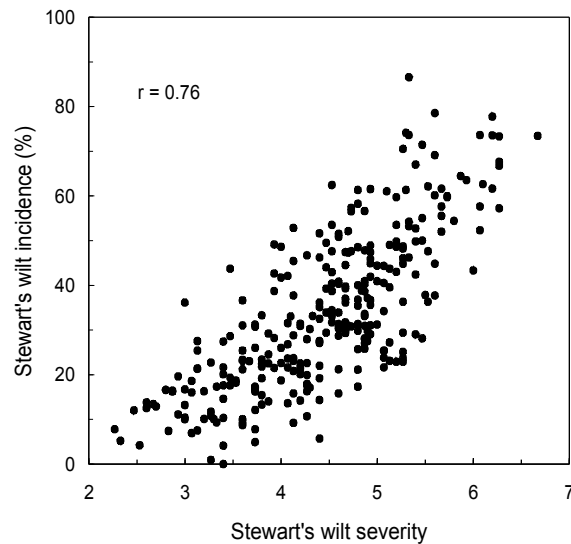


Fig. 1. Relationship between severity of Stewart's wilt in inoculated trials (mean of seedling and adult plant ratings from 1 to 9) and incidence (%) of systemically infected plants in naturally infected trials.

Table 4. Reactions of sweet corn hybrids in the University of Illinois disease nursery in 1999

Endo	KC	SdCo	Hybrid	<u>Rust</u>		<u>NLB</u>		<u>Stewart's wilt</u>			<u>SLB</u>		<u>MDM</u>		<u>GLS</u>		
				Rxn	Rate	Rxn	Rate	Rxn	6-23	8-5	Inc	Rxn	Rate	Rxn	Rate	Rxn	Rate
				(%)		(%)		(1 to 9)			(1-9)		(1-9)				
						su/se trial											
se	Y	Cr	Amaize	6	26	6	28	4	3.7	5.5	19	3	2.2	9	40	4	3.5
se	Y	Cr	Bodacious	5	25	6	30	5	3.4	5.8	27	4	2.5	9	36	6	4
su	Y	Rog	Bonus	0	0	5	25	2	2.6	3.7	17	6	3.8	2	8	4	3.8
su	Y	Cr	Conquest	0	0	6	31	6	4.7	5.2	41	7	4.5	9	67	6	4.3
sesu	Y	Asg	EX 8410237	0	0	5	27	6	4.2	4.7	52	4	2.5	9	54	6	4
se	Y	Asg	EX 8414907	8	32	7	32	6	3.8	6.3	21	6	3.8	9	57	6	4
sesu	Y	Asg	EX 8452897	0	0	6	29	9	4.9	7.3	64	5	3	9	70	4	3
su	Y	Cr	Earlivee	7	29	8	35	9	4.4	8.5	58	9	6	9	55	.	.
su	Y	Asg	El Toro	0	0	7	32	4	3.1	4.8	33	5	3.3	2	7	4	3.3
su	Y	Cr	Eliminator	0	0	7	32	1	2.8	2.8	17	7	4.5	2	9	6	4.2
su	Y	Asg	Esquire	0	0	7	33	6	4	5.5	40	6	3.7	5	24	4	3
se	Y	HM	Esteem	3	18	5	24	6	4.2	5.2	41	4	2.5	3	14	4	3.7
su	Y	HM	FMX 516	0	0	8	38	7	4.3	6.2	25	3	2	9	46	4	3.5
su	Y	Rog	GH 0934-A	3	15	4	22	3	2.1	5.7	19	5	3	3	11	4	3.5
su	Y	Rog	GH 0937-A	0	0	4	21	1	2.3	3.5	13	6	3.8	3	12	4	3.7
su	Y	Rog	GH 0990	0	0	6	29	6	3.9	5.8	40	4	2.7	9	34	3	2.8
su	Y	Rog	GH 2547	0	0	6	31	7	4.3	6	41	4	2.8	9	41	4	3
su	Y	Rog	GH 2550	0	0	4	23	5	3.7	4.5	26	6	3.7	9	58	6	4
su	Y	Rog	GH 2783	3	16	5	25	4	2.9	5.7	19	5	3	3	13	4	3.3
su	Y	Rog	GH 3054	3	19	2	8	3	3	4.2	29	3	2.3	1	2	3	2.7
su	Y	Rog	GH 7374	0	0	7	33	9	4.2	7	74	7	4.5	9	54	8	5.5
su	Y	GG	Green Giant Code 27	2	14	4	23	1	2.1	3	12	5	3.3	5	18	3	2.8
su	Y	GG	Green Giant Code 49	0	0	7	33	4	4	4.7	18	7	4.3	9	46	8	5.2
su	Y	GG	Green Giant Code 58	0	0	7	32	6	3.6	5.8	47	5	3.5	5	23	6	4.3
su	Y	GG	Green Giant Code 59	0	0	5	27	1	2.6	3.2	7	8	4.6	2	8	6	4.2
su	Y	GG	Green Giant Code 60	0	0	5	26	2	2.9	2.8	16	7	4.2	9	50	6	4
su	Y	GG	Green Giant Code 62	0	0	3	20	2	2.6	3.2	17	5	3.3	9	51	4	3.7
su	Y	GG	Green Giant Code 64	0	0	5	27	3	2.7	3.8	25	3	2.2	9	61	4	3.2
su	Y	GG	Green Giant Code 67	0	0	5	28	1	1.9	2.8	8	7	4.2	9	40	6	4
su	Y	GG	Green Giant Code 70	4	21	5	27	5	4.4	3.8	31	3	2.2	9	59	6	4
su	Y	GG	Green Giant Code 71	0	0	8	37	9	5	6.8	60	.	.	9	33	.	.

