



American Crystal
Sugar Company

November 2018

Dear ACSC Sugarbeet Grower:

The 2018 official coded variety performance trials and disease nurseries were planted at 19 sites by American Crystal Sugar Company (ACSC) including 13 yield trial sites. Four additional disease nurseries were planted by third party cooperators. Thanks are extended to the dedicated Technical Services staff involved in the official trial plot care, harvest, and analyses.

Results

Results from the Official Variety Trials sites were good to excellent. Stands in the trials were generally very good this year. Ten sites were used for variety approval calculations. One site was abandoned due to erratic emergence (Humbolt) and two were used for Aphanomyces Specialty (Climax and Georgetown). Rhizoctonia was prevalent in 2018 and showed an increase from 2017 in yield trials. Seed treatments and two applications of Quadris were used to control Rhizoctonia. Based upon susceptible plot observations, root aphids were present in low levels at nine (9) sites. Preliminary root aphid evaluations are in progress, but seed companies may know tolerance levels of their varieties. Revenue calculations in 2018 are based on a hypothetical \$46.40 payment (5-year rolling average) at 17.5% sugar and 1.5% SLM not considering hauling or production costs.

Fusarium ratings are from two Moorhead sites. The Rhizoctonia ratings are from the RRV and Michigan with the USDA. The Aphanomyces ratings are from the RRV and Shakopee. The Cercospora data is from Foxhome, MN; Randolph, MN; and Michigan USDA.

The 2018 data has been combined with the previous years' data, and results are enclosed. Bolter data is presented in plants per acre based upon 45,000 plants per acre. Results for the yield trials from individual sites are available on the

Fifteen conventional varieties are approved for sale in 2019 based upon one year of data. Three conventional varieties were previously approved and have data from previous years in the 2012 Sugarbeet Research and Extension Report and 2012 Official Variety Trial Report.

These results and additional information for individual growing sites are available on the World Wide Web at www.crystalsugar.com. More detailed information will be printed later in the Sugarbeet Research and Extension Reports (www.sbreb.org). Additional data including individual yield trial results and agronomic procedures are also on the ACSC web site.

Attached are the following pages of information:

1. List of varieties approved for sale to ACSC growers
2. Multi-year performance of RR varieties from all sites
3. Performance of RR varieties under Aphanomyces conditions
4. Performance of conventional varieties from five sites
5. Disease ratings for all nurseries (varieties tested in 2018)
6. Trial sites, disease observations and agronomic information from all trial locations
7. Seed treatments applied to seed used in the official coded variety trials

Plot Procedures

Yield trials were planted to stand at 4.5 inches. Plots were planted crosswise (90°) to the cooperators' normal farming operations, where possible. Plot row lengths for all official trials were maintained at 46 feet with about 39 feet harvested. Planting was performed with a 12-row SRES vacuum planter. The GPS controlled planter gave good single seed spacing which facilitated emergence counting. Seed companies had the option of treating seed with Tachigaren, insecticide and a Rhizoctonia seed treatment fungicide. Emergence counts were taken on 24 feet of each plot. Multiple seedlings were counted as a single plant if they emerged less than one inch apart. The stands in all yield trials were refined by removing doubles (multiple seedlings less than 1.5 inch apart) by hand but were not further reduced.

Roundup Powermax with Event and full rates of fungicides were applied using a pickup sprayer driven down the alleys. Hand weeding was used where necessary. The micro rate program was used on conventional trials. All yield trials were treated with Quadris in a band during the 2 leaf (9 oz) and 6-10 leaf stage (14 oz) for Rhizoctonia control. Treatments used for Cercospora control in 2018 included Inspire XT/Penncozebe, Agri Tin/Incognito, Proline/Penncozebe, and Headline/Agri Tin. Ground spraying was conducted by ACSC technical staff.

RR varieties with commercial seed were planted in four-row, six replication trials. The RR experimental entries were planted in smaller two-row, four replication trials. Two applications of Roundup were made in the 4-6 (32 oz) and 8 – 12 (22 oz) leaf stages.

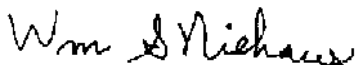
All plot rows were measured for total length after approximately 3.5 feet at each end were removed at the end of August, with skips greater than 60 inches being measured for adjustment purposes. Harvest was performed with two modified four-row harvesters (4310 and 4310A John Deere). All harvested beets of each plot were used for yield determination while one sample (approx 25 lbs) for sugar and impurity analysis was obtained from each plot. Quality analysis was performed at the ACSC Technical Services quality lab in Moorhead.

Varieties were planted in disease nurseries in North Dakota, Minnesota and Michigan to evaluate varieties for disease tolerance.

ACSC adjusts the Cercospora, Aphanomyces, Rhizoctonia and Fusarium nursery data each year to provide a consistent target for variety approval criteria.

*Before purchasing seed, please check to make sure the varieties you are buying are on the **current approved list**. In accordance with the grower contract, the cooperative has the option to refuse beets of a non-approved variety. If you have questions, please contact the ACSC Technical Services Center or your ACSC Agriculture Department.*

