RESULTS OF AMERICAN CRYSTAL SUGAR COMPANY'S 2022 CODED OFFICIAL VARIETY TRIALS

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American Crystal Sugar Company's (ACSC) coded Official Variety Trials (OVT) are designed to provide an unbiased evaluation of the genetic potential of sugarbeet variety entries under several different environments. The two-year average of these evaluations are then used to establish a list of approved varieties which ensures the use of high quality, productive varieties to maximize returns for growers and the cooperative as a whole.

This report presents data from the 2022 American Crystal OVTs and describes the procedures and cultural practices involved in the trials.

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Procedures and Cultural Practices

Sugarbeet official variety tests were conducted a t the ACSC growing region areas of the Red River Valley by ACSC personnel at the Technical Services Center.

All entries were assigned a code number by KayJay Ag Services. The seed then was sent to ACSC Technical Services Center at Moorhead for official testing. All Official Trials utilize seed identified by code numbers which prevents ACSC personnel from knowing variety names when conducting trials.

The 2022 official coded variety performance trials and disease nurseries were planted at 18 sites by American Crystal Sugar Company (ACSC) including 13 yield trial sites and five disease nurseries. Seven additional disease/insect 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 data analysis.

Results from the Official Variety Trial sites were good overall. Planting dates were two weeks later than typical but stands in the trials were good at most locations. Nine sites were used for variety approval calculations. One site (East Grand Forks) was lost from wind damage that occurred in mid-June. Buxton and Climax sites were very dry for much of the growing season including at harvest. Beets were small and data at these sites were compromised by excess harvest loss. The Perley site had severe Aphanomyces and high variability. Rhizoctonia crown and root rot was minimal in 2022. Revenue calculations in 2022 are based on a hypothetical $46.80 payment (5-year rolling average) at 17.5% sugar and 1.5% SLM not considering hauling or production costs.

Fusarium ratings are from sites at Moorhead and Sabin, MN. Rhizoctonia crown and root rot ratings are from nurseries at Crookston and Moorhead, MN and Saginaw, MI (BSDF). Aphanomyces root rot ratings are from naturally infested nurseries at Perley, Glyndon (Magno Seed), and Shakopee (KWS), MN. The Climax Aphanomyces site had no Aphanomyces disease pressure. Although the Perley site had high levels of Aphanomyces root rot, non-uniformity across the commercial trial resulted in high variability, so there are no yield results under Aphanomyces conditions for 2022. Cercospora leafspot ratings are from inoculated nurseries at Foxhome and Randolph (KWS), MN and Saginaw, MI (BSDF). Data from all three sites was highly correlated with ratings from a non-inoculated leafspot nursery at Averill, MN. Root aphid ratings are from a greenhouse assay at Shakopee, MN (KWS).

2022 harvest conditions were good overall, and beets dug well at most locations. Soil moisture levels varied from dry to wet depending on the location. Dry conditions along with small beets at Buxton and Climax resulted in excess harvest loss leading to high variability. The Alvarado site was challenging and slow-going due to wet, heavy soil.

The 2022 data have been combined with previous years' data and results are enclosed. Bolter data is presented as the number of bolters observed at a location for each variety. Results for the yield trials from individual sites are available in this report and on the internet.

Conventional trials were not planted in the 2022 OVT trials. Conventional varieties that were approved for 2020 - 2022 sales are permitted to continue in 2023 sales.

Yield trials were planted to stand at 4.5 inches. Starter fertilizer (10-34-0) was applied in-furrow (3 GPA in 6 GPA total volume) in all yield trials except St. Thomas. 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 40 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 an Aphanomyces seed treatment, 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 3 with Event (surfactant) and full rates of fungicides were applied using a pickup sprayer driven down the alleys. Two applications of Roundup (26 oz) were made at the 4-6 and 8-12 leaf stages. Hand weeding was used where necessary. All yield trials were treated with AZteroid in-furrow at planting (5.7 oz) and Quadris in a band during the 6-10 leaf stage (14 oz) for Rhizoctonia control. Treatments used for Cercospora control in 2022 included Inspire XT/Manzate, Agri Tin/Incognito, Proline/Manzate, and Priaxor/Agri Tin. Ground spraying was conducted by ACSC technical staff using 20 GPA and 75-80 psi. The Ada site Cercospora applications were made by air.

Roundup Ready varieties with commercial seed were planted in four-row plots with six replicates. The RR experimental entries were planted in two-row plots with four replicates.

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 one customized six-row harvester (Big Red) with increased cleaning capacity. All harvested beets of each plot were used for yield determination while one sample (approximately 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 nurseries in North Dakota, Minnesota, Michigan and Colorado to evaluate varieties for disease and insect susceptibility. ACSC adjusts the Cercospora, Aphanomyces, Rhizoctonia and Fusarium nursery data each year to provide a consistent target for variety approval criteria.

Acknowledgements

Thanks to the beet seed companies for their participation in the official variety testing program and to grower-cooperators. Thanks to dedicated Technical Services staff, Jon Hickel, Dan Walters, Earl Hodson, Alec Deschene, Nick Weller, Gary Hamann, and Clint Moe for official trial planting, plot care, data collection, and harvest. Thanks to Nick Moritz and the Quality Lab at the Technical Services Center for quality sample analysis. Special thanks are extended to Dr. Mohamed Khan for Cercospora nursery inoculation, Maureen Aubol and the Northwest Research and Outreach Center for hosting a Rhizoctonia nursery, Randy Nelson for RRV disease ratings, USDA staff in Michigan for Cercospora and Rhizoctonia nursery data, Magno Seed staff for Aphanomyces nursery data, KWS staff for Aphanomyces and Cercospora nursery data, and KayJay Ag Services for sampling and coding all variety entries.

Table 1.
Varieties Meeting ACSC Approval Criteria for the 2023 Sugarbeet Crop +++

Roundup Ready ®	Full Market	Aph Spec	Rhc Spec	High Rzm
BTS 8629	Yes	Yes		Hi Rzm
BTS 8927	Yes	Yes		Hi Rzm
BTS 8961	Yes	Yes	New	Hi Rzm
BTS 8018	Yes	Yes		Hi Rzm
BTS 8034	Yes	Yes		Hi Rzm
BTS 8073	Yes	Yes		Hi Rzm
BTS 8092	Yes	Yes	Yes	Hi Rzm
BTS 8100	New	New	New	Hi Rzm
BTS 8133	No	New	New	Hi Rzm
BTS 8156	New	New		Hi Rzm
Crystal 572	Yes	Yes		Hi Rzm
Crystal 684	Yes	Yes		Hi Rzm
Crystal 793	Yes	Yes		Hi Rzm
Crystal 912	Yes	Yes	Yes	Hi Rzm
Crystal 913	Yes	Yes		Hi Rzm
Crystal 021	Yes	Yes	Yes	Hi Rzm
Crystal 022	Yes	Yes	Yes	Hi Rzm
Crystal 026	Yes	Yes	Yes	Hi Rzm
Crystal 130	New	New		Hi Rzm
Crystal 134	New	New	New	Hi Rzm
Crystal 137	New	New		Hi Rzm
Crystal 138	New	New	New	Hi Rzm
Hilleshög HM9528	Yes	Yes		Hi Rzm
Hilleshög HIL9708	Yes	Yes++	Yes	Rzm
Hilleshög HIL9920	Yes	Yes		Hi Rzm
Hilleshög HIL2317	Yes	Yes		Hi Rzm
Hilleshög HIL2320	Yes	Yes		Hi Rzm
Hilleshög HIL2366	Yes			Hi Rzm
Hilleshög HIL2367	Yes	Yes		Hi Rzm
Hilleshög HIL2368	Yes		Yes	Hi Rzm
Hilleshög HIL2386	New			Hi Rzm
Hilleshög HIL2389	New	New		Hi Rzm
Maribo MA717	Yes	Yes++		Hi Rzm
Maribo MA902	Yes		New	Hi Rzm
Maribo MA932	New			Hi Rzm
SV 265	Yes			Hi Rzm
SV 285	Yes	Yes		Hi Rzm
SV 203	Yes	Yes		Hi Rzm
SX 1898	Yes	Yes		Hi Rzm
SX 1815	New			Hi Rzm
SX 1818	New			Hi Rzm

2019 Conventional	Full Market	High Rzm
Crystal R761	Yes	Hi Rzm
Crystal 620	Yes	Hi Rzm
Crystal 840	Yes	Hi Rzm
Crystal 950	Yes	Hi Rzm
Hilleshög HM3035Rz	Yes	Rzm
SX 8869 Cnv	Yes	Hi Rzm
SV 48777	Yes	Hi Rzm

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

+++ Roundup Ready sugarbeets are subject to the ACSC RRSB Bolter Destruction Policy Created 11/8/2022
++ 2nd Year of not meeting Specialty Approval of previously approved Specialty variety. According to Approval Policy, may be sold as Specialty in 2023
+ 1st Year of not meeting Specialty Approval of previously approved Specialty variety. According to Approval Policy, may be sold as Specialty in 2023

Table 2. Performance Data of RR Varieties During 2021 & 2022 Growing Seasons (All Locations Combined) Approved for Sale to ACSC Growers in 2023 +++

