Report to the Oregon Processed Vegetable Commission
2009–2010

1. Title: Identification of High Yielding, Root Rot Tolerant Sweet Corn Hybrids

2. Project Leaders: James R. Myers, Horticulture

3. Cooperators: Brian Yorgey, Food Science and Technology
Cindy Ocamb, Botany and Plant Pathology

4. Project Status: Terminating 30 June, 2010

5. Project Funding: $19,344 total

Funds were used for a major portion of the support of a vegetable technician, student labor, supplies, processing plant evaluation of moisture content, and research farm expenses.

6. Objective: Identify sweet corn hybrids with suitable processing quality that have high, stable yields and tolerance to root rot disease complex.

7. Report of Progress:

Sweet corn entries grown in trials on root rot infested ground at the Oregon State University Botany and Vegetable Research Farms, Corvallis, 2009.

Entry	Company	Type	Color
EX 08735414	Seminis	su	yellow
EX 08735807	Seminis	su	yellow
EX 08755821	Seminis	su	yellow
GH 3369	Syngenta	su	yellow
GH 6377P	Syngenta	su	yellow
GH 6462	Syngenta	su	yellow
Jubilee	check	su	yellow
Coho	check	su	yellow
GSS 1477	Syngenta	sh2	yellow
GSS 2259P	Syngenta	sh2	yellow
GSS 5725	Syngenta	sh2	yellow
GSS 5765	Syngenta	sh2	yellow
GSS 8940	Syngenta	sh2	yellow
Supersweet Jubilee	check	sh2	yellow

Sweet corn hybrids were solicited from major seed companies for field and processing evaluation. Three trials were grown at two locations. On the Vegetable Research Farm, separate sugary (su) and supersweet (sh2) were planted June 25. At the Botany Farm, su and sh2 types were planted in a combined trial on July 1. Yield and yield parameters were evaluated in all locations, but only the Vegetable Farm trials were evaluated for raw product and processing quality. We also evaluated all locations for root rot and other root parameters. We received eight su and six sh2 hybrids from two companies (text table to left). At the Botany Farm one row on the north side of the field was not properly thinned, which may have influenced the data from these plots. Average yields were 5.9 T/A at the Botany Farm (6.1 T/A average for properly thinned plots), 7.8 T/A for the Vegetable Farm su hybrids, and 8.2 T/A for the comparable sh2 trial. All yields were lower than last year.

Yield and Quality evaluations (Tables 1 – 5): The su entries GH 6462 and GH 3369 had statistically higher yields compared to Coho, and all but EX 08735414 (and Coho) had higher yields than Jubilee at Vegetable Farm (table 2). At Botany Farm nothing was statistically better than

Coho, but GH 6462 had highest yield and GH 3369 was not significantly different from Coho (Ex 08755821 and EX 08735807 were also not significantly different from Coho) (Table 1). Everything was statistically as good as or better than Jubilee at Botany Farm for yield. GH6462 also had high yields last year.

At the Vegetable Farm GSS 2259P (sh2) had statistically higher yields than anything else and all entries did better than SS Jubilee although GSS 8940 was not significantly different (table 4). At the Botany Farm, no hybrid was significantly different from SS Jubilee for yield and GSS 2259P was one of the lower yielding hybrids (but statistically only lower than only GSS 1477) (table 1). GSS 2259P was very late and yield may have been adversely affected at the Botany Farm by the late planting putting harvest of this variety especially beyond the end of the season (October 28). For the fourth straight year, GSS 1477 had high yields, being best of sh2 hybrids at the Botany Farm and one of the best at the Vegetable Farm.

Considering quality for su types (table 3), GH 3369 had overall quality equal to Jubilee, with tip fill being the one question mark (this was one of the two highest yielding at Vegetable Farm) GH 6462 (other high yielder) had similar quality issues with jumbled rows and poor ear to ear uniformity.

Among sh2 hybrids (table 5), GSS 5725 matched SS Jubilee for quality. GSS 2259P (highest yielding at Vegetable Farm) had poorest quality ratings: slightly oval ears with a tendency for spades, tough kernels, and very late maturity. GSS 1477 had jumbled rows and uneven kernels with poor tip fill, but excellent flavor.

Root rot: Overall primary root rot was 99.8% (table 6), with ratings at the Botany Farm of 100% (table 7), 99.8% at the Vegetable Farm su trial (table 8), and 99.1% in the Vegetable Farm sh2 trial (table 9). No su varieties were better than Jubilee at either farm, but GSS 8940 was better than SS Jubilee when all data combined, and at Vegetable Farm. GSS 2259P had lower ratings than SS Jubilee at Botany Farm.

Mesocotyl root rot was 99% overall (table 6), 99% at the Botany Farm (table 7), 98.9% in the Vegetable Farm su trial (table 8), and 99.2 in the Vegetable Farm sh2 trial (table 9). No su entries were statistically better than Jubilee at either location, and all but GH 6377P at the Botany Farm) were worse than Coho. GSS 2259P was better than SS Jubilee (Botany Farm and overall) and GSS 5765 was better than SS Jubilee at the Vegetable Farm alone. Over the years, we have built up a very high level of disease inoculum in these fields such that by the end of the season, essentially all of the roots on all hybrids are diseased. As such, the best information for evaluating tolerance to root rot comes from adventitious roots.

For adventitious root rot, in the overall analysis, there were eight (su and sh2 hybrids combined) better than Jubilee, with only one (EX 08735414) worse. Four su and sh2 hybrids were better than SS Jubilee, and six were worse. Ten hybrids had higher disease incidence compared to Coho. GSS 2259P was best and significantly better than anything else at 56.3%. At the Botany Farm, six hybrids were better than Jubilee (two were worse), six were better than SS Jubilee (five were worse), and eight were worse than Coho. GSS 2259P was best and significantly better than anything else except EX 08735807. In the Vegetable Farm su trial, fours were better than Jubilee; none worse nothing, but none were as good as Coho. For the Vegetable Farm sh2 trial, GSS2259 P was statistically better than SS Jubilee. Only two hybrids were worse than SS Jubilee.