su	Y	GG	Green Giant Code 72	0	0	8	36	6	4.6	4.8	44	7	4.2	9	59	4	3
su	Y	GG	Green Giant Code 73	0	0	6	29	5	3.4	5	42	4	2.7	9	43	8	5.3
su	Y	GG	Green Giant Code 74	2	14	5	25	2	2.9	3.2	10	5	3.5	9	55	6	4
su	Y	GG	Green Giant Code 75	3	18	5	26	1	2.2	2.5	5	4	2.7	9	49	4	3.7

Endo	KC	SdCo	Hybrid	Rust		NLB		Stewart's wilt			SLB		MDM		GLS		
				Rxn	Rate	Rxn	Rate	Rxn	6-23	8-5	Inc	Rxn	Rate	Rxn	Rate	Rxn	Rate
				(%)	(%)	(1 to 9)			(%)	(1-9)	(%)	(1-9)					
				su/se trial (continued)													
su	Y	HM	HMX 5371	0	0	6	29	2	2.2	3.8	16	3	2.3	2	8	6	4
su	Y	HM	HMX 8389	0	0	4	21	1	2.2	3.2	14	5	3.5	9	47	4	3
su	Y	HM	HMX 8390	0	0	3	18	2	2.9	3.2	13	3	2.2	9	45	4	3.5
se	Y	Cr	Incredible	4	21	6	31	4	3.4	5.5	16	5	3.2	9	69	6	4.2
se	Y	Cr	Intrigue	0	0	6	31	7	4.8	6	23	8	4.7	9	47	6	4.3
su	Y	Rog	Jubilee	4	22	7	33	9	5.8	6.5	74	.	.	9	90	.	.
se	Y	Mes	July Gold	7	31	6	30	9	4.2	8.5	63	5	3.5	5	19	8	5
se	Y	Mes	Merlin	3	17	5	26	2	2.4	4.2	7	3	2.3	9	52	4	3.8
se	Y	Cr	Miracle	4	21	4	23	1	2.4	3.7	11	4	2.8	9	46	4	3.7
se	Y	Sen	Seneca Arrow II	6	27	6	29	3	3.1	4.8	23	5	3.3	9	35	4	3.8
se	Y	Sen	Seneca Pronto	6	27	6	29	8	3.8	7.7	46	6	3.8	9	68	8	5.5
se	Y	Sen	Seneca SX 6301 SEY	5	25	7	32	8	4.4	7	28	4	2.5	9	62	6	4.5
se	Y	Sen	Seneca SX 6508 SEY	4	22	8	36	6	4	6.7	22	6	4	9	56	.	.
se	Y	Sen	Seneca SX 6805 SEY	7	32	7	34	7	3.3	7.3	47	5	3.5	9	41	6	4
se	Y	Sen	Seneca SX 7006 SEY	8	34	8	38	8	4.3	7	42	5	3.5	9	58	6	4.2
se	Y	Cr	Sugar Buns	7	32	6	30	5	3.1	6.7	33	5	3.2	5	23	6	4.8
se	Y	Mes	Sunray	7	30	7	32	7	3.7	7.7	24	5	3.3	9	36	8	5
se	Y	Mes	Tablemaster	7	30	4	23	3	3	4	18	4	2.5	9	30	4	3.8
se	Y	Cr	Terminator	0	0	6	29	3	2.4	4.2	27	6	4	9	38	6	4.3
se	Y	HM	Topacio	0	0	4	22	2	3	2.8	20	6	3.7	1	0	6	4
su	Y	Asg	XP 8410347	0	0	7	33	5	3.8	5.2	33	1	1.8	9	52	6	4.5
se	Y	Asg	XPH 3123	3	19	5	28	2	3	4	4	4	2.5	9	53	6	4.5
se	B	Cr	Ambrosia	6	27	6	29	2	2.4	4.3	16	8	4.7	9	69	4	3.5
se	B	Cht	Bi Licious	9	38	7	31	9	4.4	7.3	79	4	2.5	9	46	4	3.8
sb	B	Cr	Bravado	5	24	7	33	4	3.8	4.5	14	5	3	9	69	8	5.2
se	B	Mes	Buckeye	5	25	5	25	1	2.4	2.8	13	6	3.7	9	62	4	3.7
se	B	Cr	D Artagnan	8	34	8	38	8	4.4	7.3	38	7	4.3	9	45	6	4.3
se	B	Cr	Delectable	4	21	5	25	4	3.4	5.2	16	4	2.5	9	75	8	5

se	B	Asg	EX	8410297	0	0	6	31	7	4.1	5.7	56	6	3.8	9	69	.	.
se	B	Asg	EX	8410307	0	0	6	29	8	4.6	6.5	54	6	3.8	9	47	6	4
se	B	Asg	EX	8410317	5	26	5	25	3	4.1	4.2	9	5	3.3	5	17	4	3.5
se	B	Asg	EX	8413857	4	22	7	33	6	4.4	5.3	37	5	3	9	53	6	4.3
se	B	Asg	EX	8414777	5	25	7	33	8	5.1	6.5	52	6	4	9	35	.	.
se	B	Asg	EX	8414787	7	29	4	24	7	4.3	5.8	37	6	3.8	9	64	4	3.8