Variety	Yrs Com	Rev/Ton ++ 22	Rev/Ton ++ 2 Yr	Rev/Ton ++ 2Y%	Rev/Acre ++ 22	Rev/Acre ++ 2 Yr	Rev/Acre ++ 2Y%	Rec/Ton 22	Rec/Ton 2 Yr	Rec/Acre 22	Rec/Acre 2 Yr	Yield 22	Yield 2 Yr	Sugar 22	Sugar 2 Yr	Molasses 22	Molasses 2 Yr	Emerg 22	Emerg 2 Yr	Bolters * 22	Bolters * 2 Yr	CR + 22	CR + 2 Yr	Aph Root+ 22	Aph Root+ 2 Yr	Rhizoc.+ 22	Rhizoc.+ 2 Yr	Fusarium+ 22	Fusarium+ 2 Yr	Rzm+
Previous Approved # locations		9	20		9	20		9	20	9	20	9	20	9	20	9	20	9	20	9	20	3	5	3	4	3	5	2	3	
BTS 8018	1	49.38	50.16	102	1447	1534	113	329	333	9656	10236	29.5	30.8	17.54	17.76	1.11	1.09	76	80	0	0	2.0	2.2	4.0	4.3	3.9	3.9	3.0	3.1	Hi
BTS 8034	1	45.34	45.96	94	1362	1475	108	315	319	9469	10255	30.0	32.2	17.02	17.18	1.27	1.22	77	80	0	0	2.3	2.4	3.9	3.6	4.5	4.2	2.2	2.4	Hi
BTS 8073	1	48.88	49.09	100	1461	1497	110	327	330	9787	10090	30.0	30.7	17.50	17.63	1.15	1.14	73	76	0	0	4.6	4.6	4.0	4.2	4.2	3.9	3.1	3.3	Hi
BTS 8092	1	46.04	47.63	97	1406	1509	111	318	325	9722	10318	30.7	31.9	17.01	17.34	1.14	1.10	74	77	0	0	4.3	4.4	3.9	4.0	3.6	3.7	3.9	4.0	Hi
BTS 8629	5	44.85	45.67	93	1385	1488	109	314	318	9687	10382	30.9	32.6	16.85	17.07	1.18	1.16	78	79	0	0	4.5	4.7	4.5	4.4	3.7	4.0	4.0	4.1	Hi
BTS 8927	2	52.46	52.47	107	1452	1512	111	339	341	9399	9856	27.8	29.0	17.97	18.09	1.03	1.04	79	75	0	0	4.4	4.4	4.0	4.3	4.1	3.9	3.1	3.6	Hi
BTS 8961	2	45.73	46.94	96	1369	1463	107	316	322	9478	10065	30.0	31.2	17.02	17.31	1.20	1.19	77	77	0	0	4.5	4.5	4.5	4.6	3.7	3.7	2.9	3.1	Hi
Crystal 021	NC	46.11	47.35	97	1390	1505	110	318	324	9577	10310	30.1	31.9	17.06	17.35	1.18	1.16	71	74	0	0	2.1	2.2	3.7	4.0	3.6	3.5	3.4	3.8	Hi
Crystal 022	1	52.56	52.15	107	1449	1496	110	339	340	9376	9799	27.7	28.9	18.04	18.08	1.08	1.08	73	76	1	1	4.6	4.8	4.0	4.4	4.1	3.8	3.2	3.4	Hi
Crystal 026	NC	47.52	47.74	98	1430	1516	111	322	325	9691	10331	30.0	31.8	17.30	17.45	1.18	1.19	77	79	0	0	4.7	4.6	3.8	3.7	3.3	3.3	2.8	2.8	Hi
Crystal 572	6	51.53	51.21	105	1424	1477	108	336	337	9292	9746	27.7	29.0	17.92	17.97	1.14	1.14	78	79	1	2	4.5	4.6	4.6	4.5	4.3	4.1	2.9	3.1	Hi
Crystal 684	4	44.38	45.14	92	1411	1472	108	312	316	9945	10358	32.0	32.8	16.83	17.04	1.23	1.22	75	78	0	0	4.6	4.6	3.8	3.7	4.2	4.0	2.3	2.5	Hi
Crystal 793	4	49.98	50.64	103	1476	1551	114	331	335	9773	10289	29.6	30.8	17.61	17.83	1.08	1.08	76	78	0	0	4.1	4.1	3.8	3.8	4.7	4.5	3.0	2.9	Hi
Crystal 912	1	44.59	46.32	95	1433	1549	114	313	320	10047	10734	32.2	33.6	16.82	17.18	1.19	1.16	76	78	0	0	4.8	5.0	3.4	3.7	3.3	3.5	3.7	3.9	Hi
Crystal 913	2	49.53	50.44	103	1458	1519	111	329	334	9702	10098	29.5	30.3	17.58	17.82	1.13	1.11	75	76	0	0	3.7	3.9	3.8	4.1	4.2	4.1	3.1	3.4	Hi
Hilleshög HIL2317	2	48.84	49.36	101	1371	1411	104	327	331	9185	9468	28.1	28.7	17.40	17.62	1.06	1.09	75	75	0	0	5.1	4.8	3.9	4.5	4.7	4.7	5.7	5.9	Hi
Hilleshög HIL2320	1	47.65	47.29	97	1403	1407	103	323	324	9528	9654	29.6	29.9	17.26	17.33	1.12	1.15	77	80	0	0	5.0	4.9	4.0	4.3	3.9	3.8	4.7	4.6	Hi
Hilleshög HIL2366	1	46.59	47.78	98	1351	1416	104	319	325	9263	9648	29.0	29.7	17.08	17.38	1.12	1.12	77	81	0	0	5.0	5.0	4.3	5.1	3.9	4.0	4.8	4.7	Hi
Hilleshög HIL2367	NC	47.72	47.76	98	1356	1399	103	323	325	9226	9564	28.7	29.5	17.30	17.42	1.15	1.17	75	78	0	0	4.8	4.8	4.2	4.6	3.9	4.0	4.2	4.2	Hi
Hilleshög HIL2368	NC	49.55	50.19	103	1154	1247	91	329	333	7696	8310	23.6	25.1	17.58	17.80	1.13	1.14	54	68	0	0	4.6	4.6	4.6	4.9	3.5	3.2	4.3	4.4	Hi
Hilleshög HIL9708	5	47.55	47.61	97	1342	1372	101	323	325	9127	9387	28.4	29.0	17.23	17.34	1.11	1.11	80	80	0	0	4.9	4.8	4.4	5.4	3.8	3.8	3.8	4.3	Rzm
Hilleshög HIL9920	4	48.16	49.17	100	1383	1440	106	325	330	9342	9692	28.8	29.4	17.34	17.63	1.12	1.13	77	76	0	0	4.9	4.8	4.3	4.5	4.6	4.6	5.7	5.6	Hi
Hilleshög HM9528RR	7	46.64	46.19	94	1368	1380	101	319	320	9374	9558	29.4	29.9	17.07	17.11	1.10	1.12	77	76	0	0	4.8	4.6	4.1	4.8	4.0	4.2	4.8	4.9	Hi
Maribo MA717	4	46.39	45.64	93	1397	1406	103	319	318	9605	9809	30.2	30.9	17.07	17.05	1.14	1.15	76	75	0	0	5.1	4.9	4.4	5.6	3.9	4.1	4.9	5.0	Hi
Maribo MA902	2	47.16	47.42	97	1310	1369	100	321	324	8954	9381	28.0	29.0	17.17	17.32	1.11	1.12	82	83	0	0	4.9	4.8	4.6	5.8	3.6	3.7	4.3	4.4	Hi
SV 203	1	47.41	49.14	100	1296	1387	102	322	330	8835	9344	27.5	28.4	17.28	17.64	1.18	1.14	63	71	0	0	4.7	4.7	4.2	4.3	4.2	4.3	5.6	5.8	Hi
SV 265	5	46.24	46.95	96	1321	1369	100	318	323	9114	9420	28.7	29.3	17.01	17.22	1.11	1.09	75	76	1	1	4.5	4.4	4.3	4.6	4.0	4.1	6.1	5.9	Hi
SV 285	2	47.58	48.93	100	1276	1400	103	323	329	8672	9442	27.0	28.7	17.31	17.61	1.18	1.15	65	74	0	0	4.7	4.7	4.3	4.4	4.5	4.4	5.5	5.9	Hi
SX 1898	2	46.94	48.58	99	1297	1388	102	320	328	8873	9403	27.8	28.8	17.19	17.55	1.17	1.15	65	71	0	0	4.7	4.7	4.2	4.6	4.1	4.2	5.4	5.5	Hi
Newly Approved																														
BTS 8100	NC	48.43	49.86	102	1363	1453	107	325	332	9207	9731	28.4	29.4	17.44	17.77	1.17	1.16	76	79	0	0	3.9	3.9	3.8	3.8	3.7	3.4	2.3	2.6	Hi
**BTS 8133	NC	44.28	45.29	93	1392	1496	110	312	317	9787	10476	31.4	33.1	16.77	17.03	1.19	1.19	80	82	0	0	2.2	2.3	3.6	3.5	3.4	3.7	3.0	3.3	Hi
BTS 8156	NC	49.07	48.86	100	1410	1480	109	327	329	9411	9998	28.7	30.5	17.57	17.62	1.20	1.17	82	84	0	0	2.4	2.5	4.2	3.9	4.2	4.0	2.3	2.5	Hi
Crystal 130	NC	50.48	50.72	104	1436	1528	112	332	335	9469	10140	28.5	30.4	17.72	17.85	1.11	1.10	74	78	0	0	2.1	2.2	3.6	3.9	4.1	3.8	3.2	3.2	Hi
Crystal 134	NC	52.96	53.36	109	1430	1502	110	340	344	9228	9715	27.2	28.3	18.07	18.23	1.04	1.03	70	73	0	0	4.5	4.5	3.7	4.0	3.6	3.5	3.4	3.7	Hi
Crystal 137	NC	48.22	48.51	99	1390	1509	111	325	328	9381	10228	28.8	31.2	17.46	17.58	1.22	1.19	74	78	0	0	2.6	2.6	4.3	3.7	4.2	3.9	2.4	2.3	Hi
Crystal 138	NC	50.57	50.56	103	1471	1516	111	332	335	9690	10069	29.2	30.2	17.71	17.83	1.08	1.10	74	76	0	0	4.9	4.8	3.9	4.0	3.8	3.7	3.2	3.5	Hi
Hilleshög HIL2386	NC	47.52	48.38	99	1424	1461	107	322	327	9682	9905	30.1	30.3	17.25	17.52	1.13	1.15	76	80	1	1	4.5	4.4	4.3	5.1	3.5	3.9	3.7	4.0	Hi
Hilleshög HIL2389	NC	48.85	49.33	101	1407	1445	106	327	330	9431	9717	28.8	29.5	17.47	17.64	1.13	1.12	76	81	0	0	4.7	4.8	3.8	3.8	3.9	4.0	4.3	4.5	Hi
Maribo MA932	NC	47.95	48.03	98	1406	1446	106	324	326	9532	9848	29.6	30.3	17.33	17.45	1.14	1.15	76	79	0	0	4.8	4.8	4.3	4.4	3.8	3.9	4.2	4.1	Hi
SX 1815	NC	49.35	50.24	103	1403	1474	108	328	334	9366	9819	28.6	29.5	17.53	17.78	1.11	1.10	76	79	0	0	5.1	4.9	4.3	4.2	4.1	4.3	5.3	5.1	Hi
SX 1818	NC	47.24	48.28	99	1361	1458	107	321	327	9281	9904	29.0	30.4	17.21	17.47	1.15	1.13	71	75	0	0	4.7	4.8	4.8	5.2	4.2	4.3	4.5	4.9	Hi
Benchmark var. mean		48.23	48.94		1324	1363		325	329	8945	9210	27.6	28.1	17.44	17.66	1.20	1.20	74	76											

+++2021 Sites include Casselton, Glyndon, Georgetown, Hendrum, Hillsboro, Grand Forks, Scandia, Climax, Forest River, Hallock and Bathgate

+++2022 Sites include Casselton, Averill, Ada, Grand Forks, Scandia, Alvarado, St. Thomas, Hallock, Bathgate

++2022 Revenue estimate based on a $46.80 beet payment (5-yr ave) at 17.5% crop with a 1.5% loss to molasses and 2021 Revenue estimate based on a $45.65 beet payment. Revenue does not consider hauling or production costs.

* Number of bolters observed across locations.

+ Aph ratings from Perley MN, Shakopee MN and Glyndon MN (res.<4.2, susc>4.8). CR from Randolph MN, Foxhome MN and Saginaw MI (res.<4.4, susc>5.0). Fusarium from Moorhead MN and Sabin MN (res.<3.0, susc>5.0). Rhizoctonia from Moorhead MN, Crookston MN and Saginaw MI (res.<3.8, susc>5). Hi may perform better under severe Rhizomania.