Brown node and crown rot represent symptoms of a potentially different disease complex from the root rot organisms. Four hybrids (GSS 2259P, EX 08735807, EX 08755821, and GSS 1477) were significantly better overall and in their respective trials on the Vegetable Farm. For

crown rot, only GH 6462 was not significantly better than Jubilee and SS Jubilee overall and at Vegetable Farm. Results were mixed at Botany Farm.

For root worm evaluations, SS Jubilee had very little damage, so no varieties were statistically better and about half were worse. At both farms EX 08735414 had significantly more root worm damage than Jubilee.

Most root rot parameters had little or no correlation to yield parameters (table 10). Primary and mesocotyl root rot, brown node and crown rot all showed weak or no correlation to anything. Adventitious root rot was strongly correlated to root worm damage. All yield and yield components were correlated, most very strongly.

8. Conclusions:

Several of both su and sh2 hybrids appear to be significantly better than Jubilee (or SS Jubilee) for yield and root rot parameters. It has been tough to match the raw product and processing quality of these latter two hybrids. Among su hybrids, GH 3369 appears to be the best for yield and quality, but in the middle of the pack for root rot tolerance. This hybrid should be tested again next year. Based on their performance this year, EX 08735508 and EX 08755521 merit further testing. GSS 5727 is a sh2 hybrid with yields similar to GSS 1477 and potentially better quality, but mediocre root rot performance. It needs additional testing to determine if it will show stable performance over time. Unlike previous years, root rot and yield parameters were not correlated. In addition there were few correlations among root rot parameters, the only exception being a strong correlation between adventitious root rot and root worm damage. This correlation has been observed in previous years, and the data suggest that the presence of diseased roots attracts *Diabrotica* larvae. It may be that damaged roots release compounds into the soil that guide the larvae to the roots. It appears that root rot tolerance is not necessarily related to brown node and crown rot symptoms.

Table 1. Yield and ear measurements for selected sweet corn hybrids grown in a root rot trial on the OSU Botany Research Farm, Corvallis, 2009[z].

Entry	Days to Harvest	Plants /Plot (no.)	Gross T/A	Net Ears /Plot (no.)	Ears /Plant (no.)	Lb/Ear	Net T/A	Culls T/A	Ear Length (in.)	Ear Dia. (in.)	Kernel Depth (mm)	Notes
GH 6462	110	27.8	12.0	25.8	0.92	0.66	7.3	0.15	7.4	2.04	12.3	Good uniformity
GSS 1477	113	28.0	10.5	28.8	1.03	0.57	7.2	0.17	7.8	1.90	12.3	Highly variable maturity
Coho	110	26.5	12.1	28.0	1.05	0.60	7.0	0.00	6.8	1.90	11.4	
GH 3369	116	29.0 (27.0)	13.4 (14.2)	23.3 (26.7)	0.84 (1.00)	0.67 (0.70)	6.9 (8.2)	0.04 (0.00)	7.6 (7.7)	2.03 (2.08)	11.5 (12.0)	One of 4 plots not thinned properly
EX 08755821	113	27.3	10.5	23.5	0.86	0.62	6.4	0.03	7.7	2.03	13.3	Highly variable maturity
EX 08735807	119	27.3	10.5	22.5	0.83	0.63	6.2	0.04	7.5	1.99	12.3	
GSS 8940	113	26.3	9.3	22.8	0.87	0.58	5.8	0.15	7.4	1.99	12.8	Highly variable maturity
GSS 5765	110	29.0 (28.0)	9.9 (10.8)	21.5 (24.7)	0.77 (0.88)	0.59 (0.62)	5.6 (6.7)	0.00 (0.00)	7.3 (7.4)	1.95 (2.00)	11.3 (12.0)	One of 4 plots not thinned properly
GH 6377P	116	35.8	9.2	25.3	0.71	0.50	5.5	0.08	6.9	1.83	10.3	Three of 4 plots not thinned properly but yield and other data were consistent across all plots
GSS 2259P	125	25.3	8.1	22.5	0.90	0.54	5.4	0.20	7.6	1.91	12.8	
Supersweet Jubilee	110	27.0	8.8	23.8	0.89	0.51	5.3	0.04	7.5	1.81	11.1	
EX 08735414	102	28.3 (25.7)	8.7 (9.1)	20.5 (20.7)	0.74 (0.81)	0.56 (0.57)	5.0 (5.2)	0.47 (0.58)	7.5 (7.6)	1.99 (2.02)	11.8 (12.0)	One of 4 plots not thinned properly; lots of shriveled kernels
GSS 5725	119	27.5	7.6	19.8	0.78	0.54	4.7	0.07	7.4	1.93	13.0	Highly variable maturity
Jubilee	109	29.2 (28.0)	8.5 (9.8)	20.8 (26.0)	0.72 (0.92)	0.44 (0.46)	4.0 (5.1)	0.08 (0.08)	7.4 (7.4)	1.81 (1.81)	12.5 (13.0)	Two of 4 plots not thinned properly
LSD 0.05		4.9	1.9	6.4	0.28	0.09	1.9	0.26	0.2	0.09	1.4	

[z]Planted July 1 in rows 30" apart, thinned to 9" between plants. Harvested plot length was 20'. Gross T/A is the weight of all harvested unhusked ears. All values shown are means of 4 replications arranged in randomized complete blocks. All data except cull T/A were obtained from typical husked good ears. For ear length and ear diameter, the value used for each replication was the average of 10 individual primary ear measurements. Plots in north 2 rows were not properly thinned and produced many small immature ears. Where possible (for all but GH 6377 which had 3 of 4 poorly thinned plots) means of properly thinned plots are shown in parentheses.