Endo	KC	SdCo	Hybrid	Rust		NLB		Stewart's wilt			SLB		MDM		GLS			
				Rxn	Rate	Rxn	Rate	Rxn	6-23	8-5	Inc	Rxn	Rate	Rxn	Rate	Rxn	Rate	
				(%)	(%)	(1 to 9) (%)			(1-9)	(%)	(1-9)							
				<u>su/se trial (continued)</u>														
se	B	Asg	EX	8414807	0	0	7	33	9	4.1	7.2	87	3	2	9	88	6	4
se	B	Asg	EX	8414837	0	0	7	34	4	3.7	5	17	5	3	9	68	4	3.5
se	B	Asg	EX	8415097	4	20	4	24	5	3.7	5	20	6	3.8	9	69	6	4
se	B	Mes	Elation		9	37	7	34	8	4.4	7.3	45	9	5.7	9	36	8	5
se	B	Mes	Encore		4	20	5	26	2	2.3	4.2	19	6	4	9	57	4	3.7
se	B	Cr	Fleet		7	30	9	48	8	4.3	7	29	7	4.5	9	31	.	.
sb	B	HM	HMX 5348 BES		5	24	5	27	4	4	4.2	22	4	2.5	3	11	6	4
su	B	Cr	Honey & Cream		7	30	8	37	9	4.8	7	58	5	3.2	9	75	6	4.5
se	B	Mes	July Gem		8	34	5	27	8	3.6	8.3	61	5	3	5	24	4	3.5
se	B	Cr	Mystique		7	30	4	21	3	2.8	5.3	22	5	3.2	9	62	6	4
se	B	Mes	Native Gem		9	37	5	26	6	3.7	6.5	26	6	3.8	9	62	6	4
se	B	Mes	Parfait		5	24	5	26	5	3.3	5.2	27	6	3.8	9	35	8	5.5
se	B	Mes	Precious Gem		5	24	4	22	3	2.7	5.5	13	5	3	9	44	3	2.8
su	B	Cr	Quickie		9	36	9	60	9	4.3	7.7	62	9	5.8	9	44	.	.
se	B	Sen	Seneca Arrowhead		8	34	7	35	8	3.7	7	52	5	3.3	9	42	8	5
se	B	Sen	Seneca Dancer		4	20	5	25	6	3.4	5.8	46	5	3.3	9	63	4	3.5
se	B	Sen	Seneca Nation		5	25	4	24	1	2.2	3	4	5	3.3	9	51	6	4.3
se	B	Sen	Seneca SX 6101 SEB		6	27	6	31	7	3.8	6.8	31	5	3.3	9	53	9	6
se	B	Sen	Seneca SX 6602 SEB		7	29	8	38	4	3.8	4.7	21	7	4.3	5	17	6	4.8
se	B	Sen	Seneca SX 6706 SEB		6	28	8	36	5	3.6	6	32	6	3.8	9	92	6	4.5
se	B	Sen	Seneca SX 6707 SEB		6	27	7	35	7	3.7	6.7	48	4	2.5	9	89	6	4.5
se	B	Sen	Seneca SX 6803 SEB		4	23	7	32	6	4.2	6.3	24	4	2.5	9	54	4	3.7
se	B	Sen	Seneca SX 6804 SEB		4	22	5	24	6	4.1	6	26	5	3.5	9	37	4	3
se	B	Sen	Seneca SX 6904 SEB		6	28	6	28	6	4.2	6	42	5	3.3	9	49	6	4
se	B	Sen	Seneca SX 7004 SEB		8	33	7	34	5	3.4	5.8	27	5	3.3	9	85	6	4.5
se	B	Sen	Seneca SX 7105 SEB		7	30	6	29	7	3.9	6.8	34	5	3.3	9	32	4	3.5

se	B	Sen	Seneca SX 7404 SEB	5	26	6	29	3	3.1	4.8	22	4	2.8	9	56	6	4.3
se	B	Sen	Seneca SX 7405 SEB	5	24	7	33	9	4.2	8.2	69	3	2	9	58	6	4.5
se	B	Sen	Seneca Spring	6	28	7	34	3	2.9	5	10	6	3.8	9	64	8	5
se	B	Sen	Seneca Tomahawk	6	27	6	29	6	4	6.7	25	5	3	9	63	6	4.2
se	B	Asg	Sensor	4	21	5	25	7	4.8	5.8	23	5	3.3	9	42	6	4.3
se	B	Asg	Sunset	4	21	6	31	7	3	6.8	62	3	2	9	58	4	3.5
se	B	Cr	Trinity	8	34	8	35	6	3.8	6.5	34	5	3.5	9	77	8	5.5
se	B	Cr	Vanguard	0	0	5	26	3	2.7	4	36	5	3.5	5	22	6	4.8
se	B	Asg	Wizard	5	25	8	35	9	4.3	7.2	71	3	2.2	9	49	6	4.5
se	B	Mes	Yankee Gem	6	26	4	24	3	2.7	5.2	23	4	2.5	9	74	4	3.3