** Does not meet Full Market Approval. Meets Aphanomyces Specialty Approval and Rhizoctonia Approval.

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

Created 11/4/2022

Table 3. Performance Data of RR 2023 Approved Varieties Under Aphanomyces Conditions (Relative to Susceptible Checks)+++

Variety	Com	Yrs *Aph Spc	Rev/Ton++ 2022#	2021#	2020	%Sus	Rev/Acre++ 2022#	2021#	2020	%Sus	Rec/Ton 2022#	2021#	2020	Rec/Acre 2022#	2021#	2020	Sugar 2022#	2021#	2020	Yield 2022#	2021#	2020	CR Rating + 22	2Yr	3Yr	Aph Root + 22	2 Yr	3 Yr	Fusarium + Rhizoctonia + 22	2Yr	22	2Yr
Previous Approved # locations			0	0	2		0	0	2		0	0	2	0	0	2	0	0	2	0	0	2	3	5	8	3	4	7	2	3	3	5
BTS 8018	1	Yes	--	--	40.59	132	--	--	982	167	--	--	303.9	--	--	7256	--	--	16.22	--	--	23.62	2.03	2.17	2.25	4.00	4.26	4.13	2.98	3.10	3.93	3.88
BTS 8034	1	Yes	--	--	35.57	115	--	--	887	150	--	--	286.7	--	--	7046	--	--	15.53	--	--	24.32	2.28	2.42	2.51	3.89	3.56	3.83	2.16	2.43	4.49	4.18
BTS 8073	1	Yes	--	--	39.92	130	--	--	935	159	--	--	301.6	--	--	6983	--	--	16.16	--	--	22.91	4.55	4.55	4.59	4.01	4.15	3.92	3.06	3.35	4.21	3.94
BTS 8092	1	Yes	--	--	37.53	122	--	--	916	155	--	--	293.3	--	--	6977	--	--	15.76	--	--	23.32	4.26	4.44	4.38	3.86	3.98	3.94	3.87	3.97	3.58	3.70
BTS 8629	5	Yes	--	--	32.72	106	--	--	789	134	--	--	276.5	--	--	6493	--	--	15.03	--	--	23.05	4.52	4.65	4.62	4.50	4.37	4.22	3.95	4.08	3.72	3.97
BTS 8927	2	Yes	--	--	43.12	140	--	--	985	167	--	--	312.6	--	--	7070	--	--	16.58	--	--	22.44	4.42	4.45	4.44	4.00	4.26	4.13	3.11	3.56	4.13	3.91
BTS 8961	2	Yes	--	--	36.54	119	--	--	835	142	--	--	290.0	--	--	6478	--	--	15.64	--	--	21.96	4.54	4.53	4.58	4.47	4.64	4.44	2.89	3.11	3.75	3.75
Crystal 021	NC	Yes	--	--	38.07	124	--	--	935	159	--	--	295.3	--	--	7071	--	--	15.86	--	--	23.47	2.08	2.18	2.19	3.74	3.97	3.80	3.39	3.79	3.58	3.48
Crystal 022	1	Yes	--	--	44.07	143	--	--	1047	178	--	--	315.8	--	--	7422	--	--	16.80	--	--	23.24	4.60	4.78	4.76	4.03	4.41	4.21	3.22	3.36	4.10	3.82
Crystal 026	NC	Yes	--	--	37.63	122	--	--	913	155	--	--	293.7	--	--	7034	--	--	15.84	--	--	23.74	4.69	4.56	4.63	3.76	3.75	3.75	2.81	2.80	3.28	3.31
Crystal 572	6	Yes	--	--	38.70	126	--	--	786	133	--	--	297.5	--	--	5929	--	--	15.99	--	--	19.61	4.50	4.63	4.57	4.60	4.54	4.45	2.88	3.11	4.28	4.08
Crystal 684	4	Yes	--	--	32.62	106	--	--	799	136	--	--	276.2	--	--	6622	--	--	14.93	--	--	23.61	4.59	4.57	4.52	3.81	3.71	3.79	2.28	2.52	4.24	4.03
Crystal 793	4	Yes	--	--	37.97	123	--	--	886	150	--	--	294.9	--	--	6732	--	--	15.80	--	--	22.43	4.10	4.12	4.18	3.82	3.78	3.81	3.03	2.92	4.73	4.55
Crystal 912	1	Yes	--	--	35.21	114	--	--	886	150	--	--	285.5	--	--	7041	--	--	15.44	--	--	24.35	4.81	4.97	4.90	3.44	3.70	3.69	3.66	3.88	3.28	3.53
Crystal 913	2	Yes	--	--	39.55	128	--	--	951	161	--	--	300.2	--	--	7129	--	--	16.06	--	--	23.53	3.73	3.92	3.99	3.79	4.09	3.98	3.13	3.40	4.23	4.08
Hilleshög HIL2317	2	Yes	--	--	36.66	119	--	--	741	126	--	--	290.5	--	--	5836	--	--	15.50	--	--	20.04	5.13	4.85	4.92	3.91	4.46	4.26	5.65	5.86	4.71	4.73
Hilleshög HIL2320	1	Yes	--	--	36.99	120	--	--	735	125	--	--	291.5	--	--	5721	--	--	15.58	--	--	19.48	5.01	4.90	4.97	4.00	4.33	4.07	4.73	4.62	3.88	3.84
Hilleshög HIL2366	1	No	--	--	37.57	122	--	--	729	124	--	--	293.5	--	--	5656	--	--	15.66	--	--	19.18	5.00	5.00	4.98	4.32	5.07	4.65	4.83	4.74	3.92	3.95
Hilleshög HIL2367	NC	Yes	--	--	37.28	121	--	--	740	125	--	--	292.5	--	--	5760	--	--	15.64	--	--	19.57	4.75	4.75	4.86	4.17	4.65	4.27	4.20	4.23	3.90	4.00
Hilleshög HIL2368	NC	No	--	--	40.99	133	--	--	693	117	--	--	305.2	--	--	5136	--	--	16.25	--	--	16.78	4.56	4.61	4.64	4.63	4.94	4.53	4.33	4.39	3.46	3.19
Hilleshög HIL9708	5	No	--	--	34.56	112	--	--	644	109	--	--	283.0	--	--	5192	--	--	15.19	--	--	18.11	4.86	4.76	4.83	4.45	5.39	4.91	3.83	4.29	3.78	3.78
Hilleshög HIL9920	4	Yes	--	--	35.57	115	--	--	706	120	--	--	286.5	--	--	5606	--	--	15.37	--	--	19.33	4.92	4.84	4.83	4.33	4.49	4.21	5.66	5.56	4.58	4.64
Hilleshög HIL9528	7	Yes	--	--	36.06	117	--	--	720	122	--	--	288.2	--	--	5703	--	--	15.42	--	--	19.63	4.76	4.64	4.71	4.07	4.79	4.43	4.80	4.85	4.01	4.24
Maribo MA717	4	No	--	--	34.86	113	--	--	731	124	--	--	284.0	--	--	5834	--	--	15.24	--	--	20.22	5.05	4.86	4.95	4.39	5.57	4.97	4.87	4.99	3.92	4.12
Maribo MA902	2	No	--	--	37.28	121	--	--	652	111	--	--	292.5	--	--	5126	--	--	15.61	--	--	17.57	4.95	4.79	4.85	4.59	5.78	5.19	4.30	4.40	3.57	3.69
SV 203	1	Yes	--	--	37.75	123	--	--	829	141	--	--	294.1	--	--	6380	--	--	15.78	--	--	21.48	4.74	4.74	4.84	4.24	4.30	4.31	5.55	5.77	4.19	4.26
SV 265	5	No	--	--	37.96	123	--	--	839	142	--	--	294.9	--	--	6388	--	--	15.77	--	--	21.30	4.46	4.38	4.44	4.30	4.63	4.41	6.08	5.87	3.96	4.06
SV 285	2	Yes	--	--	38.37	125	--	--	822	139	--	--	296.3	--	--	6301	--	--	15.89	--	--	21.15	4.72	4.75	4.66	4.35	4.42	4.37	5.47	5.87	4.53	4.39
SX 1898	2	Yes	--	--	37.53	122	--	--	855	145	--	--	293.4	--	--	6643	--	--	15.74	--	--	22.57	4.72	4.74	4.74	4.25	4.61	4.33	5.38	5.53	4.12	4.23

Variety	Com	Yrs *Aph Spc	Rev/Ton++ 2022#	2021#	2020	%Sus	Rev/Acre++ 2021#	2020	%Sus	Rec/Ton 2022#	2021#	2020	Rec/Acre 2022#	2021#	2020	Sugar 2022#	2021#	2020	Yield 2022#	2021#	2020	CR Rating + 22	2Yr	3Yr	Aph Root + 22	2 Yr	3Yr	Fusarium + Rhizoctonia + 2022# 22	2Yr	22	2Yr
Newly Approved																																
BTS 8100	NC	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.87	3.94	--	3.78	3.83	--	2.32	2.56	3.73	3.41
**BTS 8133	NC	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.23	2.26	--	3.57	3.51	--.	3.02	3.32	3.44	3.65
BTS 8156	NC	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.43	2.46	--	4.21	3.93	--	2.30	2.51	4.24	4.02
Crystal 130	NC	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.10	2.24	--	3.57	3.90	--	3.22	3.22	4.08	3.82
Crystal 134	NC	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.47	4.53	--	3.70	4.05	--	3.37	3.74	3.63	3.53
Crystal 137	NC	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.57	2.55	--	4.25	3.69	--	2.35	2.30	4.18	3.86
Crystal 138	NC	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.87	4.80	--	3.87	4.03	--	3.16	3.45	3.81	3.67
Hilleshög HIL2386	NC	No	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.54	4.42	--	4.31	5.14	--	3.73	3.99	3.51	3.85
Hilleshög HIL2389	NC	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.69	4.77	--	3.78	3.82	--	4.34	4.54	3.92	3.96
Maribo MA932	NC	No	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.78	4.82	--	4.28	4.44	--	4.22	4.13	3.75	3.89
SX 1815	NC	No	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.07	4.93	--	4.28	4.24	--	5.32	5.07	4.12	4.26
SX 1818	NC	No	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.72	4.79	--	4.82	5.19	--	4.54	4.90	4.16	4.28
Aph Susc Checks					30.80			590				269.8			4984			14.75			18.00											
Mean of Aph Specialty Varieties					37.66			856				293.8			6575			15.76			22.12											

%Sus=Percent of 15 susceptible checks.

Created 11/7/2022

* Yes indicates varieties that have met the current Aphanomyces Specialty requirement for 2023 with a 2yr rating ≤ 4.2 or previously met Aphanomyces Specialty requirement maintaining a 3 year rating ≤ 4.5

+++2020 Data from Climax, Perley, and Grandin

++2022 Revenue estimate based on a $46.80 beet payment (5-yr ave) at 17.5% crop with a 1.5% loss to molasses, 2021 Revenue estimate based on a $45.65 beet payment and 2020 Revenue estimate based on $45.12 beet payment. Revenue does not consider hauling or production costs.

+ Aph ratings from Perley MN, Shakopee MN and Glyndon MN (res.<4.2, susc>4.8). CR from Randolph MN, Foxhome MN and Saginaw MI (res.<4.4, susc>5.0). Fusarium from Moorhead MN and Sabin MN (res.<3.0, susc>5.0).