Sincerely,



William S. Niehaus
Official Trial Manager

WSN/dlm
Attachments

Table 1.
Varieties Meeting ACSC Approval Criteria for the 2019 Sugarbeet Crop ++

Roundup Ready ®	Full Market	Aph Spec	Rhc Spec	High Rzm	Conventional	Full Market	High Rzm
BTS 80RR52	Yes	Yes		Hi Rzm	BETA EXP 687	Yes	Hi Rzm
BTS 8337	Yes	Yes		Hi Rzm	BETA EXP 698	Yes	Hi Rzm
BTS 8500	Yes	Yes		Hi Rzm	BETA EXP 747	Yes	Hi Rzm
BTS 8524	Yes	Yes		Hi Rzm	BETA EXP 758	Yes	Hi Rzm
BTS 8606	Yes			Hi Rzm	BETA EXP 872	New	Hi Rzm
BTS 8629	Yes	New		Hi Rzm			
BTS 8735	New	New		Hi Rzm	Crystal R761	Yes	Hi Rzm
BTS 8749	New	New		Hi Rzm	Crystal 620	Yes	Hi Rzm
BTS 8767	New			Hi Rzm	Crystal 840	New	Hi Rzm
BTS 8784	New						
Crystal 093RR	Yes	Yes		Hi Rzm	Hilleshög HM3035Rz	Yes	Rzm
Crystal 247RR	Yes			Hi Rzm	Hilleshög HIL9891Rz	Yes	Rzm
Crystal 355RR	Yes	Yes	Yes	Hi Rzm	Maribo MA615Rz	Yes	Rzm
Crystal 467RR	Yes	Yes		Hi Rzm	Seedex Deuce (SX0873TT)	Yes	Hi Rzm
Crystal 572RR	Yes			Hi Rzm	Seedex 8869 Cnv	Yes	Hi Rzm
Crystal 573RR	Yes	Yes		Hi Rzm	SESVanderhave 48611	Yes	Hi Rzm
Crystal 574RR	Yes	Yes		Hi Rzm	SESVanderhave 48777	Yes	Hi Rzm
Crystal 578RR	Yes	New		Hi Rzm			
Crystal 684RR	Yes	Yes		Hi Rzm			
Crystal 792RR	New	New		Hi Rzm			
Crystal 793RR	New	New		Hi Rzm			
Crystal 796RR	New	New		Hi Rzm			
Hilleshög HM4302RR	Yes		Yes	Rzm			
Hilleshög HM4448RR	Yes			Rzm			
Hilleshög HM9528RR	Yes	Yes		Hi Rzm			
Hilleshög HIL9708	Yes			Hi Rzm			
Hilleshög HIL9920	New			Hi Rzm			
Maribo MA109	Yes	Yes	Yes	Hi Rzm			
Maribo MA305	Yes			Rzm			
Maribo MA5U2	No	Yes		Hi Rzm			
Maribo MA504	Yes			Hi Rzm			
Maribo MA717	New			Hi Rzm			
Seedex Avalanche (858)	Yes	Yes		Hi Rzm			
Seedex Bronco RR (1863)	Yes	Yes		Hi Rzm			
Seedex Canyon RR(844TT)	Yes	Yes		Hi Rzm			
Seedex Cruze RR(846)	Yes	Yes		Rzm			
Seedex Marathon (856)	Yes			Hi Rzm			
Seedex RR1879	New	Yes		Hi Rzm			
SESVdh RR265	Yes			Hi Rzm			
SESVdh RR266	Yes			Hi Rzm			
SESVdh RR268	Yes	Yes		Hi Rzm			
SESVdh RR333	Yes	Yes		Hi Rzm			
SESVdh RR351	Yes	Yes		Hi Rzm			
SESVdh RR371	New			Hi Rzm			

++Roundup Ready sugarbeets are subject to the ACSC RRSB Bolter Destruction Policy
Roundup Ready ® is a registered trademark of Monsanto Company.

Created 11/6/2018

Aph Spec = variety meets Aphanomyces specialty requirements
Rhc Spec = variety meets Rhizoctonia specialty requirements
Hi Rzm = may perform better under severe Rzm.
New = newly approved

Table 3. Performance Data of RR Aphanomyces Specialty Varieties - Under Aphanomyces Conditions (Relative to Susceptible Checks) approved for 2019 Growing Season +++