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Table 2. Yield and ear measurements for selected sugary sweet corn hybrids grown in a root rot trial on the OSU Vegetable Research Farm, Corvallis, 2009.[z]

Entry	Days to Harvest	% Mois-ture[y]	Plants/Plot (no.)	Gross T/A	Net Ears /Plot (no.)	Ears /Plant (no.)	Lb/Ear	Net T/A	Culls T/A	Ear Length (in.)	Ear Dia. (in.)	Kernel Depth (mm)	Tender-ness[x]
GH 3369	99	73.3	28.3	14.5	26.3	0.93	0.81	9.3	0.20	8.5	2.19	13.5	119
GH 6462	99	73.4	27.3	13.3	27.5	1.01	0.78	9.3	0.13	7.9	2.18	13.8	85
EX 08735807	99	74.0*	27.3	12.1	26.3	0.96	0.70	8.0	0.11	7.9	2.01	13.5	113
EX 08755821	99	72.5*	27.0	11.8	27.0	1.00	0.68	8.0	0.00	7.8	2.05	13.3	124
GH 6377P	97	73.0	27.8	12.1	28.5	1.03	0.63	7.8	0.49	7.7	2.05	13.3	98
Coho	96	73.8	27.0	12.1	29.0	1.08	0.59	7.5	0.14	7.4	2.03	13.8	83
Jubilee	95	70.7	28.0	10.3	27.8	0.99	0.54	6.4	0.30	7.6	1.95	12.8	96
EX 08735414	89	73.0*	26.8	10.4	21.0	0.78	0.67	6.2	1.03	7.8	2.16	11.5	61
LSD 0.05[x]			NS	1.5	4.8	0.16	0.04	1.3	0.35	0.2	0.05	1.0	11

[z]Planted June 25 in rows 30" apart, thinned to 9" between plants. Wind and rain at tasseling caused considerable lodging in some plots, especially on the south edge. Harvested plot length was 20'. Gross T/A is the weight of all harvested unhusked ears. All values shown are means of 4 replications arranged in randomized complete blocks. All data except cull T/A were obtained from typical husked good ears. For ear length and ear diameter, the value used for each replication was the average of 10 individual primary ear measurements. Tenderness value is the average of 10 individual primary ear measurements per replication, determined by a spring-operated puncture gauge; lower numbers indicate more tender pericarp.

[y]% moisture was estimated based on pre-harvest sampling for those varieties not sent in for processing (marked with *).

[x]NS = Non-significant.

Table 3. Ear quality evaluations for selected sugary sweet corn hybrids grown in a root rot trial on the OSU Vegetable Research Farm, Corvallis, 2009.[z]

Entry	Days to Harvest	Shape	Refine-ment	Row Straight-ness	Tip Fill	Uniformity			Flavor	Overall Score	Row No.	Notes
						Ear	Maturity	Kernel				
GH 3369	99	4	3.5	4.5	3	4	4	3.5	4	4	18-22	Very large attractive ears; a little tough
GH 6462	99	4.5	3.5	2.5	4	2.5	3	3	3	3	18	Color seems pale; some ears with very jumbled rows
EX 08735807	99	3.5	3.5	2	5	3.5	4	2.5	2	3	18-20	Some white kernels in most ears
EX 08755821	99	3	3-4	2	3.5	2	2.5	2	2	2.5	16-22	Ears have very jumbled appearance from un-even kernels and crooked rows; some curved ears
GH 6377P	97	3.5	4.5	4	2-5	2.5	3	3	3.5	3	18-20	Contains bicolor off-type with larger ear; 1 or 2 spades per plot; severe lodging in 1 plot
Coho	96	4	4.5	3	4.5	3	3	4.5	3	3.5	16-20	Some ears have bulge in middle
Jubilee	95	5	4	4.5	4.5	3.5	4	4	4	4	16	Low yield; some lodg-ing
EX 08735414	89	3	3	2.5	4	2.5	3.5	3	4	2.5	16-24	All 4 plots on south side of field and badly lodged; shape varies from good bullet to very fat and conical; good flavor; very tender

[z]Planted June 25. Scores based on a 1-5 scale, with 5 = best.

Table 4. Yield and ear measurements for selected supersweet corn hybrids grown in a root rot trial on the OSU Vegetable Research Farm, Corvallis, 2009.[z]

Entry	Days to Harvest	% Mois-ture	Plants/ Plot (no.)	Gross T/A	Net Ears /Plot (no.)	Ears /Plant (no.)	Lb/Ear	Net T/A	Culls T/A	Ear Length (in.)	Ear Dia. (in.)	Kernel Depth (mm)	Tender-ness[x]
GSS 2259P	113	78.3	27.0	14.7	32.8	1.22	0.74	10.5	0.29	8.0	2.10	14.0	147
GSS 1477	97	77.6	25.8	12.4	28.3	1.12	0.69	8.5	0.04	8.5	2.05	13.0	107
GSS 5725	106	78.9	25.5	12.5	29.3	1.15	0.64	8.2	0.00	7.6	2.04	13.5	123
GSS 5765	102	78.3	24.3	11.3	25.5	1.05	0.71	7.9	0.00	7.5	2.10	13.3	126
GSS 8940	102	78.1	26.3	10.8	26.3	1.00	0.66	7.5	0.05	7.5	2.03	13.5	131
Supersweet Jubilee	96	75.9	24.3	9.5	25.8	1.06	0.58	6.5	0.00	7.7	1.96	13.0	84
LSD 0.05			2.6	1.5	4.2	0.16	0.04	1.2	0.17	0.2	0.05	0.8	9

[z]Planted June 25 in rows 30" apart, thinned to 9" between plants. Harvested plot length was 20'. Gross T/A is the weight of all harvested un-husked ears. All values shown are means of 4 replications arranged in randomized complete blocks. All data except and cull T/A were obtained from typical husked good ears. For ear length and ear diameter, the value used for each replication was the average of 10 individual primary ear measurements. Tenderness value is the average of 10 individual primary ear measurements per replication, determined by a spring-operated puncture gauge; lower numbers indicate more tender pericarp.