Lack of uniform Aphanomyces pressure at any of the OVT sites prevented collection of Aphanomyces Yield Data for 2021 and 2022

** Does not meet Full Market Approval. Meets Aphanomyces Specialty Approval and Rhizoctonia Approval.

Table 4. Performance Data of Conventional Varieties During 2017, 2018, 2019 Growing Seasons (All Locations Combined)

Variety @	Yrs Com	Rev/Ton ++ 19	2 Yr	2Y%	3Yr#	3Y%	Rev/Acre ++ 19	2 Yr	2Y%	3Yr#	3Yr%	Rec/Ton 19	2 Yr	Rec/Acre 19	2 Yr	Sugar 19	2 Yr	Yield 19	2 Yr	Molasses 19	2 Yr	Emerg 19	2 Yr	Bolter / Ac 19	2 Yr	CR + 19	2 Yr	Aph Root+ 19	2 Yr	Rhizoc.+		Fusarium+		Rzm+	
Previous Approved # location		3	8		14		3	8		14		3	8	3	8	3	8	3	8	3	8	3	8	3	8	3	6	2	3	3	6	2	4	
Crystal 620	NC	41.74	47.24	97	49.48	99	1394	1631	118	1656	104	311	326	10403	11312	16.59	17.38	33.7	34.9	1.07	1.06	54	67	0	0	3.95	4.13	4.7	4.2	5.1	4.6	2.5	3.0	Hi
Crystal R761	10	38.62	43.53	89	46.06	92	1375	1582	115	1618	101	299	313	10742	11457	16.18	16.86	36.0	36.7	1.21	1.19	61	72	0	0	4.98	4.85	4.4	4.3	4.9	4.6	3.0	3.6	Hi
Crystal 840	NC	39.30	45.48	93	30.32	60	1288	1585	115	NA	--	302	320	9916	11173	16.23	17.10	33.1	35.1	1.15	1.10	52	65	0	0	4.18	4.25	4.0	3.9	4.7	4.4	2.7	3.1	Hi
Hilleshög HM3035Rz	13	43.77	49.17	101	50.89	101	1294	1379	100	1405	88	318	333	9439	9422	16.91	17.65	29.9	28.5	1.02	1.00	72	71	0	0	4.42	4.32	5.1	5.2	4.4	4.2	4.1	4.3	Rzm
Seedex 8869 Cnv	NC	40.88	45.47	93	48.33	96	1374	1617	117	1658	104	307	320	10388	11418	16.40	17.00	33.9	35.8	1.02	1.00	64	74	0	5	4.52	4.59	4.8	4.8	5.1	4.9	3.5	3.7	Hi
SV 48777	NC	45.18	50.25	103	52.63	105	1452	1634	118	1656	104	323	337	10342	10954	17.08	17.78	31.8	32.5	0.94	0.93	63	73	0	0	4.10	4.33	4.9	5.0	5.0	4.7	4.3	4.4	Hi
Newly Approved																																			
Crystal 950	NC	41.21	--	--	--	--	1430	--	--	--	--	309	--	10719	NA	16.49	NA	34.7	--	1.06	--	62	--	0	--	4.72	--	4.8	--	4.8	--	2.9	--	Hi
Benchmark var. mean		44.35	48.87		50.20		1427	1381		1595		320	332	10330	10887	17.07	17.68	32.4	33.0	1.08	1.09	66	75											

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

++ 2019 Revenue estimate based on a $44.38beet payment (5-yr ave) at 17.5% sugar and 1.5% loss to molasses.

+ Aph ratings from Shakopee (res<4.4, susc>5.0). CR from Randolph MN, Foxhome MN & Michigan (res<4.5, susc>5.0). 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 planting base of 60,000.

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

+++ Sites include Scandia, Bathgate, Grand Forks in 2019

Table 5. ACSC Official Trial Disease Nurseries 2020-2022 (Varieties tested in 2022)

Cercospora, Aphanomyces, Rhizoctonia & Fusarium

Code	Description	< 4.5 Cercospora > 5.0					< 4.2 Aphanomyces > 4.8					< 3.82 Rhizoctonia > 5.0					< 3.0 Fusarium > 5.0					High Rzm
		22 Mean	21 Mean	20 Mean	2 Yr Mean	3 Yr Mean	22 Mean	21 Mean	20 Mean	2 Yr Mean	3 Yr Mean	22 Mean	21 Mean	20 Mean	2 Yr Mean	3 Yr Mean	22 Mean	21 Mean	20 Mean	2 Yr Mean	3 Yr Mean	
	Previously Approved																					
524	BTS 8018	2.03	2.31	2.41	2.17	2.25	4.00	4.52	3.87	4.26	4.13	3.93	3.83	4.16	3.88	3.97	2.98	3.22	2.47	3.10	2.89	Hi Rzm
567	BTS 8034	2.28	2.56	2.70	2.42	2.51	3.89	3.24	4.36	3.56	3.83	4.49	3.88	4.56	4.18	4.31	2.16	2.71	2.26	2.43	2.38	Hi Rzm
533	BTS 8073	4.55	4.56	4.68	4.55	4.59	4.01	4.30	3.45	4.15	3.92	4.21	3.67	4.11	3.94	4.00	3.06	3.63	2.58	3.35	3.09	Hi Rzm
511	BTS 8092	4.26	4.62	4.26	4.44	4.38	3.86	4.11	3.85	3.98	3.94	3.58	3.81	3.81	3.70	3.73	3.87	4.07	3.70	3.97	3.88	Hi Rzm
503	BTS 8629	4.52	4.78	4.55	4.65	4.62	4.50	4.24	3.92	4.37	4.22	3.72	4.22	4.30	3.97	4.08	3.95	4.21	3.78	4.08	3.98	Hi Rzm
510	BTS 8927	4.42	4.48	4.42	4.45	4.44	4.00	4.51	3.87	4.26	4.13	4.13	3.68	4.37	3.91	4.06	3.11	4.00	2.59	3.56	3.23	Hi Rzm
557	BTS 8961	4.54	4.53	4.69	4.53	4.58	4.47	4.80	4.04	4.64	4.44	3.75	3.75	4.11	3.75	3.87	2.89	3.33	2.19	3.11	2.80	Hi Rzm
566	Crystal 021	2.08	2.28	2.20	2.18	2.19	3.74	4.19	3.46	3.97	3.80	3.58	3.38	3.88	3.48	3.61	3.39	4.18	2.85	3.79	3.47	Hi Rzm
559	Crystal 022	4.60	4.97	4.71	4.78	4.76	4.03	4.79	3.81	4.41	4.21	4.10	3.53	3.49	3.82	3.71	3.22	3.50	2.60	3.36	3.11	Hi Rzm
563	Crystal 026	4.69	4.43	4.76	4.56	4.63	3.76	3.74	3.75	3.75	3.75	3.28	3.34	3.57	3.31	3.40	2.81	2.79	2.31	2.80	2.64	Hi Rzm
516	Crystal 572	4.50	4.75	4.46	4.63	4.57	4.60	4.47	4.28	4.54	4.45	4.28	3.88	4.21	4.08	4.13	2.88	3.34	2.36	3.11	2.86	Hi Rzm
539	Crystal 684	4.59	4.54	4.44	4.57	4.52	3.81	3.60	3.97	3.71	3.79	4.24	3.82	4.15	4.03	4.07	2.28	2.76	2.32	2.52	2.45	Hi Rzm
558	Crystal 793	4.10	4.13	4.31	4.12	4.18	3.82	3.74	3.87	3.78	3.81	4.73	4.36	4.84	4.55	4.64	3.03	2.80	2.61	2.92	2.82	Hi Rzm
530	Crystal 912	4.81	5.13	4.75	4.97	4.90	3.44	3.95	3.67	3.70	3.69	3.28	3.77	3.54	3.53	3.53	3.66	4.11	3.61	3.88	3.79	Hi Rzm
564	Crystal 913	3.73	4.10	4.13	3.92	3.99	3.79	4.39	3.75	4.09	3.98	4.23	3.94	4.58	4.08	4.25	3.13	3.68	2.59	3.40	3.13	Hi Rzm
541	Hilleshög HIL2317	5.13	4.57	5.05	4.85	4.92	3.91	5.01	3.86	4.46	4.26	4.71	4.76	4.95	4.73	4.81	5.65	6.06	5.97	5.86	5.89	Hi Rzm
517	Hilleshög HIL2320	5.01	4.78	5.11	4.90	4.97	4.00	4.66	3.55	4.33	4.07	3.88	3.80	4.64	3.84	4.11	4.73	4.50	4.56	4.62	4.60	Hi Rzm
521	Hilleshög HIL2366	5.00	5.01	4.94	5.00	4.98	4.32	5.81	3.81	5.07	4.65	3.92	3.98	4.24	3.95	4.05	4.83	4.65	4.55	4.74	4.68	Hi Rzm
545	Hilleshög HIL2367	4.75	4.75	5.08	4.75	4.86	4.17	5.13	3.51	4.65	4.27	3.90	4.10	4.26	4.00	4.09	4.20	4.27	4.44	4.23	4.30	Hi Rzm
560	Hilleshög HIL2368	4.56	4.66	4.69	4.61	4.64	4.63	5.25	3.70	4.94	4.53	3.46	2.92	3.52	3.19	3.30	4.33	4.44	3.86	4.39	4.21	Hi Rzm
504	Hilleshög HIL9708	4.86	4.65	4.97	4.76	4.83	4.45	6.34	3.96	5.39	4.91	3.78	3.78	3.83	3.78	3.80	3.83	4.76	3.64	4.29	4.08	Rzm
519	Hilleshög HIL9920	4.92	4.75	4.82	4.84	4.83	4.33	4.65	3.65	4.49	4.21	4.58	4.70	5.12	4.64	4.80	5.66	5.45	6.28	5.56	5.80	Hi Rzm
535	Hilleshög HM9528RR	4.76	4.52	4.84	4.64	4.71	4.07	5.51	3.72	4.79	4.43	4.01	4.47	4.57	4.24	4.35	4.80	4.91	4.68	4.85	4.80	Hi Rzm
536	Maribo MA717	5.05	4.68	5.11	4.86	4.95	4.39	6.75	3.77	5.57	4.97	3.92	4.31	4.61	4.12	4.28	4.87	5.11	4.62	4.99	4.87	Hi Rzm
531	Maribo MA902	4.95	4.63	4.96	4.79	4.85	4.59	6.96	4.01	5.78	5.19	3.57	3.80	3.93	3.69	3.77	4.30	4.50	4.01	4.40	4.27	Hi Rzm
554	SV 203	4.74	4.75	5.03	4.74	4.84	4.24	4.35	4.34	4.30	4.31	4.19	4.34	4.29	4.26	4.27	5.55	5.99	5.26	5.77	5.60	Hi Rzm
513	SV 265	4.46	4.30	4.55	4.38	4.44	4.30	4.95	3.98	4.63	4.41	3.96	4.17	4.21	4.06	4.11	6.08	5.65	5.70	5.87	5.81	Hi Rzm
532	SV 285	4.72	4.78	4.50	4.75	4.66	4.35	4.48	4.28	4.42	4.37	4.53	4.26	4.03	4.39	4.27	5.47	6.26	5.40	5.87	5.71	Hi Rzm
506	SX 1898	4.72	4.76	4.73	4.74	4.74	4.25	4.97	3.76	4.61	4.33	4.12	4.34	4.16	4.23	4.21	5.38	5.67	5.41	5.53	5.49	Hi Rzm
	Newly Approved																					
527	BTS 8100	3.87	4.01	--	3.94	--	3.78	3.89	--	3.83	--	3.73	3.09	--	3.41	--	2.32	2.80	--	2.56	--	Hi Rzm
526	BTS 8133	2.23	2.30	--	2.26	--	3.57	3.46	--	3.51	--	3.44	3.87	--	3.65	--	3.02	3.62	--	3.32	--	Hi Rzm
555	BTS 8156	2.43	2.48	--	2.46	--	4.21	3.64	--	3.93	--	4.24	3.81	--	4.02	--	2.30	2.72	--	2.51	--	Hi Rzm
528	Crystal 130	2.10	2.38	--	2.24	--	3.57	4.23	--	3.90	--	4.08	3.57	--	3.82	--	3.22	3.22	--	3.22	--	Hi Rzm
543	Crystal 134	4.47	4.59	--	4.53	--	3.70	4.39	--	4.05	--	3.63	3.44	--	3.53	--	3.37	4.11	--	3.74	--	Hi Rzm
515	Crystal 137	2.57	2.53	--	2.55	--	4.25	3.13	--	3.69	--	4.18	3.53	--	3.86	--	2.35	2.25	--	2.30	--	Hi Rzm
565	Crystal 138	4.87	4.74	--	4.80	--	3.87	4.19	--	4.03	--	3.81	3.52	--	3.67	--	3.16	3.75	--	3.45	--	Hi Rzm
547	Hilleshög HIL2386	4.54	4.30	--	4.42	--	4.31	5.98	--	5.14	--	3.51	4.20	--	3.85	--	3.73	4.26	--	3.99	--	Hi Rzm
512	Hilleshög HIL2389	4.69	4.85	--	4.77	--	3.78	3.86	--	3.82	--	3.92	3.99	--	3.96	--	4.34	4.75	--	4.54	--	Hi Rzm
523	Maribo MA932	4.78	4.85	--	4.82	--	4.28	4.60	--	4.44	--	3.75	4.03	--	3.89	--	4.22	4.05	--	4.13	--	Hi Rzm
529	SX 1815	5.07	4.78	--	4.93	--	4.28	4.19	--	4.24	--	4.12	4.40	--	4.26	--	5.32	4.82	--	5.07	--	Hi Rzm
562	SX 1818	4.72	4.86	--	4.79	--	4.82	5.56	--	5.19	--	4.16	4.41	--	4.28	--	4.54	5.26	--	4.90	--	Hi Rzm

Created 11/08/2022

Green highlighted ratings indicate specialty or good resistance.