Endo	KC	SdCo	Hybrid	Rust		NLB		Stewart's wilt			SLB		MDM		GLS		
				Rxn	Rate (%)	Rxn	Rate (%)	Rxn	6-23	8-5	Inc (%)	Rxn	Rate (1-9)	Rxn	Rate (%)	Rxn	Rate (1-9)
<u>su/se trial (continued)</u>																	
se	W	Mes	20242	5	24	4	22	1	2.7	3.5	10	5	3.2	9	42	6	4.7
se	W	Sdw	94H263	4	22	7	33	6	3.9	6.3	28	6	3.8	5	24	6	4.5
se	W	Sdw	96H1608	5	26	6	30	4	3.8	5	11	4	2.7	9	52	8	5.5
se	W	Cr	Argent	5	23	4	21	2	2.6	3.8	16	5	3	9	35	6	4
se	W	Asg	Celebration	7	30	6	28	5	3.6	5.8	34	6	4	5	21	4	3.7
se	W	Asg	EX 8410337	7	31	5	25	6	4.4	5	39	6	3.8	9	31	.	.
se	W	Asg	EX 8414877	0	0	6	29	7	4.4	5.7	36	5	3	5	26	6	4.2
se	W	Asg	EX 8414887	6	28	7	32	8	4.3	6.8	53	4	2.5	5	24	6	4.5
se	W	Asg	EX 8414897	6	28	8	36	8	4.2	6.3	61	5	3.3	9	50	4	3.8
se	W	Asg	EX 8415167	7	30	5	27	6	4	5.7	29	6	3.8	5	18	6	4
se	W	Asg	EX 8415187	6	28	5	27	5	4.2	5.2	21	7	4.3	9	38	6	4.5
se	W	Cr	Frosty	9	35	7	33	6	4.1	5.5	36	5	3.3	9	55	8	5.3
su	W	GG	Green Giant Code 24	3	16	4	24	9	4.9	6.5	62	3	2	9	48	4	3.5
su	W	GG	Green Giant Code 61	2	10	5	26	9	4.8	6.2	74	1	1.8	9	65	6	4
se	W	Sen	Seneca Sensation	5	24	5	25	6	3.5	6.7	30	1	1.5	9	52	6	4
se	W	Sen	Seneca Snowshoe	8	33	5	27	2	2.7	4.2	12	8	4.7	9	57	8	5.3
se	W	Rog	Silver King	4	22	5	25	4	3.7	4.5	15	4	2.5	9	67	6	4.3
se	W	Rog	Silver Princess	7	30	7	32	5	3.9	5.3	29	4	2.8	9	75	6	4
se	R	Asg	EX 8410017	4	22	4	24	7	4.1	6.7	44	1	1.5	9	64	6	4
sesu	R	Asg	Sweet Scarlet	4	21	6	30	9	4.8	6.3	67	3	2.3	9	58	4	3
<u>sh2 trial</u>																	
sh2	Y	AC	ACX 427	0	0	6	31	9	5.1	7.5	62	4	2.8	5	18	8	5
sh2	Y	AC	ACX 97 CN 405	9	40	7	33	6	4.2	5.5	48	5	3.3	5	20	6	4

sh2	Y	Cr	Assure	0	0	5	25	8	4.3	5.7	57	1	1.7	5	18	4	3.2
sh2	Y	Asg	Brigadier	6	27	4	22	8	4	7	50	5	3	9	43	4	3.2
sh2	Y	Asg	Challenger	7	31	5	25	6	3.6	6.5	31	3	2	9	37	6	4
sh2	Y	Cr	Crisp n Sweet 710	7	30	4	24	4	3.2	5.3	32	3	2.2	9	34	6	4
sh2	Y	Cr	Crisp n Sweet 710A	7	32	4	23	4	3.3	4.7	29	3	2	9	64	3	2.8
sh2	Y	Cr	Crisp n Sweet 711	8	35	4	24	4	3	5.3	28	1	1.8	9	62	4	3.2
sh2	Y	HM	Day Star	5	26	1	4	4	3.7	3.8	31	3	2	5	25	2	2.2
sh2	Y	Asg	EX 8410057	0	0	5	25	7	4.4	6.5	25	4	2.5	9	59	4	3.7
sh2	Y	Asg	EX 8414687	9	37	4	22	5	3.3	5.5	31	5	3.3	5	27	6	4
sh2	Y	Asg	EX 8414717	0	0	5	25	6	3.9	6.2	31	4	2.5	9	63	6	4
sh2	Y	Asg	EX 8414737	0	0	5	26	6	3.9	5.7	29	5	3	9	55	4	3.7
sh2	Y	Asg	EX 8415257	0	0	4	23	8	4.4	7.2	48	6	3.8	9	48	4	3.8
sh2	Y	IFS	Early Illini	7	30	5	27	6	3.4	6.3	31	5	3	9	51	4	3.5

Endo	KC	SdCo	Hybrid	Rust		NLB		Stewart's wilt			SLB		MDM		GLS		
				Rxn	Rate	Rxn	Rate	Rxn	6-23	8-5	Inc	Rxn	Rate	Rxn	Rate	Rxn	Rate
				(%)	(%)	(1 to 9)			(%)	(1-9)	(%)	(1-9)					
<u>sh2 trial (continued)</u>																	
sh2	Y	Asg	Endeavor	6	28	5	25	6	3.7	6.6	39	4	2.5	9	58	4	3.8
sh2	Y	HM	FMX 467	0	0	5	25	9	5.7	8.2	73	4	2.8	9	42	4	3.7
sh2	Y	Sdw	Flagship II	0	0	5	26	3	3.3	3.5	27	4	2.7	9	41	4	3.5
sh2	Y	Rog	GSS 0954-A	0	0	3	19	6	3.7	5.8	43	4	2.7	9	70	4	3.5
sh2	Y	Rog	GSS 0966-A	0	0	3	21	6	3.6	5	53	8	4.8	9	43	4	3.7
sh2	Y	Rog	GSS 3381	0	0	3	16	3	2.6	4.3	23	5	3	9	77	3	2.7
sh2	Y	Rog	GSS 3587	0	0	5	26	7	4.1	6.5	28	6	4	3	15	4	3.2
sh2	Y	Rog	GSS 3893	6	27	6	30	8	4.2	6.8	46	5	3.2	9	57	6	4.2
sh2	Y	Rog	GSS 5771	0	0	3	20	7	4.1	6.2	31	9	5.5	9	46	6	4.3
sh2	Y	Rog	GSS 5786	0	0	3	20	4	3.2	5.8	22	5	3.5	9	58	4	3.3
sh2	Y	Rog	GSS 5859	4	23	3	20	7	4.7	5.5	48	5	3.5	9	52	4	3.7
sh2	Y	Rog	GSS 5865	0	0	5	27	7	3.9	6.2	58	3	2.3	9	43	4	3.5
sh2	Y	Rog	GSS 9299	0	0	5	26	6	3.7	6.7	40	5	3	9	52	4	3.5
sh2	Y	Cr	Gallant	6	27	7	32	3	3.2	4.5	17	3	2.3	9	36	6	4
sh2	Y	HM	Goldilocks	7	31	7	34	6	4.1	6.7	23	7	4.3	9	60	6	4.5
sh2	Y	GG	Green Giant Code 39	0	0	5	26	3	3.2	4.2	23	5	3	3	14	6	4.7
sh2	Y	HM	HMX 3392 S	0	0	7	32	8	4.7	5.3	61	5	3	3	12	6	4
sh2	Y	HM	HMX 4398 S	0	0	7	32	8	4.2	6.7	60	5	3.3	5	23	4	3.3
sh2	Y	HM	HMX 6383 S	0	0	7	32	3	3.1	4.3	23	4	2.5	2	8	4	3.5
sh2	Y	HM	HMX 8391 SREC	0	0	7	33	2	3.1	3.8	0	7	4.2	9	32	4	3.5