Table 5. Ear quality evaluations for selected supersweet corn hybrids grown in a root rot trial on the OSU Vegetable Research Farm, Corvallis, 2009.[z]

Entry	Days to Harvest	Shape	Refine-ment	Row Straight-ness	Tip Fill	Uniformity			Flavor	Overall Score	Row No.	Notes
						Ear	Maturity	Kernel				
GSS 2259P	113	2.5	3	3	3	3.5	3.5	2.5	3	2.5	18	Large, slightly oval ears with tendency for spades; some curved ears; tough; very late
GSS 1477	97	4	3	2.5	2.5	3	3.5	2.5	4.5	3	16-18	Some curved ears; rows are jumbled and kernels uneven
GSS 5725	106	4.5	3.5	3	5	3.5	4.5	3	4	4	16-20	Attractive ears; a few curved; some jumbled rows
GSS 5765	102	3.5	3.5	2.5	4	3	3	2.5	3.5	3	16-18	Somewhat rough and jumbled appearance
GSS 8940	102	4	2.5-3	2.5-3.5	4	3	4	2.5	4	3	16	Some curved ears; uneven kernels give rough appearance
Supersweet Jubilee	96	5	3.5	4	3.5	3	3.5	3	5	4	16	Very tender with ex-cellent flavor; low yield

[z]Planted June 25. Scores based on a 1-5 scale with 5 = best.

Table 6. Overall root disease ratings of sweet corn hybrids grown at the OSU Botany and Vegetable Research Farms, Corvallis, 2009[z]

Entry	Primary root rot (%)	Sign. diff from: Jub[v]	Sign. diff from: SS Jub[v]	Sign. diff from: Coho[v]	Meso-cotyl root rot (%)	Sign. diff from: Jub[v]	Sign. diff from: SS Jub[v]	Sign. diff from: Coho[v]	Adventitious root rot (%) Mean	Adventitious root rot (%) Mean Comparison[u]	Brown node[y] Mean	Brown node[y] Mean Comparison[u]	Crown rot[x] Mean	Crown rot[x] Mean Comparison[u]	Root worm[w] Mean	Root worm[w] Mean Comparison[u]
GSS 2259P	99.8				95.7	*	*		56.3	a	63.5	a	0.45	a	1.00	a
Coho	99.5				95.5	*	*		67.7	b	58.0	a	0.86	de	1.13	abc
GSS 5765	99.2	*			97.7				69.0	b	96.5	e	0.94	def	1.08	ab
GSS 8940	98.9	*	*	*	99.3			^	70.4	bc	94.8	de	0.90	de	1.00	a
GH 6462	99.8				97.9				73.1	cd	96.9	e	1.13	gh	1.38	de
EX 08735807	100.0				100.0			^	73.5	cd	81.6	bc	0.67	b	1.25	cd
Supersweet Jubilee	99.5				99.8			^	74.6	d	99.0	e	1.27	h	1.00	a
GSS 5725	100.0				100.0			^	79.0	e	93.8	de	0.90	de	1.38	de
EX 08755821	100.0				100.0			^	82.1	ef	80.9	b	0.68	bc	1.25	cd
Jubilee	100.0				100.0			^	83.8	fg	100.0	e	1.54	i	1.50	e
GH 6377P	100.0				100.0			^	85.2	fgh	91.3	cde	1.05	fg	1.17	bc
GH 3369	100.0				100.0			^	85.8	gh	91.3	cde	0.98	efg	1.50	e
GSS 1477	100.0				100.0			^	86.3	gh	86.5	bcd	0.82	cd	1.17	bc
EX 08735414	100.0				100.0			^	87.9	h	95.8	de	1.08	fg	2.00	f
LSD 0.05									3.4		9.8		0.15		0.13	

[z]Trials planted June 25 for vegetable farm plots and July 1 for botany farm plots. Plants dug and rated October 15 (vegetable farm) and November 3 (botany farm). Combined analysis from 2 trials per entry, 4 reps per trial, 3 plants per rep.
[y]Percentage of first 2-5 nodes above the soil line with brown discoloration.
[x]Scale of 0-3 with 0=no crown discoloration, 0.5=beginning of discoloration, 1.0 = entire crown is rotted, 2.0=entire crown is rotted with black discoloration; 3=rot moved up past crown.
[w]Scale of 1-3 with 1=no evidence of feeding, 2=less than 75% adventitious roots with feeding, 3=more than 75% roots with feeding.
[v]Least square means were calculated where there were missing values; * indicates significantly better than the check cultivar at 95% probability level; ^ indicates significantly worse than the check cultivar at 95% probability level.
[u]LSD (least significant difference) was calculated where there were complete data sets; means with the same letter are not significantly different.

Table 7. Root disease ratings of sweet corn hybrids grown at the OSU Botany Farm, Corvallis, 2009[z].

Entry	Primary root rot (%)	Meso-cotyl root rot (%)	Sign. diff from: Jub[v]	SS Jub[v]	Coho[v]	Adventitious root rot (%) Mean	Mean Comparison[u]	Brown node[y] Mean	Mean Comparison[u]	Crown rot[x] Mean	Mean Comparison[u]	Root worm[w] Mean	Mean Comparison[u]
GSS 2259P	100.0	91.7	*	*	*	55.0	a	70.8	ab	0.40	a	1.00	a
EX 08735807	100.0	100.0				60.0	ab	77.1	bc	0.71	b	1.00	a
GSS 5765	100.0	100.0				62.1	bc	100.0	d	0.92	de	1.00	a
Coho	100.0	95.8	*			63.3	bc	60.4	a	0.83	cd	1.00	a
GSS 8940	100.0	98.8				64.2	bc	89.6	cd	0.83	cd	1.00	a
GH 6462	100.0	100.0			^	65.4	c	100.0	d	1.00	e	1.00	a
Supersweet Jubilee	100.0	100.0				72.9	d	100.0	d	1.00	e	1.00	a
GSS 5725	100.0	100.0			^	75.8	de	87.5	cd	0.88	cd	1.42	c
Jubilee	100.0	100.0			^	75.8	de	100.0	d	1.00	e	1.00	a
EX 08755821	100.0	100.0			^	78.3	e	100.0	d	0.77	bc	1.00	a
GH 6377P	100.0	100.0				78.3	e	100.0	d	0.94	de	1.17	b
GH 3369	100.0	100.0			^	80.4	ef	100.0	d	1.00	e	1.17	b
EX 08735414	100.0	100.0			^	83.8	f	100.0	d	1.00	e	1.17	b
GSS 1477	100.0	100.0				84.2	f	100.0	d	0.85	cd	1.08	ab
LSD 0.05	ns					5.4		15.8		0.12		0.17	