Description	Years Comm	Rev/Ton			Rev/Acre			Rec/Ton		Rec/Acre		Sugar		Yield		CR Rating +		Aph Root +		Fusarium +		Rhizoctonia +		
		2018	2016#	%Sus	2018	2016#	%Sus	2018	2016#	2018	2016#	2018	2016#	2018	2016#	18	2Yr	18	2Yr	18	2Yr	18	2Yr	
Previously Approved		2	2	4	2	2	4	2	2	2	2	2	2	2	2	2	3	6	2	3	2	4	3	4
BTS 80RR52	7	40.90	47.73	101	1181	1294	131	300.8	305.0	8663	8994	16.27	16.32	28.8	29.5	4.38	4.38	4.5	4.4	3.8	3.2	4.0	4.1	
BTS 8337	4	44.69	49.32	107	1240	1306	132	314.0	310.0	8719	8626	16.83	16.59	27.8	27.9	4.64	4.50	3.7	3.8	4.2	4.0	4.1	4.2	
BTS 8500	2	39.44	44.32	95	1309	1318	133	295.7	293.9	9794	8817	15.97	15.79	33.1	30.1	4.40	4.34	4.4	4.5	2.5	2.3	4.4	4.5	
BTS 8524	2	35.94	44.53	91	1185	1301	131	283.5	294.6	9388	9385	15.40	15.85	33.2	31.9	4.50	4.44	4.1	4.3	3.9	3.6	4.2	4.3	
Crystal 093RR	7	40.91	49.26	103	1244	1312	132	300.8	309.9	9138	8685	16.27	16.61	30.3	28.1	4.88	4.68	4.4	4.4	4.3	3.9	4.6	4.5	
Crystal 355RR	3	40.82	49.37	103	1131	1205	122	300.5	310.2	8333	8071	16.24	16.58	27.9	26.1	4.52	4.44	4.4	4.6	3.7	3.2	3.7	3.9	
Crystal 467RR	1	37.00	42.00	90	1171	1208	122	287.2	286.1	9090	8510	15.56	15.48	31.6	29.9	4.61	4.53	3.7	3.8	2.9	2.4	3.9	4.2	
Crystal 573RR	1	42.09	48.78	103	1273	1288	130	305.0	308.8	9210	8294	16.46	16.51	30.2	27.0	4.38	4.26	4.3	4.1	4.2	3.7	4.3	4.4	
Crystal 574RR	2	38.17	44.17	94	1282	1321	133	291.3	293.4	9778	9003	15.75	15.76	33.6	30.5	4.42	4.38	4.3	4.5	2.9	2.6	4.4	4.3	
Crystal 684RR	NC	37.30	44.83	93	1295	1406	142	287.9	295.6	10015	9986	15.60	15.89	34.9	33.7	4.41	4.38	3.8	4.1	3.0	2.5	4.4	4.5	
Hilleshög HM4302RR	5	40.29	47.43	100	1087	1092	110	298.7	304.0	8026	6975	16.03	16.25	26.8	22.9	4.26	4.09	4.7	5.7	5.0	5.1	3.7	3.7	
Hilleshög HM9528RR	4	38.65	48.08	99	1157	1268	128	293.0	306.1	8781	8772	15.71	16.38	30.0	28.6	4.79	4.89	4.2	4.9	5.0	4.6	4.0	4.1	
Maribo MA109	3	42.36	51.46	107	1048	1114	112	305.9	316.9	7569	7271	16.40	16.91	24.8	23.0	4.33	4.23	4.4	4.7	4.9	4.6	3.7	3.7	
Maribo MA502	2	40.07	44.36	96	1186	1268	128	297.9	294.0	8788	8945	16.09	15.88	29.4	30.4	4.95	4.98	3.7	3.6	3.3	3.2	4.2	4.5	
SV RR268	1	41.55	48.64	103	1236	1271	128	303.1	308.4	9007	8262	16.28	16.40	29.8	26.7	4.70	4.88	4.2	4.5	5.1	5.1	4.2	4.4	
SV RR333	3	41.41	46.56	100	1172	1207	122	302.6	301.2	8553	8010	16.25	16.08	28.2	26.5	4.78	4.81	4.1	4.5	5.1	5.2	4.2	4.3	
SV RR351	2	41.26	46.82	100	1201	1293	131	302.1	302.2	8798	8971	16.25	16.16	29.2	29.7	4.61	4.51	4.5	4.3	5.3	5.1	4.2	4.2	
SX Avalanche RR	2	42.51	48.30	103	1154	1242	125	306.4	307.2	8324	8473	16.41	16.37	27.2	27.6	4.50	4.57	4.2	4.1	5.4	5.6	4.4	4.3	
SX Bronco RR(1963)	1	42.51	50.16	105	1232	1291	130	306.4	313.4	8859	8434	16.36	16.62	28.9	26.9	4.65	4.37	4.0	4.5	5.5	5.8	4.7	4.5	
SX Canyon RR	3	40.07	44.98	97	1199	1200	121	297.9	296.2	8884	7852	16.05	15.86	29.7	26.3	4.79	4.85	4.3	4.3	4.9	5.0	4.4	4.4	
SX Cruze RR	3	33.43	42.40	86	1041	1181	119	274.7	288.0	8545	8957	14.99	15.51	31.1	31.0	5.79	5.58	4.4	4.6	4.8	4.4	4.2	4.3	
Newly Approved																								
BTS 8629	1	38.57	44.43	94	1286	1332	134	292.7	294.2	9772	9079	15.82	15.81	33.4	30.7	4.52	4.40	3.9	4.3	4.4	4.3	4.0	4.1	
BTS 8735	NC	40.15	--	--	1215	--	--	298.2	--	9035	--	16.04	--	30.4	--	4.21	4.22	4.0	4.4	4.0	4.0	4.1	4.3	
BTS 8749	NC	39.62	--	--	1201	--	--	296.4	--	9005	--	16.02	--	30.5	--	4.10	4.08	2.8	3.2	3.8	3.5	3.9	3.9	
Crystal 578RR	1	39.56	47.50	99	1156	1318	133	296.1	304.5	8661	9500	15.96	16.25	29.3	31.2	4.74	4.83	4.2	4.4	3.4	2.9	4.3	4.3	
Crystal 792RR	NC	42.16	--	--	1343	--	--	305.5	--	9758	--	16.39	--	32.0	--	4.26	4.10	3.8	4.3	3.5	3.2	4.2	4.0	
Crystal 793RR	NC	42.26	--	--	1317	--	--	305.8	--	9553	--	16.37	--	31.3	--	4.26	4.10	3.3	3.2	3.6	3.3	4.1	4.2	
Crystal 796RR	NC	38.87	--	--	1288	--	--	293.5	--	9735	--	15.82	--	33.2	--	4.74	4.79	3.6	3.4	3.4	2.8	4.0	4.1	
SX RR1879	NC	40.45	--	--	1213	--	--	299.3	--	8985	--	16.04	--	30.1	--	4.44	4.66	4.4	4.3	5.2	4.9	4.3	4.3	
Aph Susc Checks		39.78	48.17		956	1025		296.9	306.8	7123	6529	16.04	16.49	24.0	21.3									
Mean of Aph Specialty Varieties		40.10	46.76		1208	1331		298.0	301.9	8992	8603	16.06	16.17	30.2	28.5									

%Susc = % of susceptible varieties.

+ Aph ratings from RRV & Shakopee (res.<4.4, susc>5.5). CR from Randolph MN, Foxhome MN & Michigan (res.<4.4, susc>5.5). Fusarium from RRV (res.<3.0, susc>5.0). Rhizoc. from Mhd, NWROC & Mich (res.<3.8, susc>5). Hi may perform better under severe Rzm.