Red highlighted ratings indicate level of concern for some fields.

-- indicates data not available

Table 6
Root Aphid Ratings
American Crystal Sugar, KWS and Magno Seed from 2020 - 2022

	Moorhead, MN[X] (1=Exc - 4=Poor)					Shakopee, MN[Y] (1=Exc - 4=Poor)					Longmont, CO[Z] (% Infested Plants)				
Variety	2020*	2021*	2022*	2 Yr Mean	3 Yr Mean	2020*	2021	2022	2 Yr Mean	3 Yr Mean	2020	2021	2022**	2 Yr Mean	3 Yr Mean
BTS 8018	--	--	--	--	--	--	1.00	1.00	1.00	--	--	67.94	--	--	--
BTS 8034	--	--	--	--	--	--	1.32	1.00	1.16	--	--	68.72	--	--	--
BTS 8073	--	--	--	--	--	--	1.19	1.00	1.10	--	--	80.81	--	--	--
BTS 8092	--	--	--	--	--	--	1.21	1.04	1.13	--	--	61.48	--	--	--
BTS 8100	--	--	--	--	--	--	--	1.08	--	--	--	--	--	--	--
BTS 8133	--	--	--	--	--	--	--	1.00	--	--	--	--	--	--	--
BTS 8156	--	--	--	--	--	--	--	1.00	--	--	--	--	--	--	--
BTS 8629	--	--	--	--	--	--	1.46	1.08	1.27	--	10.20	82.76	--	--	--
BTS 8927	--	--	--	--	--	--	1.16	1.04	1.10	--	7.90	76.97	--	--	--
BTS 8961	--	--	--	--	--	--	1.00	1.04	1.02	--	9.20	51.05	--	--	--
Crystal 021	--	--	--	--	--	--	1.22	1.04	1.13	--	--	69.71	--	--	--
Crystal 022	--	--	--	--	--	--	1.00	1.00	1.00	--	--	68.23	--	--	--
Crystal 026	--	--	--	--	--	--	1.00	1.00	1.00	--	--	62.89	--	--	--
Crystal 130	--	--	--	--	--	--	--	1.13	--	--	--	--	--	--	--
Crystal 134	--	--	--	--	--	--	--	1.00	--	--	--	--	--	--	--
Crystal 137	--	--	--	--	--	--	--	1.12	--	--	--	--	--	--	--
Crystal 138	--	--	--	--	--	--	--	1.00	--	--	--	--	--	--	--
Crystal 572	--	--	--	--	--	--	1.08	1.08	1.08	--	9.60	61.07	--	--	--
Crystal 684	--	--	--	--	--	--	1.28	1.00	1.14	--	14.40	67.74	--	--	--
Crystal 793	--	--	--	--	--	--	1.08	1.04	1.06	--	8.60	84.86	--	--	--
Crystal 912	--	--	--	--	--	--	1.24	1.00	1.12	--	3.30	64.72	--	--	--
Crystal 913	--	--	--	--	--	--	1.12	1.04	1.08	--	1.40	62.18	--	--	--
Hilleshög HIL2317	--	--	--	--	--	--	3.41	3.48	3.45	--	34.40	76.15	--	--	--
Hilleshög HIL2320	--	--	--	--	--	--	3.33	3.48	3.41	--	49.20	80.33	--	--	--
Hilleshög HIL2366	--	--	--	--	--	--	3.72	3.36	3.54	--	--	73.41	--	--	--
Hilleshög HIL2367	--	--	--	--	--	--	3.60	3.44	3.52	--	--	77.92	--	--	--
Hilleshög HIL2368	--	--	--	--	--	--	3.54	3.44	3.49	--	--	73.23	--	--	--
Hilleshög HIL2386	--	--	--	--	--	--	--	3.32	--	--	--	--	--	--	--
Hilleshög HIL2389	--	--	--	--	--	--	--	2.00	--	--	--	--	--	--	--
Hilleshög HM9528RR	--	--	--	--	--	--	3.35	3.68	3.52	--	68.20	68.62	--	--	--
Hilleshög HIL9708	--	--	--	--	--	--	3.38	3.72	3.55	--	71.10	72.26	--	--	--
Hilleshög HIL9920	--	--	--	--	--	--	3.58	3.48	3.53	--	44.40	74.56	--	--	--
Maribo MA717	--	--	--	--	--	--	3.68	3.56	3.62	--	71.60	68.33	--	--	--
Maribo MA902	--	--	--	--	--	--	3.75	3.36	3.56	--	62.50	73.70	--	--	--
Maribo MA932	--	--	--	--	--	--	--	3.52	--	--	--	--	--	--	--
SV 203	--	--	--	--	--	--	2.32	2.00	2.16	--	--	70.81	--	--	--
SV 215	--	--	--	--	--	--	--	2.76	--	--	--	--	--	--	--
SV 265	--	--	--	--	--	--	3.65	3.36	3.51	--	83.10	70.81	--	--	--
SV 285	--	--	--	--	--	--	2.28	2.24	2.26	--	28.20	66.81	--	--	--
SX 1815	--	--	--	--	--	--	--	2.40	--	--	--	--	--	--	--
SX 1816	--	--	--	--	--	--	--	2.24	--	--	--	--	--	--	--
SX 1818	--	--	--	--	--	--	--	2.00	--	--	--	--	--	--	--
SX 1898	--	--	--	--	--	--	2.21	2.32	2.27	--	43.20	54.21	--	--	--
Root Aphid Res CK#2	--	--	--	--	--	--	1.13	1.16	1.15	--	19.80	80.06	--	--	--
Root Aphid Res CK#3	--	--	--	--	--	--	1.36	1.00	1.18	--	9.60	70.65	--	--	--
Root Aphid Susc CK#4	--	--	--	--	--	--	3.48	3.48	3.48	--	64.30	71.31	--	--	--
Root Aphid Susc CK#5	--	--	--	--	--	--	3.60	3.36	3.48	--	68.20	76.10	--	--	--
Root Aphid Susc CK#6	--	--	--	--	--	--	--	3.48	--	--	--	--	--	--	--

Created 11/07/2022

X Growth chamber assay based on a 1-4 rating scale (1 = no aphids, 4 = very susceptible), Moorhead, MN, American Crystal Sugar Company
Y Greenhouse assay based on a 1-4 rating scale (1 = no aphids, 4 = very susceptible), Shakopee, MN, KWS
Z Field trial based on incidence (% infested plants), Longmont, CO, Magno Seed, LLC
* No data available due to low levels of root aphid development and infestation
** No data due to low emergence.

Table 7. Planting & Harvest Dates, Previous Crop and Disease Levels for 2022 ACSC Official Trial Sites *

Yield Trials Location	District / Trial Type	Cooperator	Planting Date	Harvest Date	Preceding Crop	Soil Type	Diseases Present @						Comments
							Aph	Rhc	Rzm	Fus	Maggot	Rt Aphid	
Casselton ND	Mhd/Hlb	Todd Weber Farms	5/20	9/12	Wheat	Medium/Light	N	L	N	N	N	N	
Averill MN	Mhd/Hlb	Tang Farms	5/23	9/9	Wheat	Medium/Light	N	L	N	N	N	N	Moderate Cercospora leafspot at harvest
Perley MN	Mhd/Hlb	TD Hoff Partnership	6/4	9/8	Corn	Heavy	M-V	L	N	N	N	N	Yield under Aphanomyces pressure
Ada MN	Mhd/Hlb	Ruebke Bros.	5/28	10/5	Wheat	Light	N	N	N	N	L	N	Gappy stands
Buxton ND	Mhd/Hlb	Hong Farms	5/24	9/13	Wheat	Medium/Light	N	N	N	N	L	N	Moisture stress (dry)
Climax MN	EGF/Crk	Todd Evenson	5/24	10/4	Wheat	Medium/Light	N	M	N	N	N	N	Moisture stress (dry)
Grand Forks ND	EGF/Crk	Drees Farming Association	5/19	9/14	Wheat	Medium/Light	N	L	M	N	L	N	Rhizomania symptoms in indicator; some non-Cercospora leafspot/necrosis
Scandia MN	EGF/Crk	Deboer Farms	5/25	10/1	Wheat	Medium	N	L	N	N	N	N	
East Grand Forks MN	EGF/Crk	Mark Holy	5/27	Abandon	Wheat	Medium	NA	NA	NA	NA	NA	NA	Trial lost to severe wind damage
Alvarado MN	Dtn	Brent Riopelle	5/27	9/22	Wheat	Medium/Heavy	N	N	N	N	N	N	Harvested 9/22 (Comm OVT) and 9/23 (Exp OVT)
St Thomas ND	Dtn	Baldwin Farms	5/17	9/19	Wheat	Medium/Light	N	N	N	N	L-M	N	Verticillium wilt may have affected yield
Hallock MN	Dtn	Prosser/Kuznia Beets	5/26	9/29	Wheat	Heavy	N	N	N	N	N	N	
Bathgate ND	Dtn	Shady Bend Farms	5/26	9/27	Wheat	Medium	N	N	N	N	L	N	

Disease Trials Location	District / Trial Type	Cooperator	Planting Date	Rating Date	Preceding Crop	Soil Type	Diseases Present @						Comments
							Aph	Rhc	Rzm	Fus	Maggot	Rt Aphid	
Moorhead Fus-N MN	Fus Nurs	Nelson Farms	5/23	Multiple	Wheat	Medium/Heavy	N	N	N	V	N	N	Severe Fusarium pressure
Sabin Fus-S MN	Fus Nurs	Krabbenhoft & Sons Farm	6/6	Multiple	Wheat	Medium	N	N	N	M-V	L	N	Rep 5 not used due to water damage in range 14
Mhd Rhc-E MN	Rhc Nurs	Jon Hickel	7/7	10/6	Sugar Beet	Heavy	N	M	N	L	N	N	Replanted due to poor stand
Mhd Rhc-W MN	Rhc Nurs	Jon Hickel	6/3	Abandon	Sugar Beet	Heavy	NA	NA	NA	NA	NA	NA	Abandoned due to poor stand
NWROC MN	Rhc Nurs	Maureen Aubol	5/28	8/9	Wheat	Medium	N	M	N	N	N	N	Nice range of Rhizoctonia symptoms
East Lansing MI	Rhc Nurs	Linda Hanson	--	8/23-25	--	--	--	--	--	--	--	--	
Shakopee MN	Aphanomyces	Patrick O'Boyle	5/16	8/24	--	--	M-V	L	N	N	N	N	Nice range of Aphanomyces symptoms
Glyndon MN	Aphanomyces	Dennis Simmons	5/25	8/31	--	Light	L-M	N	N	NA	NA	NA	Disease pressure higher early in season
Perley MN	Aphanomyces	TD Hoff Partnership	6/4	9/7	Corn	Heavy	M-V	L	N	N	N	N	Nice range of Aphanomyces symptoms
Climax MN	Aphanomyces	Todd Evenson	5/24	Abandon	Wheat	Medium/Light	N	L-M	N	N	N	N	Very dry conditions and soil assay showed no Aphanomyces
Longmont CO	Root Aphids	Kara Guffey	--	--	--	--	--	--	--	--	--	--	Abandoned due to poor stand
Foxhome MN	Cercospora	NDSU/Kevin Etzler	6/6	Multiple	Wheat	Medium	N	L	N	N	N	N	Late developing but nice symptoms
East Lansing MI	Cercospora	Linda Hanson	--	Multiple	--	--	--	--	--	--	--	--	
Randolph MN	Cercospora	Patrick O'Boyle	6/14	Multiple	--	--	N	N	N	N	N	N	Replanted mid-June but severe disease pressure by late August
Averill MN	Cercospora	Tang Farms	5/23	Multiple	Wheat	Medium/Light	N	L	N	N	N	N	Non-inoculated trial, not used for approval numbers

Created 9/9/2022

* Fertilizer applied in accordance with cooperative recommendations.