[z]Planted July 1. Plants dug and rated November 3. Analysis based on 4 reps, 3 plants per rep.
[y]Percentage of first 2-5 nodes above the soil line with brown discoloration.
[x]Scale of 0-3 with 0=no crown discoloration, 0.5=beginning of discoloration, 1.0 = entire crown is rotted, 2.0=entire crown is rotted with black discoloration; 3=rot moved up past crown.
[w]Scale of 1-3 with 1=no evidence of feeding, 2=less than 75% adventitious roots with feeding, 3=more than 75% roots with feeding.
[v]Least square means were calculated where there were missing values; * indicates significantly better than the check cultivar at 95% probability level; ^ indicates significantly worse than the check cultivar at 95% probability level; ns = not statistically significant.
[u]LSD (least significant difference) was calculated where there were complete data sets; means with the same letter are not significantly different.

Table 8. Root disease ratings of sugary sweet corn hybrids grown at the OSU Vegetable Research Farm, Corvallis, 2009z.

Entry	Primary root rot (%)	Sign. diff from: Jub[v]	Sign. diff from: Coho[v]	Meso-cotyl root rot (%)	Adventitious root rot (%) Mean	Adventitious root rot (%) Mean Comparison[u]	Brown node[y] Mean	Brown node[y] Mean Comparison[u]	Crown rot[x] Mean	Crown rot[x] Mean Comparison[u]	Root worm[w] Mean	Root worm[w] Mean Comparison[u]
Coho	98.8	*		95.0	72.1	a	55.6	a	0.90	abc	1.25	a
GH 6462	99.5			95.8	80.8	b	93.8	bc	1.25	c	1.75	c
EX 08755821	100.0		^	100.0	85.8	c	61.8	a	0.58	a	1.50	b
EX 08735807	100.0		^	100.0	87.1	c	86.1	b	0.63	ab	1.50	b
GH 3369	100.0		^	100.0	91.3	d	82.6	b	0.96	bc	1.83	cd
Jubilee	100.0		^	100.0	91.7	d	100.0	c	2.08	d	2.00	d
GH 6377P	100.0		^	100.0	92.1	d	86.8	b	1.17	c	1.17	a
EX 08735414	100.0		^	100.0	92.1	d	91.7	bc	1.17	c	2.83	e
LSD 0.05				ns	3.5		13.1		0.36		0.24	

[z]Planted June 25. Plants dug and rated October 15. Analysis based on 4 reps, 3 plants per rep.

[y]Percentage of first 2-5 nodes above the soil line with brown discoloration.

[x]Scale of 0-3 with 0=no crown discoloration, 0.5=beginning of discoloration, 1.0 = entire crown is rotted, 2.0=entire crown is rotted with black discoloration; 3=rot moved up past crown.

[w]Scale of 1-3 with 1=no evidence of feeding, 2=less than 75% adventitious roots with feeding, 3=more than 75% roots with feeding.

[v]Least square means were calculated where there were missing values; * indicates significantly better than the check cultivar at 95% probability level; ^ indicates significantly worse than the check cultivar at 95% probability level; ns = not statistically significant.

[u]LSD (least significant difference) was calculated where there were complete data sets; means with the same letter are not significantly different.

Table 9. Root disease ratings of supersweet corn hybrids grown at the OSU Vegetable Research Farm, Corvallis, 2009[z].

Entry	Primary root rot (%)	Sign. diff from: SS Jub[v]	Meso-cotyl root rot (%)	Sign. diff from: SS Jub[v]	Adventitious root rot (%) Mean	Adventitious root rot (%) Mean Comparison[u]	Brown node[y] Mean	Brown node[y] Mean Comparison[u]	Crown rot[x] Mean	Crown rot[x] Mean Comparison[u]	Root worm[w] Mean	Root worm[w] Mean Comparison[u]
GSS 2259P	99.5		100.0		57.5	a	56.3	a	0.50	a	1.00	a
GSS 5765	98.3		95.8	*	75.8	b	93.1	c	0.96	b	1.17	b
Supersweet Jubilee	99.0		99.5		76.3	b	97.9	c	1.54	c	1.00	a
GSS 8940	97.5	*	100.0		76.7	b	100.0	c	0.96	b	1.00	a
GSS 5725	100.0		100.0		82.1	c	100.0	c	0.92	b	1.33	c
GSS 1477	100.0		100.0		88.3	d	79.2	b	0.79	b	1.25	bc
LSD 0.05					4.9		10.3		0.17		0.14	

[z]Planted June 25. Plants dug and rated October 15. Analysis based on 4 reps, 3 plants per rep.

[y]Percentage of first 2-5 nodes above the soil line with brown discoloration.

[x]Scale of 0-3 with 0=no crown discoloration, 0.5=beginning of discoloration, 1.0 = entire crown is rotted, 2.0=entire crown is rotted with black discoloration; 3=rot moved up past crown.

[w]Scale of 1-3 with 1=no evidence of feeding, 2=less than 75% adventitious roots with feeding, 3=more than 75% roots with feeding.

[v]Least square means were calculated where there were missing values; * indicates significantly better than the check cultivar at 95% probability level; ^ indicates significantly worse than the check cultivar at 95% probability level.

[u]LSD (least significant difference) was calculated where there were complete data sets; means with the same letter are not significantly different.