++ 2018 Revenue estimates based on a \$46.40beet payment at 17.5% sugar and 1.5% loss to molasses. Revenue does not consider hauling or production costs

+++ 2018Data from Climax and Georgetown.

Lack of Aphanomyces pressure at any of the OVT sites prevented collection of Aphanomyces Yield Data for 2017.

Created 11/6/2018

Table 4. Performance Data of Conventional Varieties During 2016, 2017, 2018 Growing Seasons (All Locations Combined)

Variety	Yrs Com	Rev/Ton ++					Rev/Acre ++					Rec/Ton		Rec/Acre		Sugar		Yield		Molasses		Emerg		Bolter / Ac		CR +		Aph Root+		Rhizoc.+		Fusarium+ Rzm+		
		18	2 Yr	2Y%	3Yr#	3Y%	18	2 Yr	2Y%	3Yr#	3Yr%	18	2 Yr	18	2 Yr	18	2 Yr	18	2 Yr	18	2 Yr	18	2 Yr	18	2 Yr	18	2 Yr	18	2 Yr	18	2 Yr	18	2 Yr	
Previous Approved # locations		5	16	17		5	16	17			5	16	5	16	5	16	5	16	5	16	5	16	5	16	5	16	3	6	2	3	3	6	2	4
BETA EXP 687	NC	53.73	54.92	118	54.45	116	1698	1666	112	1753	100	346	345	11006	10565	18.40	18.44	32.1	30.9	1.12	1.17	84	78	0	0	3.90	3.95	4.1	4.2	3.8	4.0	3.9	3.7	Hi
BETA EXP 698	NC	51.36	52.29	112	52.03	111	1831	1723	116	1801	102	337	336	12134	11219	17.93	17.93	36.3	33.7	1.06	1.10	80	78	0	0	4.18	4.18	3.7	3.7	4.2	4.3	3.3	3.2	Hi
BETA EXP 747	NC	53.57	53.08	114	--	--	1907	1780	120	--	--	345	339	12377	11467	18.18	18.01	36.2	34.1	0.93	1.04	82	78	0	0	4.25	4.32	4.0	3.8	4.1	4.0	4.7	4.6	Hi
BETA EXP 758	NC	51.26	52.57	113	--	--	1731	1685	113	--	--	337	337	11501	10916	17.91	17.97	34.5	32.7	1.06	1.10	84	81	10	5	4.22	4.37	3.7	3.5	4.0	4.1	4.2	4.1	Hi
Crystal R761	9	48.44	49.78	107	49.60	106	1789	1740	117	1762	100	327	328	12172	11534	17.53	17.63	37.5	35.4	1.17	1.23	83	78	0	0	4.72	4.82	4.1	4.0	4.4	4.4	4.1	3.7	Hi
Crystal 620	NC	52.73	53.35	115	52.94	113	1867	1787	120	1839	104	342	340	12221	11502	18.16	18.11	36.1	34.1	1.05	1.10	79	74	0	0	4.30	4.22	3.8	3.9	4.2	4.3	3.5	3.1	Hi
Hilleshög HM3035Rz	12	54.57	54.45	117	54.57	116	1464	1461	98	1566	89	349	344	9405	9294	18.38	18.28	27.2	27.3	0.97	1.09	70	75	0	9	4.23	4.33	5.2	5.2	4.0	4.0	4.5	4.1	Rzm
Hilleshög 9891Rz	2	53.03	53.99	116	53.61	114	1563	1522	102	1578	90	343	342	10198	9733	18.18	18.22	30.0	28.7	1.03	1.11	84	81	10	5	4.23	4.18	4.7	4.8	3.8	4.1	3.6	3.6	Rzm
Maribo MA615Rz	NC	47.49	49.60	107	50.36	107	1640	1613	109	1732	98	324	327	11277	10734	17.43	17.62	35.1	33.0	1.23	1.25	80	80	0	0	4.58	4.70	4.7	5.0	4.4	4.5	4.9	4.8	Rzm
Seedex 8869 Cnv	NC	50.05	52.06	112	52.23	111	1859	1800	121	1869	106	333	336	12448	11695	17.60	17.81	37.7	35.1	0.97	1.03	84	80	10	5	4.66	4.94	4.8	4.9	4.6	4.5	3.8	3.6	Hi
Seedex Deuce	NC	51.50	52.70	113	52.93	113	1885	1838	124	1883	107	338	338	12417	11832	17.90	17.95	36.9	35.1	1.02	1.06	83	79	10	14	4.74	4.75	5.3	5.7	4.5	4.5	5.0	4.8	Hi
SV 48611	NC	55.21	55.37	119	54.88	117	1868	1769	119	1818	103	351	347	11930	11128	18.52	18.41	34.2	32.2	0.99	1.06	81	75	0	0	4.95	5.12	4.6	4.4	4.5	4.4	5.7	5.7	Hi
SV 48777	NC	55.32	56.36	121	--	--	1815	1758	118	--	--	351	350	11565	10987	18.47	18.48	33.1	31.5	0.92	0.97	83	78	0	0	4.56	4.66	5.1	4.7	4.5	4.5	4.5	4.2	Hi
Newly Approved																																		
BETA EXP 872	NC	52.63	--	--	--	--	1874	--	--	--	--	342	--	12279	--	18.18	--	36.3	--	1.08	--	71	--	0	0	4.82	--	3.9	--	4.4	--	3.7	--	Hi
Crystal 840	NC	51.66	--	--	--	--	1882	--	--	--	--	338	--	12429	--	17.96	--	37.1	--	1.04	--	77	--	0	0	4.33	--	3.8	--	4.0	--	3.6	--	Hi
Benchmark var. mean		53.39	46.52	46.95			1762	1486	1760			344	338	11444	10867	18.30	18.10	33.5	32.4	1.08	1.18	84	80											

Emergence is % of planted seeds producing a 4 leaf beet.