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

Table 8. Seed Treatments Used on Varieties in Official Variety Trials in 2022

Description	Years in Trial	Years ** Comm.	Fungicide Seed Treatment (Damping Off)	(Rhizoctonia)	(Aphanomyces)	Insecticide (Springtails & Maggots)	Priming (Emergence)
ACSC Commercial							
BTS 8018	3	1	Allegiance Thiram	Kabina	Tach 35	Poncho Beta	Ultipro
BTS 8034	3	1	Allegiance Thiram	Kabina	Tach 35	Poncho Beta	Ultipro
BTS 8073	3	1	Allegiance Thiram	Kabina	Tach 35	Poncho Beta	Ultipro
BTS 8092	3	1	Allegiance Thiram	Kabina	Tach 35	Poncho Beta	Ultipro
BTS 8629	7	5	Allegiance Thiram	Vibrance	Tach 35	Poncho Beta	Ultipro
BTS 8927	4	2	Allegiance Thiram	Vibrance	Tach 35	Poncho Beta	Ultipro
BTS 8961	4	2	Allegiance Thiram	Vibrance	Tach 35	Poncho Beta	Ultipro
Crystal 022	3	1	Allegiance Thiram	Kabina	Tach 45	Poncho Beta	XBEET
Crystal 572	8	6	Allegiance Thiram	Kabina	Tach 45	Poncho Beta	XBEET
Crystal 684	7	4	Allegiance Thiram	Kabina	Tach 45	Poncho Beta	XBEET
Crystal 793	6	4	Allegiance Thiram	Kabina	Tach 45	Poncho Beta	XBEET
Crystal 912	4	1	Allegiance Thiram	Kabina	Tach 45	Poncho Beta	XBEET
Crystal 913	4	2	Allegiance Thiram	Kabina	Tach 45	Poncho Beta	XBEET
Hilleshög HIL2317	4	2	Apron XL Maxim	Vibrance	Tach 45	Cruiser Maxx	XBEET
Hilleshög HIL2320	4	1	Apron XL Maxim	Vibrance	Tach 45	Cruiser Maxx	XBEET
Hilleshög HIL2366	3	1	Apron XL Maxim	Vibrance	Tach 45	Cruiser Maxx	XBEET
Hilleshög HIL9708	8	5	Apron XL Maxim	Vibrance	Tach 45	Cruiser Maxx	XBEET
Hilleshög HIL9920	6	4	Apron XL Maxim	Vibrance	Tach 45	Cruiser Maxx	XBEET
Hilleshög HM9528RR	9	7	Apron XL Maxim	Vibrance	Tach 45	Cruiser Maxx	XBEET
Maribo MA717	6	4	Apron XL Maxim	Vibrance	Tach 45	Cruiser Maxx	XBEET
Maribo MA902	4	2	Apron XL Maxim	Vibrance	Tach 45	Cruiser Maxx	XBEET
SV 203	3	1	Apron XL Maxim	Metlock/Rizolex/Zeltera	Int Sol	NipsIt	XBEET
SV 265	7	5	Apron XL Maxim	Metlock/Rizolex/Zeltera	Int Sol	NipsIt	XBEET
SV 285	5	2	Apron XL Maxim	Metlock/Rizolex/Zeltera	Int Sol	NipsIt	XBEET
SX 1898	4	2	Apron XL Maxim	Zeltera	Int Sol	NipsIt	XBEET
BTS 8572 (Check)	8	6	Allegiance Thiram	Systiva	Tach 35	Poncho Beta	Ultipro
BTS 8337 (Check)	10	8	Allegiance Thiram	Systiva	Tach 35	Poncho Beta	Ultipro
Crystal 578RR (Check)	8	5	Allegiance Thiram	Kabina	Tach 45	Poncho Beta	XBEET
BTS 8815 (Check)	5	3	Allegiance Thiram	Systiva	Tach 35	Poncho Beta	Ultipro
Crystal 803 (Check)	5	2	Allegiance Thiram	Kabina	Tach 45	Poncho Beta	XBEET
AP CK#55 CRYS247	11	9	Allegiance Thiram	Kabina	Tach 45	Poncho Beta	XBEET
AP CK#59 BTS8606	7	5	Allegiance Thiram	Systiva	Tach 35	Poncho Beta	Ultipro
ACSC Experimental							
BTS 8100	2	NC	Allegiance Thiram	Kabina	Tach 35	Poncho Beta	Ultipro
BTS 8133	2	NC	Allegiance Thiram	Kabina	Tach 35	Poncho Beta	Ultipro
BTS 8156	2	NC	Allegiance Thiram	Kabina	Tach 35	Poncho Beta	Ultipro
BTS 8205	1	NC	Allegiance Thiram	Kabina	Tach 35	Poncho Beta	Ultipro
BTS 8217	1	NC	Allegiance Thiram	Kabina	Tach 35	Poncho Beta	Ultipro
BTS 8226	1	NC	Allegiance Thiram	Kabina	Tach 35	Poncho Beta	Ultipro
BTS 8242	1	NC	Allegiance Thiram	Kabina	Tach 35	Poncho Beta	Ultipro
BTS 8248	1	NC	Allegiance Thiram	Kabina	Tach 35	Poncho Beta	Ultipro
BTS 8270	1	NC	Allegiance Thiram	Kabina	Tach 35	Poncho Beta	Ultipro
BTS 8299	1	NC	Allegiance Thiram	Kabina	Tach 35	Poncho Beta	Ultipro
Crystal 021	3	NC	Allegiance Thiram	Kabina	Tach 45	Poncho Beta	XBEET
Crystal 026	3	NC	Allegiance Thiram	Kabina	Tach 45	Poncho Beta	XBEET
Crystal 130	2	NC	Allegiance Thiram	Kabina	Tach 45	Poncho Beta	XBEET
Crystal 134	2	NC	Allegiance Thiram	Kabina	Tach 45	Poncho Beta	XBEET
Crystal 137	2	NC	Allegiance Thiram	Kabina	Tach 45	Poncho Beta	XBEET
Crystal 138	2	NC	Allegiance Thiram	Kabina	Tach 45	Poncho Beta	XBEET
Crystal 260	1	NC	Allegiance Thiram	Kabina	Tach 45	Poncho Beta	XBEET
Crystal 262	1	NC	Allegiance Thiram	Kabina	Tach 45	Poncho Beta	XBEET
Crystal 263	1	NC	Allegiance Thiram	Kabina	Tach 45	Poncho Beta	XBEET
Crystal 265	1	NC	Allegiance Thiram	Kabina	Tach 45	Poncho Beta	XBEET
Crystal 267	1	NC	Allegiance Thiram	Kabina	Tach 45	Poncho Beta	XBEET
Crystal 269	1	NC	Allegiance Thiram	Kabina	Tach 45	Poncho Beta	XBEET
Hilleshög HIL2367	3	NC	Apron XL Maxim	Vibrance	Tach 45	Cruiser Maxx	XBEET
Hilleshög HIL2368	3	NC	Apron XL Maxim	Vibrance	Tach 45	Cruiser Maxx	XBEET
Hilleshög HIL2386	2	NC	Apron XL Maxim	Vibrance	Tach 45	Cruiser Maxx	XBEET
Hilleshög HIL2389	2	NC	Apron XL Maxim	Vibrance	Tach 45	Cruiser Maxx	XBEET
Hilleshög HIL2440	1	NC	Apron XL Maxim	Vibrance	Tach 45	Cruiser Maxx	XBEET
Hilleshög HIL2441	1	NC	Apron XL Maxim	Vibrance	Tach 45	Cruiser Maxx	XBEET
Hilleshög HIL2442	1	NC	Apron XL Maxim	Vibrance	Tach 45	Cruiser Maxx	XBEET
Hilleshög HIL2443	1	NC	Apron XL Maxim	Vibrance	Tach 45	Cruiser Maxx	XBEET
Maribo MA932	2	NC	Apron XL Maxim	Vibrance	Tach 45	Cruiser Maxx	XBEET
Maribo MA942	1	NC	Apron XL Maxim	Vibrance	Tach 45	Cruiser Maxx	XBEET
Maribo MA943	1	NC	Apron XL Maxim	Vibrance	Tach 45	Cruiser Maxx	XBEET
Maribo MA944	1	NC	Apron XL Maxim	Vibrance	Tach 45	Cruiser Maxx	XBEET
SV 215	2	NC	Apron XL Maxim	Metlock/Rizolex/Zeltera	Int Sol	NipsIt	XBEET
SV 321	1	NC	Apron XL Maxim	Metlock/Rizolex/Zeltera	Int Sol	NipsIt	XBEET
SV 322	1	NC	Apron XL Maxim	Metlock/Rizolex/Zeltera	Int Sol	NipsIt	XBEET
SV 324	1	NC	Apron XL Maxim	Metlock/Rizolex/Zeltera	Int Sol	NipsIt	XBEET
SX 1815	2	NC	Apron XL Maxim	Zeltera	Int Sol	NipsIt	XBEET
SX 1816	2	NC	Apron XL Maxim	Zeltera	Int Sol	NipsIt	XBEET
SX 1818	2	NC	Apron XL Maxim	Zeltera	Int Sol	NipsIt	XBEET
SX 1829	1	NC	Apron XL Maxim	Zeltera	Int Sol	NipsIt	XBEET
BTS 8572 (Check)	8	6	Allegiance Thiram	Systiva	Tach 35	Poncho Beta	Ultipro
BTS 8337 (Check)	10	8	Allegiance Thiram	Systiva	Tach 35	Poncho Beta	Ultipro
Crystal 578RR (Check)	8	5	Allegiance Thiram	Kabina	Tach 45	Poncho Beta	XBEET
BTS 8815 (Check)	5	3	Allegiance Thiram	Systiva	Tach 35	Poncho Beta	Ultipro
Crystal 803 (Check)	5	2	Allegiance Thiram	Kabina	Tach 45	Poncho Beta	XBEET
AP CK#55 CRYS247	11	9	Allegiance Thiram	Kabina	Tach 45	Poncho Beta	XBEET