sh2	Y	HM	HMX 8392 S	0	0	7	33	2	2.8	4	11	5	3.2	9	34	4	3.8
sh2	Y	Rog	Impulse	7	32	9	43	9	4.7	7.8	54	3	2.2	9	46	6	4.3
sh2	Y	Sak	K8-408	6	28	6	31	7	4.3	6.7	29	5	3.3	9	31	6	4.2
sh2	Y	Cr	Marvel	0	0	6	29	8	4.2	6.8	61	4	2.8	9	72	8	5
sh2	Y	Cr	Missouri	7	30	5	27	2	2.9	4	9	4	2.7	9	47	6	4.3
sh2	Y	HM	Morning Star	0	0	1	6	6	4	5.2	50	1	1.7	5	17	2	2.3
sh2	Y	Rog	Prime Plus	0	0	3	17	3	3.1	4.3	21	7	4.3	9	42	4	3.3
sh2	Y	Asg	Punchline	8	33	5	24	4	3.3	4.3	31	4	2.5	9	53	6	4.2
sh2	Y	Rog	Royal Sweet	0	0	6	30	7	3.7	6.8	49	6	3.7	9	91	6	4.3
sh2	Y	Cr	Samson	0	0	7	32	8	4.1	6.8	43	5	3.3	9	33	6	4
sh2	Y	IFS	Sch 70064	5	26	4	23	3	2.4	4.8	22	4	2.5	5	19	4	3.8
sh2	Y	IFS	Sch 70064 RR	0	0	4	22	4	4.1	4.3	14	3	2	9	40	4	3.3
sh2	Y	IFS	Sch 90570	6	27	7	33	3	3.4	5.5	6	6	4	9	45	6	4
sh2	Y	IFS	Sch 90590	0	0	5	27	3	3.3	4.7	14	5	3.2	9	60	6	4
sh2	Y	IFS	Sch 90591	6	28	5	28	3	3.3	4	9	6	3.8	5	16	6	4

Endo	KC	SdCo	Hybrid	Rust		NLB		Stewart's wilt			SLB		MDM		GLS		
				Rxn	Rate (%)	Rxn	Rate (%)	Rxn	6-23	8-5	Inc (%)	Rxn	Rate (1-9)	Rxn	Rate (%)	Rxn	Rate (1-9)
<u>sh2 trial (continued)</u>																	
sh2	Y	Sen	Seneca SX 7204 SSY	9	36	8	40	9	5.2	7.8	67	5	3.3	9	60	.	.
sh2	Y	Sen	Seneca SX 7402 SSY	7	32	5	26	5	3.9	5.2	36	5	3.5	5	27	6	4
sh2	Y	Sen	Seneca SX 7403 SSY	8	33	5	28	8	4.4	6.3	49	6	3.8	9	46	6	4.5
sh2	Y	Sen	Seneca SX 7803 SSY	5	25	8	37	9	5.4	7.5	57	5	3.2	9	59	6	4.3
sh2	Y	Sen	Seneca SX 8003 SSY	7	29	6	28	7	3.9	7	40	5	3	9	48	4	3.5
sh2	Y	Sen	Seneca SX 8004 SSY	6	27	6	29	6	3.9	6.3	31	3	2.2	5	18	4	3
sh2	Y	Asg	Shimmer	0	0	4	23	6	3.8	6	32	3	2.3	9	41	4	3.7
sh2	Y	Cr	Skipper	0	0	5	25	5	3.9	5.5	40	3	2.3	9	45	6	4.2
sh2	Y	Rog	Sugar 73	2	13	5	26	3	3.2	4.2	37	3	2.2	2	9	2	2.3
sh2	Y	AC	Summer Sweet 6800	7	32	5	25	6	3.7	6.7	39	4	2.7	5	24	6	4
sh2	Y	AC	Summer Sweet 6800 R	0	0	5	27	7	3.3	6.5	51	3	2.3	9	35	6	4.5
sh2	Y	AC	Summer Sweet 7100	7	29	7	32	5	3.3	6	32	6	3.8	5	17	4	3.3
sh2	Y	AC	Summer Sweet 7630	6	27	3	18	3	2.7	3.8	21	4	2.8	9	69	4	3.5
sh2	Y	AC	Summer Sweet 7710	6	27	3	18	3	2.6	4	21	4	2.5	5	27	4	3.7
sh2	Y	AC	Summer Sweet 8100	5	24	4	22	5	3.4	5	33	1	1.7	9	47	3	2.8
sh2	Y	AC	Summer Sweet 8100 R	0	0	4	22	3	3.1	3.8	20	1	1.8	9	50	3	2.8