Table 10. Correlation among root disease and yield traits for sweet corn hybrids grown at three locations, Corvallis, Oregon, 2009.[z]

	Mesocotyl root rot	Adventitious root rot	Brown Node	Crown rot	Root worm	Stand	Gross T/A	Net T/A	Ear Length	Ear Di-am.	Kernel depth
Primary root rot	0.24 ns	0.09 ns	-0.45*	-0.10 ns	0.15 ns	0.43*	-0.10 ns	-0.25 ns	0.05 ns	-0.23 ns	-0.38*
Mesocotyl root rot		0.42*	-0.25 ns	0.20 ns	0.10 ns	0.40*	0.04 ns	-0.04 ns	0.20 ns	-0.02 ns	-0.17 ns
Adventitious root rot			0.01 ns	0.45*	0.61***	0.16 ns	0.19 ns	0.18 ns	0.46*	0.31 ns	0.12 ns
Brown node				0.06 ns	-0.04 ns	-0.40 *	0.00 ns	0.09 ns	-0.07 ns	0.18 ns	0.10 ns
Crown rot					0.40*	0.07 ns	-0.08 ns	-0.10 ns	-0.04 ns	0.01 ns	-0.07 ns
Root worm						0.09 ns	0.18 ns	0.17 ns	0.40+	0.50**	0.06 ns
Stand							0.08 ns	-0.16 ns	0.04 ns	-0.06 ns	-0.19 ns
Gross T/A								0.92***	0.49**	0.71***	0.43*
Net T/A									0.59***	0.73***	0.61***
Ear Length										0.61***	0.55**
Ear Diam.											0.56**

[z]Significantly different at: + = 90%, * = 95%, ** = 99% and *** = >99.9% probability levels. ns = not significant.

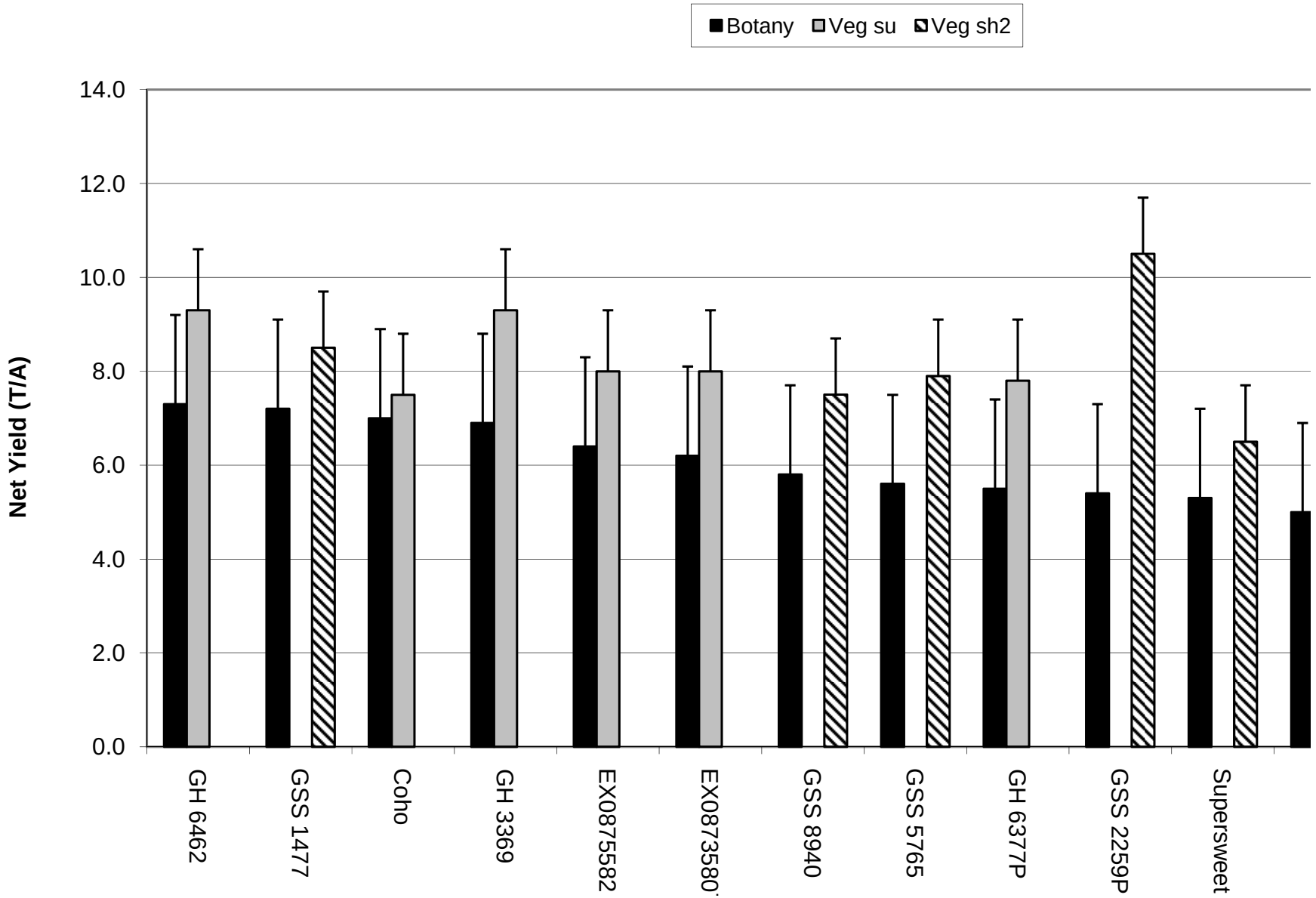

Figure 1. Net yield for sweet corn hybrids grown at 3 locations, Corvallis, Oregon, 2009. Supersweet and sugary hybrids were grown together at the Botany Farm.