Created 11/7/2022

Table 9.
2022 Performance of Varieties - ACSC RR Official Trials
9 sites

Description @	Code	Rec/T lbs.	Rec/T %Bnch	Rec/A lbs.	Rec/A %Bnch	Rev/T $ +	Rev/T %Bnch	Rev/A $ +	Rev/A %Bnch	Yield T/A	Gross	Sugar% LTM	Sugar% Rec	Na ppm	K ppm	AmN ppm	Bolters ++	Emerg. %
Commercial Trial																		
BTS 8018	120	328.6	101	9656	108	49.38	102	1447	109	29.48	17.54	1.11	16.43	231	1543	368	0	76.2
BTS 8034	123	315.1	97	9469	106	45.34	94	1362	103	30.04	17.02	1.27	15.75	332	1763	391	0	76.6
BTS 8073	102	326.9	101	9787	109	48.88	101	1461	110	29.99	17.50	1.15	16.35	234	1527	400	0	72.7
BTS 8092	116	317.5	98	9722	109	46.04	95	1406	106	30.73	17.01	1.14	15.87	274	1536	371	0	73.6
BTS 8629	118	313.5	97	9687	108	44.85	93	1385	105	30.88	16.85	1.18	15.67	295	1537	398	0	77.8
BTS 8927	104	338.8	104	9399	105	52.46	109	1452	110	27.81	17.97	1.03	16.94	211	1448	339	0	78.9
BTS 8961	117	316.4	97	9478	106	45.73	95	1369	103	29.98	17.02	1.20	15.82	280	1684	377	0	76.5
Crystal 022	125	339.2	104	9376	105	52.56	109	1449	109	27.69	18.04	1.08	16.96	190	1519	365	1	73.4
Crystal 572	108	335.7	103	9292	104	51.53	107	1424	108	27.70	17.92	1.14	16.78	206	1521	401	1	77.9
Crystal 684	122	311.9	96	9945	111	44.38	92	1411	107	31.98	16.83	1.23	15.60	315	1732	377	0	75.3
Crystal 793	111	330.6	102	9773	109	49.98	104	1476	112	29.59	17.61	1.08	16.53	221	1524	351	0	76.1
Crystal 912	107	312.6	96	10047	112	44.59	92	1433	108	32.17	16.82	1.19	15.63	334	1512	399	0	76.1
Crystal 913	103	329.1	101	9702	108	49.53	103	1458	110	29.52	17.58	1.13	16.45	259	1511	379	0	75.1
Hilleshög HIL2317	112	326.8	101	9185	103	48.84	101	1371	104	28.14	17.40	1.06	16.34	247	1595	305	0	75.1
Hilleshög HIL2320	106	322.8	99	9528	107	47.65	99	1403	106	29.57	17.26	1.12	16.14	272	1532	358	0	77.4
Hilleshög HIL2366	119	319.3	98	9263	104	46.59	97	1351	102	29.04	17.08	1.12	15.96	298	1513	354	0	77.1
Hilleshög HIL9708	124	322.5	99	9127	102	47.55	99	1342	101	28.41	17.23	1.11	16.12	297	1498	354	0	80.0
Hilleshög HIL9920	115	324.5	100	9342	104	48.16	100	1383	104	28.83	17.34	1.12	16.22	276	1630	332	0	76.7
Hilleshög HM9528RR	101	319.4	98	9374	105	46.64	97	1368	103	29.39	17.07	1.10	15.97	272	1529	344	0	76.7
Maribo MA717	121	318.6	98	9605	107	46.39	96	1397	106	30.19	17.07	1.14	15.93	280	1566	363	0	76.0
Maribo MA902	110	321.2	99	8954	100	47.16	98	1310	99	27.95	17.17	1.11	16.06	303	1520	344	0	81.9
SV 203	113	322.0	99	8835	99	47.41	98	1296	98	27.53	17.28	1.18	16.10	259	1714	366	0	62.8
SV 265	109	318.1	98	9114	102	46.24	96	1321	100	28.71	17.01	1.11	15.90	250	1583	346	1	75.3
SV 285	105	322.6	99	8672	97	47.58	99	1276	96	26.95	17.31	1.18	16.13	255	1721	361	0	65.3
SX 1898	114	320.4	99	8873	99	46.94	97	1297	98	27.77	17.19	1.17	16.02	277	1714	349	0	64.9
BTS 8572 (CommBench)	126	329.3	101	9025	101	49.60	103	1355	102	27.51	17.65	1.18	16.47	234	1586	409	0	74.5
BTS 8337 (CommBench)	127	334.4	103	8696	97	51.12	106	1324	100	26.09	17.90	1.18	16.72	261	1673	375	0	74.5
Crystal 578RR (CommBench)	128	318.2	98	9272	104	46.27	96	1345	102	29.23	17.14	1.23	15.91	314	1708	383	0	78.4
BTS 8815 (CommBench)	129	317.0	98	8785	98	45.92	95	1270	96	27.75	17.07	1.22	15.85	301	1751	369	0	67.4
Crystal 803 (Check)	130	329.2	101	9483	106	49.57	103	1428	108	28.83	17.57	1.11	16.46	223	1565	359	0	80.4
AP CK#55 CRYS247	131	317.2	98	9236	103	45.96	95	1333	101	29.21	17.03	1.18	15.85	310	1707	344	0	77.2
AP CK#59 BTS8606	132	317.4	98	9310	104	46.03	95	1348	102	29.37	17.07	1.20	15.87	296	1693	373	0	76.7
Experimental Trial (Comm status)																		
BTS 8100	208	325.4	100	9207	103	48.43	100	1363	103	28.43	17.44	1.17	16.27	233	1706	367	0	75.8
BTS 8133	215	311.5	96	9787	109	44.28	92	1392	105	31.44	16.77	1.19	15.59	283	1750	355	0	80.3
BTS 8156	218	327.5	101	9411	105	49.07	102	1410	107	28.67	17.57	1.20	16.37	257	1782	360	0	81.5
BTS 8205	234	325.1	100	9607	107	48.35	100	1426	108	29.55	17.43	1.17	16.26	203	1586	411	1	76.2
BTS 8217	237	323.1	100	9268	104	47.75	99	1373	104	28.61	17.34	1.19	16.16	263	1744	363	0	73.8
BTS 8226	219	343.0	106	9723	109	53.69	111	1521	115	28.41	18.18	1.03	17.15	201	1453	339	0	75.1
BTS 8242	204	340.4	105	9321	104	52.91	110	1441	109	27.58	18.11	1.10	17.01	190	1566	364	0	76.3
BTS 8248	238	328.9	101	9354	105	49.48	103	1403	106	28.52	17.53	1.09	16.44	223	1572	347	0	68.0
BTS 8270	211	333.6	103	9683	108	50.89	106	1472	111	29.13	17.81	1.13	16.68	211	1607	376	0	74.0
BTS 8299	235	328.3	101	9114	102	49.31	102	1359	103	27.86	17.47	1.06	16.41	195	1525	343	0	74.5
Crystal 021	226	317.6	98	9577	107	46.11	96	1390	105	30.14	17.06	1.18	15.89	289	1658	369	0	71.1
Crystal 026	240	322.3	99	9691	108	47.52	99	1430	108	30.01	17.30	1.18	16.13	270	1740	357	0	77.1
Crystal 130	213	332.3	102	9469	106	50.48	105	1436	108	28.55	17.72	1.11	16.61	214	1588	358	0	74.1
Crystal 134	202	340.5	105	9228	103	52.96	110	1430	108	27.18	18.07	1.04	17.03	196	1498	338	0	70.1
Crystal 137	201	324.6	100	9381	105	48.22	100	1390	105	28.79	17.46	1.22	16.24	257	1826	367	0	73.8
Crystal 138	224	332.5	102	9690	108	50.57	105	1471	111	29.18	17.71	1.08	16.63	186	1538	361	0	73.9
Crystal 260	231	333.9	103	9757	109	50.98	106	1488	112	29.23	17.78	1.09	16.69	204	1564	352	0	77.3
Crystal 262	229	325.3	100	9850	110	48.41	100	1463	111	30.33	17.36	1.10	16.26	252	1524	354	0	74.2
Crystal 263	210	338.1	104	9221	103	52.25	108	1418	107	27.31	18.01	1.10	16.91	215	1606	348	0	72.1
Crystal 265	225	330.3	102	9062	101	49.91	103	1366	103	27.56	17.57	1.05	16.52	192	1535	337	0	74.0
Crystal 267	222	320.0	99	9494	106	46.82	97	1389	105	29.69	17.24	1.24	16.01	277	1790	382	0	74.4
Crystal 269	212	333.8	103	9648	108	50.96	106	1466	111	29.05	17.86	1.17	16.69	236	1646	382	0	69.0
Hilleshög HIL2367	242	323.0	99	9226	103	47.72	99	1356	102	28.68	17.30	1.15	16.16	289	1544	372	0	74.9
Hilleshög HIL2368	241	329.1	101	7696	86	49.55	103	1154	87	23.60	17.58	1.13	16.45	252	1573	362	0	53.7
Hilleshög HIL2386	228	322.3	99	9682	108	47.52	99	1424	108	30.07	17.25	1.13	16.13	265	1530	374	1	76.5
Hilleshög HIL2389	239	326.8	101	9431	105	48.85	101	1407	106	28.83	17.47	1.13	16.34	225	1621	359	0	75.9
Hilleshög HIL2440	232	327.7	101	9002	101	49.12	102	1343	101	27.58	17.64	1.25	16.39	285	1616	438	0	67.3
Hilleshög HIL2441	214	327.0	101	8835	99	48.92	101	1312	99	27.21	17.51	1.16	16.35	243	1591	383	1	74.2
Hilleshög HIL2442	220	331.7	102	8707	97	50.33	104	1312	99	26.41	17.76	1.18	16.58	218	1583	413	0	69.6
Hilleshög HIL2443	227	313.8	97	9512	106	44.98	93	1361	103	30.28	16.83	1.13	15.71	273	1623	348	0	68.7
Maribo MA932	230	323.8	100	9532	107	47.95	99	1406	106	29.57	17.33	1.14	16.20	256	1563	376	0	75.6
Maribo MA942	223	328.8	101	8742	98	49.45	103	1310	99	26.64	17.53	1.09	16.44	204	1526	364	0	75.7
Maribo MA943	233	326.3	100	8975	100	48.71	101	1333	101	27.60	17.47	1.15	16.32	234	1572	387	0	69.4
Maribo MA944	221	328.7	101	8908	100	49.43	102	1334	101	27.19	17.57	1.14	16.43	256	1522	384	0	72.9
SV 215	217	314.6	97	8749	98	45.21	94	1252	95	27.98	16.87	1.14	15.74	227	1765	333	0	59.7
SV 321	209	316.7	98	9165	102	45.85	95	1320	100	29.02	16.94	1.11	15.84	210	1664	339	0	65.7
SV 322	236	317.9	98	8308	93	46.18	96	1201	91	26.20	17.02	1.12	15.91	243	1671	337	0	63.2
SV 324	205	310.8	96	8695	97	44.06	91	1231	93	28.02	16.78	1.24	15.55	277	1826	375	0	67.5
SX 1815	203	328.4	101	9366	105	49.35	102	1403	106	28.58	17.53	1.11	16.42	216	1673	339	0	76.3
SX 1816	206	316.1	97	9060	101	45.66	95	1302	98	28.87	16.97	1.17	15.81	250	1678	368	0	64.6
SX 1818	216	321.4	99	9281	104	47.24	98	1361	103	28.98	17.21	1.15	16.07	239	1667	359	0	70.8
SX 1829	207	321.2	99	8317	93	47.18	98	1221	92	25.84	17.16	1.10	16.07	238	1665	322	0	64.7
BTS 8572 (Check)	243	326.1	100	8844	99	48.64	101	1314	99	27.25	17.50	1.20	16.30	229	1630	410	0	74.5
BTS 8337 (1stYrBench)	244	334.8	103	8674	97	51.24	106	1322	100	26.02	17.94	1.20	16.74	256	1683	389	0	70.4
Crystal 578RR (1stYrBench)	245	313.1	96	9364	105	44.75	93	1339	101	29.92	16.87	1.22	15.66	299	1726	379	0	77.0
BTS 8815 (1stYrBench)	246	324.9	100	8896	99	48.27	100	1320	100	27.39	17.44	1.20	16.24	276	1764	360	0	65.2
Crystal 803 (1stYrBench)	247	331.6	102	9451	106	50.31	104	1433	108	28.50	17.70	1.11	16.59	206	1588	367	0	77.2
AP CK#55 CRYS247	248	316.2	97	9292	104	45.70	95	1338	101	29.48	17.00	1.18	15.83	297	1735	349	0	75.8
Comm Benchmark Mean		324.7		8945		48.23		1324		27.65	17.44	1.20		277	1680	384		73.7
Comm Trial Mean		323.0		9344		47.71		1377		29.00	17.30	1.15		269	1599	366		75.1
Coeff. of Var. (%)		2.8		6.5		5.6		8.1		5.9	2.3	7.4		23.1	4.1	12.6		11.0
Mean LSD (0.05)		5.2		289		1.56		56		0.84	0.24	0.05		34	42	26		3.2
Mean LSD (0.01)		6.9		380		2.06		74		1.11	0.32	0.06		45	55	34		4.2
Sig Lvl		**		**		**		**		**	**	**		**	**	**		**

2022 Data from 9 sites

Created 11/02/2022

@ Statistics and trial mean are from Commercial trial including benchmark means. Experimental trial data adjusted to commercial status.