sh2	Y	Rog	Supersweet Jubilee	5	26	7	31	9	5.6	6.8	52	5	3.2	9	44	4	3.2
sh2	Y	HM	Suregold	0	0	7	32	4	3.7	4.3	21	4	2.8	1	5	4	3.8
sh2	Y	HM	Swiftly	0	0	8	37	6	3.8	5.8	34	4	2.8	1	0	6	4
sh2	Y	Cr	Trigger	4	22	3	19	1	2.7	3.7	7	4	2.5	5	26	4	3.5
sh2	Y	HM	Ultimate	6	27	5	26	3	3.1	3.8	15	3	2.3	9	32	4	3
sh2	Y	Asg	XP 8414657	0	0	7	32	5	3.1	5.7	45	5	3	9	39	6	4
sh2	Y	Asg	XP 8414667	0	0	6	29	6	4	5.7	31	5	3.3	5	21	6	4
sh2	Y	Asg	XP 8415337	6	27	4	24	7	4.1	6.2	29	4	2.8	5	25	6	4
sh2	Y	Asg	XSC 1040	0	0	6	29	6	4.4	5	37	4	2.5	9	51	4	3.7
sh2	Y	IFS	Xtra Tender 171A	5	26	5	27	2	3.2	4.2	9	5	3.2	2	5	4	3.8
sh2	Y	IFS	Xtra Tender 175A	6	28	7	34	4	3.4	5.3	23	8	5	9	35	6	4.3
sh2	Y	IFS	Xtra Tender 176A	6	29	6	28	5	3.9	5.3	39	5	3.5	5	26	4	3.7
sh2	Y	IFS	Xtra Tender 177A	5	24	5	25	3	3.2	4.5	16	5	3	9	37	4	3.3
sh2	Y	IFS	Xtra Tender 178A	7	32	8	37	5	3.4	5.8	27	8	4.8	9	62	6	4.5
sh2	Y	IFS	Xtra Tender 179A	4	22	4	23	1	3	3.7	1	5	3.2	9	37	4	3.5
sh2	Y	IFS	Xtra Tender 182A	0	0	4	22	2	3	3.5	10	3	2.3	5	22	3	2.8
sh2	Y	Sak	92H-18	0	0	6	31	9	4.8	8.5	73	5	3	9	34	6	4.5
bt	Y	Rog	Sugar 74 bt	2	12	2	12	1	2.4	3	13	3	2.3	1	0	3	2.8

Endo	KC	SdCo	Hybrid	Rust		NLB		Stewart's wilt			SLB		MDM		GLS		
				Rxn	Rate (%)	Rxn	Rate (%)	Rxn	6-23	8-5	Inc	Rxn	Rate (1-9)	Rxn	Rate (%)	Rxn	Rate (1-9)
<u>sh2 trial (continued)</u>																	
sh2	B	AC	ACX 420	6	28	6	30	8	4.7	6	53	4	2.8	9	37	4	3.8
sh2	B	Rog	BSS 0977 VP	0	0	3	18	5	3.3	4.8	43	8	5	9	50	4	3.7
sh2	B	Rog	BSS 8142	3	15	2	14	6	4.4	4	47	3	2	9	34	2	2
sh2	B	Sdw	Bicolor Saturn	5	25	7	33	3	2.6	5.5	17	7	4.2	5	29	4	3.8
sh2	B	Rog	Big Time	0	0	4	21	4	2.8	4.5	44	8	4.7	9	44	4	3.5
sh2	B	Asg	Cabaret	7	30	6	29	4	3.2	5.2	23	5	3.2	5	27	4	3.8
sh2	B	HM	Candy Corner	0	0	9	48	6	3.7	6	31	5	3.3	2	9	4	3.8
sh2	B	IFS	Chieftain BC	0	0	3	20	5	3.4	5.2	38	4	2.5	9	48	4	3.5
sh2	B	Asg	EX 8415367	7	29	5	28	6	4.1	5.5	47	4	2.5	9	39	6	4
sh2	B	IFS	Early Illini BC	7	30	5	26	6	3.4	6.8	31	5	3	9	53	6	4
sh2	B	IFS	Fortune BC	0	0	5	25	7	4.3	5.7	28	3	2.3	5	20	6	4
sh2	B	IFS	Fresh Start	7	32	6	31	5	3	6.5	35	6	4	9	72	4	3.3
sh2	B	HM	HMX 0366 BS	8	32	7	34	3	3.2	4.8	23	4	2.5	9	44	6	4.3