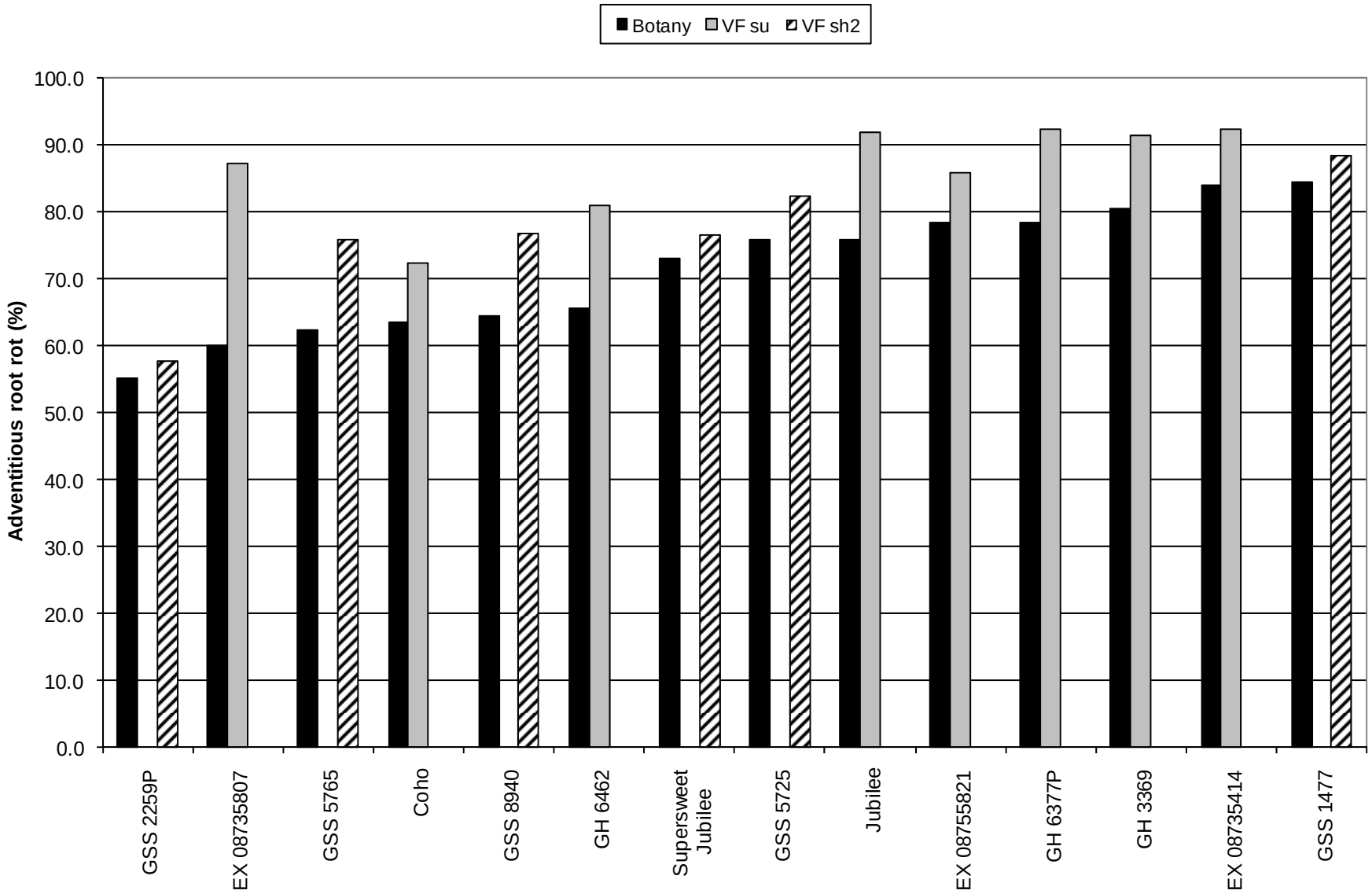

Figure 2. Adventitious root rot for sweet corn hybrids grown at 3 locations, Corvallis, Oregon, 2009. Supersweet and sugary hybrids were grown together at the Botany Farm.