++ 2018 Revenue estimate based on a \$46.40 beet payment (5-yr ave) at 17.5% sugar and 1.5% loss to molasses.

+ Aph ratings from OVT's and Shakopee (res<4.4, susc>5.5). CR from Randolph MN, Foxhome MN & Michigan (res<4.5, susc>5.2). Fusarium from RRV (res<3.0, susc>5.0). Rhizoc. from Mhd, NWROC & Mich (res<3.8, susc>5). Hi may perform better under severe Rzm.

Bolters /Ac are based upon a plant stand of 45,000.

+++ Sites include Casselton, Hendrum, Grand Forks, Scandia, St. Thomas, Humboldt in 2017.

+++ Sites include Casselton, Ada, Grand Forks, Scandia, St. Thomas in 2018

Table 5. ACSC Official Trial Disease Nurseries 2016 - 2018 (Varieties tested in 2018)

		Cercospora, Aphanomyces, Rhizoctonia & Fusarium																				High Rzm
Code	Description	< 4.5 CR > 5.00					< 4.4 Aph > 5.5					< 3.82 Rhizoctonia > 5.0					< 3.0 Fusarium > 5.0					
		18 Mean	17 Mean	16 Mean	2 Yr Mean	3 Yr Mean	18 Mean	17 Mean	16 Mean	2 Yr Mean	3 Yr Mean	18 Mean	17 Mean	16 Mean	2 Yr Mean	3 Yr Mean	18 Mean	17 Mean	16 Mean	2 Yr Mean	3 Yr Mean	
Previously Approved																						
570	BTS 80RR52	4.38	4.37	4.28	4.38	4.34	4.49	4.36	4.11	4.43	4.32	3.96	4.14	4.41	4.05	4.17	3.76	2.69	2.81	3.22	3.08	Hi Rzm
501	BTS 8337	4.64	4.36	4.62	4.50	4.54	3.74	3.78	3.26	3.76	3.59	4.07	4.30	4.08	4.18	4.15	4.18	3.83	4.01	4.00	4.01	Hi Rzm
577	BTS 8500	4.40	4.29	4.54	4.34	4.41	4.43	4.52	4.22	4.48	4.39	4.36	4.57	4.43	4.46	4.45	2.46	2.14	1.90	2.30	2.17	Hi Rzm
503	BTS 8524	4.50	4.38	4.74	4.44	4.54	4.08	4.49	3.89	4.28	4.15	4.23	4.41	4.20	4.32	4.28	3.93	3.24	3.38	3.59	3.52	Hi Rzm
576	BTS 8606	4.80	4.73	5.12	4.76	4.88	4.43	4.91	4.60	4.67	4.64	4.24	5.00	4.48	4.62	4.57	3.66	2.81	2.69	3.24	3.05	Hi Rzm
527	BTS 8629	4.52	4.29	4.59	4.40	4.46	3.89	4.68	4.14	4.28	4.24	4.02	4.21	3.73	4.12	3.99	4.40	4.20	4.04	4.30	4.21	Hi Rzm
530	Crystal 093RR	4.88	4.49	4.95	4.68	4.77	4.38	4.43	4.32	4.41	4.38	4.59	4.50	4.37	4.55	4.49	4.28	3.48	3.35	3.88	3.70	Hi Rzm
542	Crystal 247RR	4.54	4.55	4.65	4.55	4.58	5.02	5.35	4.77	5.19	5.05	4.56	4.49	4.32	4.52	4.46	3.34	3.00	2.80	3.17	3.05	Hi Rzm
562	Crystal 355RR	4.52	4.36	4.60	4.44	4.50	4.42	4.84	4.46	4.63	4.58	3.66	4.09	3.96	3.87	3.90	3.73	2.76	2.65	3.24	3.05	Hi Rzm
513	Crystal 467RR	4.61	4.46	4.69	4.53	4.58	3.68	3.96	4.04	3.82	3.90	3.94	4.47	4.26	4.21	4.23	2.92	1.98	1.84	2.45	2.25	Hi Rzm
518	Crystal 572RR	4.45	4.27	4.57	4.36	4.43	4.47	4.69	4.74	4.58	4.63	4.54	4.47	4.21	4.51	4.41	3.70	2.64	1.82	3.17	2.72	Hi Rzm
563	Crystal 573RR	4.38	4.15	4.35	4.26	4.29	4.33	3.84	4.06	4.09	4.08	4.29	4.57	4.55	4.43	4.47	4.20	3.10	3.49	3.65	3.60	Hi Rzm
575	Crystal 574RR	4.42	4.35	4.51	4.38	4.43	4.32	4.72	3.69	4.52	4.24	4.36	4.16	4.47	4.26	4.33	2.87	2.23	1.82	2.55	2.31	Hi Rzm
508	Crystal 578RR	4.74	4.91	4.87	4.83	4.84	4.21	4.56	4.44	4.38	4.40	4.30	4.40	4.32	4.35	4.34	3.36	2.41	1.99	2.88	2.59	Hi Rzm
545	Crystal 684RR	4.41	4.34	4.57	4.38	4.44	3.83	4.31	3.74	4.07	3.96	4.39	4.57	4.41	4.48	4.46	2.96	2.01	1.76	2.49	2.25	Hi Rzm
580	Hilleshög HM4302RR	4.26	3.93	4.13	4.09	4.10	4.65	6.66	4.63	5.66	5.32	3.71	3.60	3.65	3.65	3.65	5.02	5.09	5.09	5.06	5.07	Rzm
510	Hilleshög HM4448RR	5.26	5.28	5.21	5.27	5.25	4.53	6.29	3.90	5.41	4.91	4.38	4.63	4.51	4.50	4.51	5.23	5.35	5.26	5.29	5.28	Rzm