sh2	B	HM	HMX 6362 BS	0	0	8	40	7	3.9	6.8	41	5	3.3	9	30	6	4.8
sh2	B	HM	HMX 6364 BS	0	0	1	6	4	3.6	5.3	23	4	2.7	2	9	4	3.2
sh2	B	HM	HMX 8343 BS	0	0	1	4	3	3.2	4	19	4	2.5	1	2	3	2.7
sh2	B	HM	HMX 8344 BS	0	0	7	33	3	3.6	4	26	4	2.8	2	8	6	4.5
sh2	B	IFS	Headliner	0	0	3	19	5	3.9	5.5	39	4	2.5	9	52	4	3.5
sh2	B	IFS	Jumpstart RR	0	0	8	37	8	4.1	7.7	36	6	3.8	9	38	4	3.5
sh2	B	Sak	K8-009	5	26	5	26	3	3.3	4.3	8	4	2.7	9	38	6	4.3
sh2	B	IFS	Majesty	7	31	5	28	7	3.3	7.5	44	5	3	9	54	4	3.5
sh2	B	IFS	Odyssey	0	0	4	21	5	3	5.5	49	5	3	9	55	6	4
sh2	B	Sak	Peter 445	6	28	3	20	3	3.2	4.2	25	5	3	9	62	4	3.8
sh2	B	Cr	Phenomenal	6	27	7	34	4	3.7	4.8	24	6	3.7	9	38	4	3.3
sh2	B	IFS	Sch 65145	0	0	3	20	3	3.2	3.8	19	3	2.3	9	59	4	3.3
sh2	B	IFS	Sch 86804	6	28	5	25	6	3.3	6.5	30	4	2.5	5	23	4	3.7
sh2	B	IFS	Sch 96870	6	29	8	36	7	4.4	6.2	27	6	3.8	9	61	6	4.5
sh2	B	IFS	Sch 96872	5	24	6	30	8	3.8	7.8	53	5	3.2	9	45	6	4
sh2	B	IFS	Sch 96881	5	23	5	27	4	3.9	5.3	16	3	2.2	9	33	4	3.8
sh2	B	IFS	Sch 96885	7	30	7	33	5	3.7	6.5	17	5	3	9	91	8	5
sh2	B	IFS	Sch 96887	5	24	5	25	4	3.6	5.3	18	5	3.5	9	30	4	3.5
sh2	B	Sen	Seneca SV 8001	5	26	7	35	9	5.2	7.7	78	5	3.5	9	66	6	4.5
sh2	B	Sen	Seneca SX 7303 SSB	8	33	8	36	9	4.2	7.7	60	6	4	9	44	6	4.8
sh2	B	Sen	Seneca SX 7504 SSB	7	31	8	37	8	5.2	6.5	60	6	3.8	9	44	6	4.5
sh2	B	Sen	Seneca SX 7505 SSB	9	37	7	35	5	3.4	6	30	5	3.5	9	64	6	4.7

Endo	KC	SdCo	Hybrid	<u>Rust</u>		<u>NLB</u>		<u>Stewart's wilt</u>			<u>SLB</u>		<u>MDM</u>		<u>GLS</u>		
				Rxn	Rate	Rxn	Rate	Rxn	6-23	8-5	Inc	Rxn	Rate	Rxn	Rate	Rxn	Rate
				(%)	(%)	(1 to 9)			(%)	(1-9)	(%)	(1-9)					
<i>sh2 trial (continued)</i>																	
sh2	B	Sen	Seneca SX 7704 SSB	4	19	5	26	8	4.4	6.8	50	6	3.7	9	37	4	3.8
sh2	B	Sen	Seneca SX 8002 SSB	7	31	5	27	4	3	6.2	20	5	3.2	9	74	4	3.5
sh2	B	Sen	Seneca SX 8201 SSB	0	0	4	24	3	3.4	3.7	18	4	2.7	5	22	4	3.2
sh2	B	AC	Summer Sweet 7422	8	35	5	27	4	3.1	5.5	24	5	3.2	5	25	6	4.2
sh2	B	AC	Summer Sweet 8102	6	27	4	24	4	3.4	4.5	24	1	1.5	9	35	4	3.2
sh2	B	Asg	XP 8414607	0	0	5	27	4	3.4	5.3	21	5	3	9	31	4	3.5
sh2	B	Asg	XP 8414617	0	0	5	27	6	4.1	6	27	5	3.5	9	35	4	3.7
sh2	B	IFS	Xtra Tender 271A	7	31	8	36	3	3.3	4.3	12	6	4	9	38	6	4.3
sh2	B	IFS	Xtra Tender 273A	6	27	8	36	5	4	5	22	7	4.3	9	31	4	3.8
sh2	B	IFS	Xtra Tender 275A	7	30	6	29	4	3.3	5.3	23	5	3.3	9	45	6	4