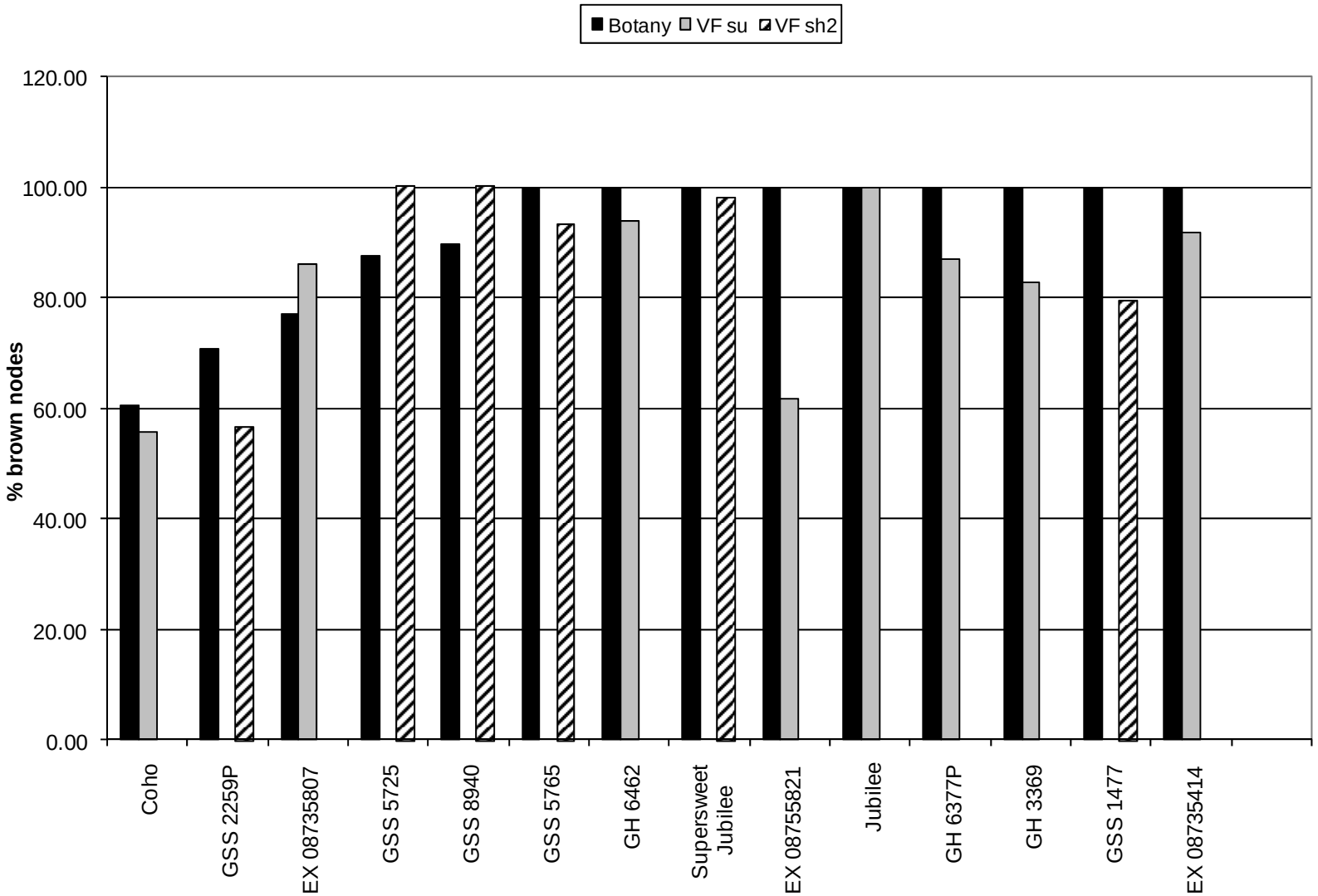

Figure 3. Percent brown node for sweet corn hybrids grown at 3 locations, Corvallis, Oregon, 2009. Supersweet and sugary hybrids were grown together at the Botany Farm.

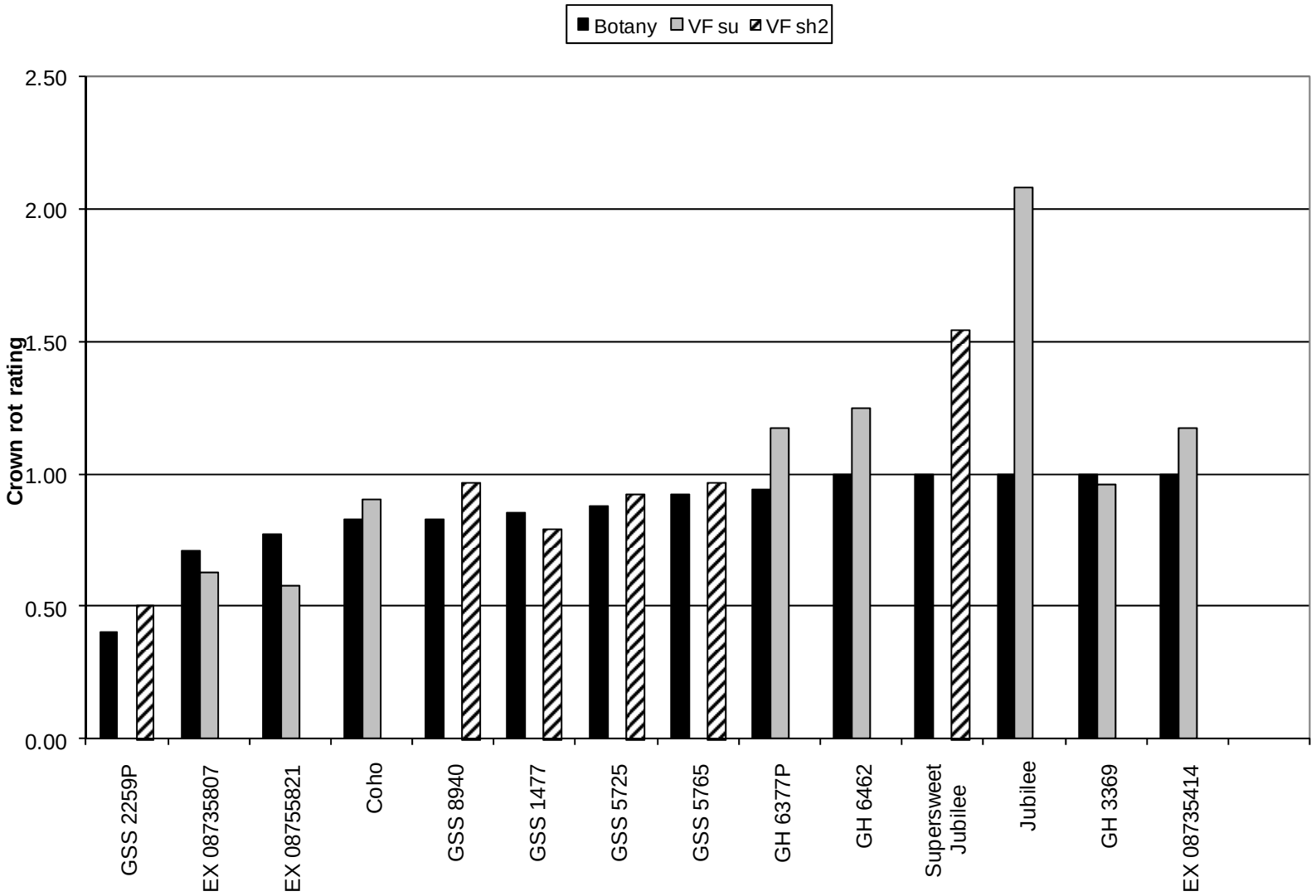

Figure 4. Crown rot rating for sweet corn hybrids grown at 3 locations, Corvallis, Oregon, 2009. Supersweet and sugary hybrids were grown together at the Botany Farm.