543	Hilleshög HM9528RR	4.79	4.99	4.73	4.89	4.84	4.22	5.63	3.77	4.93	4.54	4.04	4.21	4.21	4.13	4.16	4.95	4.25	4.52	4.60	4.57	Hi Rzm
533	Hilleshög HIL9708	4.71	4.61	4.74	4.66	4.69	4.25	5.94	4.82	5.09	5.00	3.71	4.21	4.28	3.96	4.07	4.61	4.61	4.29	4.61	4.50	Hi Rzm
541	Maribo MA109	4.33	4.14	4.14	4.23	4.20	4.38	5.06	4.27	4.72	4.57	3.69	3.63	3.69	3.66	3.67	4.95	4.23	4.50	4.59	4.56	Hi Rzm
532	Maribo MA305	4.92	4.98	4.72	4.95	4.87	4.91	5.67	4.42	5.29	5.00	4.26	4.60	4.40	4.43	4.42	5.45	5.89	5.89	5.67	5.74	Rzm
515	Maribo MA502	4.95	5.01	4.79	4.98	4.92	3.67	3.53	3.06	3.60	3.42	4.20	4.78	4.73	4.49	4.57	3.33	3.02	1.92	3.17	2.76	Hi Rzm
504	Maribo MA504	4.98	5.50	5.04	5.24	5.17	5.30	6.20	4.54	5.75	5.34	4.25	4.37	4.58	4.31	4.40	4.80	4.52	4.60	4.66	4.64	Hi Rzm
552	SV RR265	4.48	5.19	5.00	4.83	4.89	4.16	5.35	4.54	4.76	4.69	4.32	4.42	4.44	4.37	4.39	5.44	5.32	5.26	5.38	5.34	Hi Rzm
540	SV RR266	4.73	4.61	4.74	4.67	4.69	4.72	5.64	4.62	5.18	4.99	4.34	4.39	4.20	4.36	4.31	5.73	5.64	5.18	5.69	5.52	Hi Rzm
548	SV RR268	4.70	5.06	5.13	4.88	4.97	4.21	4.71	4.00	4.46	4.31	4.21	4.57	4.70	4.39	4.49	5.12	5.01	5.20	5.06	5.11	Hi Rzm
537	SV RR333	4.78	4.84	4.85	4.81	4.82	4.06	4.99	4.71	4.52	4.59	4.23	4.44	4.44	4.34	4.37	5.14	5.35	4.84	5.24	5.11	Hi Rzm
544	SV RR351	4.61	4.41	4.50	4.51	4.51	4.50	4.18	4.38	4.34	4.35	4.16	4.25	4.17	4.20	4.19	5.30	4.96	4.75	5.13	5.00	Hi Rzm
573	SX Avalanche RR	4.50	4.64	4.74	4.57	4.63	4.18	4.00	4.44	4.09	4.21	4.36	4.29	4.52	4.33	4.39	5.37	5.75	5.38	5.56	5.50	Hi Rzm
569	SX Bronco RR(1863)	4.65	4.08	4.35	4.37	4.36	4.05	4.88	3.55	4.46	4.16	4.73	4.23	4.54	4.48	4.50	5.52	6.04	5.80	5.78	5.79	Hi Rzm
551	SX Canyon RR	4.79	4.92	4.76	4.85	4.82	4.34	4.33	4.28	4.33	4.32	4.36	4.51	4.40	4.43	4.42	4.93	5.12	5.26	5.03	5.10	Hi Rzm
549	SX Cruze RR	5.79	5.37	4.65	5.58	5.27	4.38	4.79	3.41	4.58	4.19	4.23	4.39	4.69	4.31	4.44	4.78	3.98	2.80	4.38	3.85	Rzm
528	SX Marathon RR	5.27	4.54	4.44	4.90	4.75	4.72	4.52	4.38	4.62	4.54	4.19	4.40	4.47	4.29	4.35	5.51	4.84	4.90	5.18	5.08	Hi Rzm
Newly Approved																						
521	BTS 8735	4.21	4.22	--	4.22	--	4.00	4.74	--	4.37	--	4.12	4.38	--	4.25	--	4.04	3.93	--	3.98	--	Hi Rzm
512	BTS 8749	4.10	4.05	--	4.08	--	2.79	3.53	--	3.16	--	3.88	3.95	--	3.92	--	3.79	3.28	--	3.53	--	Hi Rzm
568	BTS 8767	4.32	4.16	--	4.24	--	4.28	4.80	--	4.54	--	4.10	4.75	--	4.42	--	3.41	2.71	--	3.06	--	Hi Rzm
572	BTS 8784	3.73	3.65	--	3.69	--	4.22	4.59	--	4.40	--	4.60	4.64	--	4.62	--	3.76	2.63	--	3.20	--	Hi Rzm
522	Crystal 792RR	4.26	3.94	--	4.10	--	3.78	4.73	--	4.26	--	4.22	3.88	--	4.05	--	3.50	2.81	--	3.16	--	Hi Rzm
557	Crystal 793RR	4.26	3.93	--	4.10	--	3.32	3.02	--	3.17	--	4.11	4.26	--	4.18	--	3.59	2.95	--	3.27	--	Hi Rzm
574	Crystal 796RR	4.74	4.85	--	4.79	--	3.61	3.11	--	3.36	--	3.97	4.23	--	4.10	--	3.36	2.34	--	2.85	--	Hi Rzm
525	Hilleshög HIL9920	4.79	4.89	--	4.84	--	4.09	4.94	--	4.52	--	4.65	4.48	--	4.56	--	5.51	5.92	--	5.72	--	Hi Rzm
567	Maribo MA717	4.78	4.85	--	4.81	--	4.15	5.31	--	4.73	--	4.35	4.28	--	4.31	--	4.86	4.95	--	4.91	--	Hi Rzm
582	SV RR371	4.71	4.59	--	4.65	--	4.51	4.55	--	4.53	--	4.19	4.31	--	4.25	--	5.36	4.91	--	5.13	--	Hi Rzm
524	SX RR1879	4.44	4.88	--	4.66	--	4.39	4.18	--	4.28	--	4.32	4.36	--	4.34	--	5.18	4.64	--	4.91	--	Hi Rzm