sh2	B	IFS	Xtra Tender 276A	6	29	5	26	6	3.6	6.7	35	4	2.5	5	22	6	4.5
sh2	B	IFS	Xtra Tender 277A	6	27	5	28	2	3.2	4.5	5	3	2.3	9	33	4	3.8
sh2	B	IFS	Xtra Tender 278A	6	26	5	25	2	3	4	10	5	3.2	9	32	4	3.8
sh2	B	Sak	Yumeno corn	0	0	4	22	7	4	6.3	46	5	3.3	5	25	4	3.7
sh2	W	Cr	Accolade	7	29	5	28	8	4.3	6.3	49	4	2.5	5	27	6	4.3
sh2	W	Rog	Boreal	0	0	4	22	5	3.2	5	49	8	5	9	42	4	3.3
sh2	W	Asg	EX 8410177	7	32	6	30	9	5.4	6.7	64	4	2.5	9	39	6	4.8
sh2	W	Asg	EX 8410187	0	0	7	35	6	3.9	6.5	37	5	3.2	5	22	6	4.3
sh2	W	Asg	EX 8413927	6	29	8	38	6	4	6	30	6	3.8	5	19	6	4
sh2	W	HM	FMX 413	0	0	7	32	8	4.4	6.5	48	3	2.3	9	52	4	3.8
sh2	W	IFS	First Class	8	33	8	35	6	3.7	6.5	40	7	4.2	9	51	6	4
sh2	W	IFS	First Snow	8	34	7	32	7	3.7	6.8	45	6	3.7	9	34	6	4.3
sh2	W	Cr	How Sweet It Is	5	26	7	32	5	3.7	5.2	28	6	3.7	3	14	4	3.7
sh2	W	HM	Ice Queen	0	0	8	36	4	3.6	4.7	42	5	3.5	2	8	4	3.3
sh2	W	IFS	Majesty W	7	32	5	27	6	2.7	7.3	48	5	3	9	73	4	3.5
sh2	W	IFS	Nova	8	33	6	30	8	3.4	8	71	5	3.5	9	59	6	4.5
sh2	W	Cr	Pegasus	5	24	7	31	8	5.1	7.3	43	4	2.5	9	47	6	4.2
sh2	W	IFS	Sch 96876	6	28	6	30	4	3.7	5.5	14	4	2.5	9	36	4	3.5
sh2	W	IFS	Sch 98003	5	25	4	24	4	3.2	5.5	29	5	3	5	29	4	3.8
sh2	W	IFS	Sch 98004	5	24	4	23	6	3.6	6.3	30	4	2.5	5	29	4	3.5
sh2	W	IFS	Sch 98015	0	0	3	19	3	3.3	4.3	16	4	2.7	5	17	4	3.5
sh2	W	Sen	Seneca Great White	8	32	6	31	7	4.4	6.3	38	5	3.3	9	49	6	4.5
sh2	W	Sen	Seneca SX 7401 SSW	7	31	8	37	9	4.9	6.8	55	5	3	9	55	6	4.5
sh2	W	Sen	Seneca SX 7502 SSW	5	26	5	27	8	4.6	6.3	49	5	3.3	9	38	4	3.7
sh2	W	Sen	Seneca SX 8003 SSW	6	29	6	29	6	3.3	6.2	44	5	3.2	9	45	4	3.8

Endo	KC	SdCo	Hybrid	<u>Rust</u>		<u>NLB</u>		<u>Stewart's wilt</u>			<u>SLB</u>		<u>MDM</u>		<u>GLS</u>		
				Rxn	Rate	Rxn	Rate	Rxn	6-23	8-5	Inc	Rxn	Rate	Rxn	Rate	Rxn	Rate
				(%)	(%)	(1 to 9)			(%)	(1-9)	(%)	(1-9)					
				<u>sh2 trial (continued)</u>													
sh2	W	Sen	Seneca Sugarburst	6	28	8	35	9	5	8	73	1	1.7	9	65	6	4.5
sh2	W	IFS	Snow Storm	5	24	6	28	7	3.3	6.8	57	4	2.7	9	56	4	3.5
sh2	W	HM	Snow White	7	30	8	38	8	4.9	6.3	55	4	2.5	3	12	6	4.3
sh2	W	AC	Summer Sweet 7211	8	33	4	23	4	2.9	4.7	31	5	3	9	44	4	3.5
sh2	W	AC	Summer Sweet 7311	6	29	8	40	9	5.3	7.7	68	4	2.5	9	63	4	3.3
sh2	W	AC	Summer Sweet 7631	6	26	3	15	3	3.1	4	18	3	2.3	5	28	4	3.5
sh2	W	AC	Summer Sweet 781 Ultra	6	27	4	22	2	3.1	3.7	17	5	3.2	9	42	4	3.8

sh2	W	AC	Summer Sweet 7901	5	26	4	22	4	3	5.3	39	1	1.7	9	38	4	3
sh2	W	Rog	Vail	8	35	4	21	6	3	6.8	34	5	3.2	9	54	4	3.5
sh2	W	Rog	WSS 1921	0	0	4	24	6	3.1	6.7	54	4	2.7	9	62	4	3.3
sh2	W	Rog	WSS 4185	0	0	6	31	7	3.6	6.2	51	4	2.7	9	62	4	3.5
sh2	W	Asg	XP 8414577	5	24	7	32	7	5	5.7	36	5	3.3	9	37	6	4
sh2	W	Asg	XPH 3098	7	31	7	33	8	4.1	7.5	50	3	2.2	9	61	6	4.5
sh2	W	IFS	Xtra Tender 372A	6	28	7	34	6	4.1	6	33	4	2.8	9	40	4	3.5
sh2	W	IFS	Xtra Tender 374A	6	28	7	31	8	4.3	6.2	44	5	3	5	15	4	3.8
sh2	W	IFS	Xtra Tender 376A	4	23	6	29	8	4	7.2	45	3	2.3	5	26	4	3
sh2	W	IFS	Xtra Tender 378A	5	24	5	27	2	3	4.3	10	3	2.2	9	51	4	3.7

Endo = endosperm type: su = sugary, se = sugary enhancer, sesu = heterozygous sugary enhancer, sb = sweet bred, sh2 - shrunken-2, bt = brittle

KC = kernel color: B = bicolor, W = white, Y = yellow, R = red

SdCo = seed source: AC = Abbott & Cobb, Agw = Agway, Asg = Asgrow, Cr = Crookham, GG = Green Giant, HM = Harris Moran, HS = Harris Seeds, IFS = Illinois Foundation Seeds, Mes = Mesa Maize,

Rog = Rogers Novartis, Sak = Sakata, Sen = Seneca Hybrids (Seminis)

Rate = Disease rating: 0 to 100% leaf area infected (rust, NLB), 0 to 100% systemically infected plants (Stewart's wilt incidence, MDM), 1 to 9 (Stewart's wilt severity, SLB and GLS leaf symptoms)

Rxn = classification of hybrid disease reaction: 0 - Rp-resistant
1 - resistant
3 - moderately resistant
5 - moderate
7 - moderately susceptible
9 - susceptible.