Created 11/5/2018

Green highlighted ratings indicate specialty or good resistance.
 Red highlighted ratings indicate level of concern for some fields.
 -- indicates data not available

Table 6. Planting & Harvest Dates, Previous Crop and Disease Levels for 2018 ACSC Official Trial Sites *

Location	District / Trial Type	Cooperator	Planting Date	Harvest Date	Preceeding Crop	Soil Type	Diseases Present @						Comments
							Aph	Rhc	Rzm	Fus	Maggot	Rt Aphid	
Casselton ND	Mhd/Hlb	Todd Weber	4/30	10/23	Wheat	Medium/Light	N	L-M	N	N	N	L	Wilting, RH in Conv
Glyndon MN	Mhd/Hlb	Menholt Farms	4/30	9/6	Wheat	Medium/Light	N	N	L-M	L-M	N	L	FS in Exp and Prop Trial
Georgetown MN	Mhd/Hlb	Hoff Farms	5/14	9/10	Soybeans	Medium	M-V	L-M	N	N	N	L	Severe AP (AP Specialty Site)
Ada MN	Mhd/Hlb	Ruebke Bros.	5/5	10/16	Wheat	Medium	N	L	M-V	N	N	L-V	RZ in all 4 Corners
Hillsboro ND	Mhd/Hlb	M&R Steenson Farms	5/7	9/13	Wheat	Medium	N	M	L-M	N	N	L	Severe RH in Part of Comm
Climax MN	EGF/Crk	Evenson Farms	5/6	9/11	Wheat	Medium	M-V	L-M	N	N	N	L-M	Light to Severe AP (AP Specialty Site)
Grand Forks ND	EGF/Crk	Drees Farming Association	5/15	9/24	Wheat	Medium/Light	N	L	L-M	N	L	N	Some Moderate Stands
Scandia MN	EGF/Crk	Dennis Deboer	5/3	10/18	Wheat	Medium	N	L	M	N	N	L-M	RA in all 4 Corners
East Grand Forks MN	EGF/Crk	Mark Holy	5/7	10/21	Wheat	Medium/Light	N	M	L	N	N	N	Light RH in Comm
Stephen MN	EGF/Crk	Jensen Farms	5/5	10/27	Barley	Medium	N	L	L	N	L	L	Some Brown Leaves
St Thomas ND	Dtn	Kennelly Farms	5/1	9/29	Wheat	Medium/Light	N	N	L	N	L	N	Lower Yield
Humboldt MN	Dtn	Youngren Farms	4/28	Abandon	Wheat	Medium/Heavy	N	L-M	N	N	L	M	Abandoned
Bathgate ND	Dtn	Shady Bend Farms	5/2	10/1	Wheat	Medium	N	N	N	N	L	N	Some Brown Leaves
Mhd Rhc-E	Rhc Nurs	Jon Hickel	5/16	7/14	Soybeans	Medium/Heavy	NA	V	NA	L	N	N	Heavy RH Infection
Mhd Rhc-W	Rhc Nurs	Jon Hickel	5/16	7/2	Soybeans	Medium/Heavy	NA	V	NA	L-M	N	N	Uniform RH Infection
NWROC Rhc	Rhc Nurs	Albert Sims	5/17	Abandon	Wheat	Medium	NA	L-M	N	N	N	N	Abandoned
BSDF Rhc	Rhc Nurs	Mitch McGrath	5/2	8/14	NA	NA	NA	V	NA	NA	NA	NA	Uniform RH Infection
Mhd SE Fus	Fusarium	Oberg Farms	6/22	7/18	Soybeans	Medium	NA	L	N	V	NA	NA	Replanted
Mhd Fus	Fusarium	Nelson Farms	5/12	7/26	Soybeans	Medium	NA	L	N	V	NA	NA	
Shakopee MN	Aph Nurs	Patrick O'Boyle	5/12	8/17	NA	NA	V	NA	NA	NA	NA	NA	
Longmont CO	RA Nurs	Kara Crist	6/30	9/20	NA	NA	NA	NA	NA	NA	NA	NA	Data Not Included
Foxhome CR	Cercospora	NDSU/Kevin Etzler	5/14	8/27	Soybeans	Medium	NA	L-M	NA	NA	NA	NA	Uniform CR Infection
BSDF CR	Cercospora	Mitch McGrath	5/1	9/6	NA	NA	NA	NA	NA	NA	NA	NA	Uniform CR Infection
Randolph MN CR	Cercospora	Patrick O'Boyle	5/5	8/9	NA	Medium/Light	NA	NA	NA	NA	NA	NA	Uniform CR Infection

Created 10-31-2018

* Fertilizer applied in accordance to cooperative recommendations.

@ Disease notes for Aph., Rhizoc., Rhizomania, Fusarium, Root Maggot and Root Aphids were based upon visual evaluations (N=none, L=light, M=moderate, V=severe, NA=not observed)

Table 7. Seed Treatments Used on Approved Varieties in Official Variety Trials in 2018

Description	Years in Trial	Years ** Comm.	Fungicide (Rhizoctonia)	Insecticide pring Tails & Maggo	Tachigaren Rate (Aphanomyces)	Priming (Emergence)	Fungicide (Damping Off)
Previous Approved							
BTS 80RR52	9	7	Systiva	Poncho Beta	35	Ultipro	Allegiance Thiram
BTS 8337	6	4	Systiva	Poncho Beta	35	Ultipro	Allegiance Thiram
BTS 8500	4	2	Systiva	Poncho Beta	35	Ultipro	Allegiance Thiram
BTS 8524	4	2	Systiva	Poncho Beta	35	Ultipro	Allegiance Thiram
BTS 8606	3	1	Systiva	Poncho Beta	35	Ultipro	Allegiance Thiram
BTS 8629	3	1	Systiva	Poncho Beta	35	Ultipro	Allegiance Thiram
Crystal 093RR	9	7	Kabina	Poncho Beta	45	XBEEET	Allegiance Thiram
Crystal 247RR	7	5	Kabina	Poncho Beta	45	XBEEET	Allegiance Thiram
Crystal 355RR	6	3	Kabina	Poncho Beta	45	XBEEET	Allegiance Thiram
Crystal 467RR	5	1	Kabina	Poncho Beta	45	XBEEET	Allegiance Thiram
Crystal 572RR	4	2	Kabina	Poncho Beta	45	XBEEET	Allegiance Thiram
Crystal 573RR	4	1	Kabina	Poncho Beta	45	XBEEET	Allegiance Thiram
Crystal 574RR	4	2	Kabina	Poncho Beta	45	XBEEET	Allegiance Thiram
Crystal 578RR	4	1	Kabina	Poncho Beta	45	XBEEET	Allegiance Thiram
Crystal 684RR	3	NC	Kabina	Poncho Beta	45	XBEEET	Allegiance Thiram
Hilleshög HM4302RR	8	5	Vibrance	Cruiser Maxx	45	XBEEET	Apron XL Maxim
Hilleshög HM4448RR	7	5	Vibrance	Cruiser Maxx	45	XBEEET	Apron XL Maxim
Hilleshög HM9528RR	6	4	Vibrance	NA	45	XBEEET	Apron XL Maxim
Hilleshög HIL9708	4	1	Vibrance	Cruiser Maxx	45	XBEEET	Apron XL Maxim
Maribo MA109	5	3	Vibrance	Cruiser Maxx	20	XBEEET	Apron XL Maxim
Maribo MA305	6	3	Vibrance	Cruiser Maxx	20	XBEEET	Apron XL Maxim
Maribo MA502	4	2	Vibrance	Cruiser Maxx	20	XBEEET	Apron XL Maxim
Maribo MA504	4	2	Vibrance	Cruiser Maxx	20	XBEEET	Apron XL Maxim
SX Avalanche RR	4	2	Metlock/Rizolex/Kabina	NipsIt	20	XBEEET	Sebring Thiram
SX Bronco RR(1863)	3	1	Metlock/Rizolex/Kabina	NipsIt	20	XBEEET	Sebring Thiram
SX Canyon RR	5	3	Metlock/Rizolex/Kabina	NipsIt	20	XBEEET	Sebring Thiram
SX Cruze RR	5	3	Metlock/Rizolex/Kabina	NipsIt	20	XBEEET	Sebring Thiram
SX Marathon RR	4	2	Metlock/Rizolex/Kabina	NipsIt	20	XBEEET	Sebring Thiram
SV RR265	3	1	Metlock/Rizolex/Vibrance	NipsIt	45	XBEEET	Sebring Thiram
SV RR266	3	1	Metlock/Rizolex/Vibrance	NipsIt	45	XBEEET	Sebring Thiram
SV RR268	3	1	Metlock/Rizolex/Vibrance	NipsIt	45	XBEEET	Sebring Thiram
SV RR333	6	3	Metlock/Rizolex/Vibrance	NipsIt	45	XBEEET	Sebring Thiram
SV RR351	4	2	Metlock/Rizolex/Vibrance	NipsIt	45	XBEEET	Sebring Thiram
Newly Approved							
BTS 8735	2	NC	Systiva	Poncho Beta	35	Ultipro	Allegiance Thiram
BTS 8749	2	NC	Systiva	Poncho Beta	35	Ultipro	Allegiance Thiram
BTS 8767	2	NC	Systiva	Poncho Beta	35	Ultipro	Allegiance Thiram
BTS 8784	2	NC	Systiva	Poncho Beta	35	Ultipro	Allegiance Thiram
Crystal 792RR	2	NC	Kabina	Poncho Beta	45	XBEEET	Allegiance Thiram
Crystal 793RR	2	NC	Kabina	Poncho Beta	45	XBEEET	Allegiance Thiram
Crystal 796RR	2	NC	Kabina	Poncho Beta	45	XBEEET	Allegiance Thiram
Hilleshög HIL9920	2	NC	Vibrance	Cruiser Maxx	20	NA	Apron XL Maxim
Maribo MA717	2	NC	Vibrance	Cruiser Maxx	20	NA	Apron XL Maxim
SV RR371	2	NC	Metlock/Rizolex/Vibrance	NipsIt	20	NA	Sebring Thiram
SV RR375	2	NC	Metlock/Rizolex/Vibrance	NipsIt	20	NA	Sebring Thiram
SX RR1879	2	NC	Metlock/Rizolex/Kabina	NipsIt	20	NA	Sebring Thiram

NA indicates no treatment applied in this category.

Created 11/5/2018