%Bnch = percentage of four commercial benchmark (CommBench) varieties used for approval of second year entries.

+ Revenue estimates are based on a $46.80 beet payment at 17.5% sugar & 1.5% loss to molasses and do not consider hauling costs.

Trial # = 22ACSExpB

Na, K, AmN, Bolter & Emergence not adjusted to commercial status.

++ Number of bolters observed across 9 locations.

Table 10.
2022 Performance of Varieties - ACSC RR Official Trials
Casselton ND

Description @	Code	Rec/T lbs.	Rec/T %Bnch	Rec/A lbs.	Rec/A %Bnch	Rev/T $ +	Rev/T %Bnch	Rev/A $ +	Rev/A %Bnch	Yield T/A	Sugar% Gross	Sugar% LTM	Sugar% Rec	Na ppm	K ppm	AmN ppm	Bolters ++	Emerg. %
Commercial Trial																		
BTS 8018	120	343.0	99	8353	104	53.71	98	1302	103	24.47	18.43	1.29	17.14	158	1881	440	0	82.5
BTS 8034	123	338.6	98	9234	115	52.38	96	1427	113	27.29	18.24	1.31	16.93	212	2054	393	0	78.8
BTS 8073	102	350.3	101	9343	116	55.91	102	1484	117	26.80	18.72	1.21	17.51	157	1753	419	0	79.2
BTS 8092	116	341.7	99	9559	119	53.33	98	1494	118	27.92	18.29	1.20	17.09	159	1798	393	0	78.4
BTS 8629	118	321.8	93	8708	109	47.35	87	1285	102	26.94	17.38	1.29	16.09	175	1814	455	0	81.3
BTS 8927	104	356.7	103	8446	105	57.82	106	1367	108	23.70	19.02	1.19	17.83	158	1744	401	0	85.6
BTS 8961	117	336.3	97	9110	114	51.69	95	1401	111	27.10	18.09	1.28	16.81	185	1931	413	0	84.8
Crystal 022	125	359.2	104	8450	105	58.57	107	1380	109	23.50	19.25	1.29	17.96	152	1826	462	0	73.9
Crystal 572	108	347.2	100	8049	100	54.99	101	1277	101	23.17	18.72	1.35	17.37	137	1898	494	0	76.0
Crystal 684	122	331.8	96	9097	113	50.35	92	1384	109	27.35	17.98	1.39	16.59	228	2038	449	0	78.8
Crystal 793	111	343.6	99	9071	113	53.90	99	1426	113	26.36	18.42	1.24	17.18	146	1787	435	0	85.2
Crystal 912	107	333.3	96	9947	124	50.81	93	1516	120	29.84	17.91	1.24	16.67	197	1781	417	0	85.3
Crystal 913	103	348.6	101	9132	114	55.39	101	1448	114	26.25	18.67	1.24	17.43	151	1809	423	0	81.8
Hilleshög HIL2317	112	346.3	100	8568	107	54.70	100	1355	107	24.76	18.58	1.27	17.31	177	1997	387	0	78.8
Hilleshög HIL2320	106	342.4	99	9200	115	53.53	98	1435	113	26.92	18.42	1.30	17.12	172	1858	452	0	86.6
Hilleshög HIL2366	119	340.6	98	8540	106	52.99	97	1324	105	25.18	18.27	1.24	17.03	175	1863	403	0	84.3
Hilleshög HIL9708	124	344.6	100	8218	102	54.18	99	1290	102	23.91	18.47	1.24	17.23	170	1860	407	0	80.7
Hilleshög HIL9920	115	345.5	100	8178	102	54.46	100	1289	102	23.66	18.52	1.25	17.27	166	2005	372	0	85.3
Hilleshög HM9528RR	101	339.2	98	8664	108	52.58	96	1340	106	25.64	18.24	1.28	16.96	179	1886	424	0	78.3
Maribo MA717	121	332.6	96	9180	114	50.58	93	1396	110	27.61	17.90	1.27	16.63	164	1883	422	0	82.8
Maribo MA902	110	343.6	99	8139	101	53.88	99	1270	100	23.74	18.40	1.23	17.17	186	1826	399	0	86.2
SV 203	113	345.3	100	8456	105	54.39	100	1332	105	24.48	18.53	1.26	17.27	151	2032	384	0	78.0
SV 265	109	342.4	99	8384	104	53.54	98	1309	103	24.52	18.37	1.25	17.12	164	1998	378	0	87.9
SV 285	105	337.4	98	7901	98	52.03	95	1218	96	23.39	18.21	1.34	16.87	178	2044	433	0	73.4
SX 1898	114	345.0	100	8183	102	54.31	99	1287	102	23.72	18.49	1.23	17.26	156	1993	371	0	74.0
BTS 8572 (CommBench)	126	346.7	100	7756	97	54.81	100	1227	97	22.38	18.70	1.37	17.33	145	1992	478	0	77.5
BTS 8337 (CommBench)	127	352.9	102	7618	95	56.69	104	1222	97	21.59	19.00	1.35	17.65	155	2021	454	0	74.1
Crystal 578RR (CommBench)	128	345.7	100	8314	104	54.52	100	1310	104	24.07	18.59	1.30	17.29	162	1973	428	0	86.1
BTS 8815 (CommBench)	129	338.8	98	8415	105	52.45	96	1302	103	24.85	18.25	1.31	16.94	163	2041	412	0	65.5
Crystal 803 (Check)	130	345.9	100	8925	111	54.58	100	1412	112	25.73	18.55	1.26	17.29	153	1881	422	0	83.5
AP CK#55 CRYS247	131	335.0	97	8320	104	51.31	94	1278	101	24.81	18.08	1.32	16.76	176	2025	424	0	81.9
AP CK#59 BTS8606	132	335.1	97	8291	103	51.35	94	1274	101	24.72	18.11	1.34	16.77	188	2001	441	0	81.2
Experimental Trial (Comm status)																		
BTS 8100	208	345.8	100	8780	109	54.57	100	1372	108	25.67	18.66	1.35	17.31	179	2073	454	0	79.8
BTS 8133	215	332.7	96	9131	114	50.58	93	1372	108	27.77	17.95	1.30	16.65	189	2039	420	0	73.5
BTS 8156	218	342.0	99	9016	112	53.40	98	1417	112	26.16	18.47	1.37	17.09	226	2137	432	0	81.4
BTS 8205	234	345.4	100	9046	113	54.45	100	1411	111	26.48	18.73	1.44	17.29	162	1955	558	0	80.9
BTS 8217	237	348.9	101	9249	115	55.48	102	1478	117	26.37	18.68	1.23	17.44	158	2024	381	0	75.2
BTS 8226	219	371.7	107	8933	111	62.43	114	1499	118	24.06	19.77	1.18	18.59	122	1759	417	0	80.6
BTS 8242	204	366.5	106	8882	111	60.82	111	1465	116	24.42	19.56	1.23	18.32	140	1911	419	0	76.5
BTS 8248	238	350.5	101	9139	114	55.97	102	1453	115	26.21	18.77	1.23	17.53	160	1931	403	0	64.0
BTS 8270	211	356.9	103	8632	108	57.92	106	1401	111	24.19	19.12	1.27	17.85	161	1916	441	0	73.1
BTS 8299	235	358.1	103	7867	98	58.28	107	1268	100	22.22	19.08	1.17	17.92	135	1762	408	0	66.5
Crystal 021	226	334.5	97	9129	114	51.12	94	1391	110	27.39	18.08	1.34	16.74	206	2035	448	0	71.4
Crystal 026	240	340.7	98	8983	112	52.99	97	1402	111	26.29	18.33	1.30	17.03	185	2036	421	0	76.2
Crystal 130	213	352.2	102	8450	105	56.49	103	1355	107	23.98	18.86	1.24	17.62	155	1909	423	0	72.1
Crystal 134	202	369.5	107	8441	105	61.75	113	1408	111	22.89	19.68	1.21	18.47	152	1804	418	0	65.2
Crystal 137	201	345.1	100	9606	120	54.35	100	1539	122	27.30	18.60	1.36	17.24	196	2135	440	0	71.6
Crystal 138	224	350.3	101	8912	111	55.91	102	1434	113	25.21	18.76	1.24	17.51	143	1851	439	0	70.2
Crystal 260	231	356.6	103	9154	114	57.82	106	1469	116	26.00	18.99	1.15	17.84	128	1861	367	0	70.1
Crystal 262	229	348.8	101	9565	119	55.45	102	1516	120	27.53	18.65	1.21	17.43	150	1854	412	0	68.7
Crystal 263	210	362.1	105	8261	103	59.49	109	1360	107	22.75	19.35	1.25	18.10	149	1955	417	0	69.9
Crystal 265	225	355.6	103	8098	101	57.51	105	1308	103	22.82	18.93	1.16	17.77	135	1848	377	0	73.0
Crystal 267	222	347.6	100	8962	112	55.08	101	1433	113	25.54	18.74	1.37	17.37	183	2078	464	0	75.2
Crystal 269	212	352.1	102	8937	111	56.45	103	1440	114	25.25	18.88	1.27	17.61	151	1972	429	0	68.5
Hilleshög HIL2367	242	350.1	101	7896	98	55.85	102	1264	100	22.48	18.75	1.25	17.49	165	1936	419	0	74.9
Hilleshög HIL2368	241	363.6	105	7276	91	59.97	110	1184	94	20.31	19.49	1.29	18.19	174	1885	459	0	45.3
Hilleshög HIL2386	228	351.9	102	8476	106	56.41	103	1363	108	23.99	18.80	1.21	17.58	160	1929	387	0	75.6
Hilleshög HIL2389	239	344.9	100	8387	105	54.30	99	1315	104	24.41	18.56	1.30	17.25	168	1972	444	0	73.9
Hilleshög HIL2440	232	356.8	103	7983	99	57.87	106	1308	103	22.12	19.20	1.38	17.82	180	1918	514	0	67.5
Hilleshög HIL2441	214	353.3	102	7902	98	56.85	104	1272	101	22.32	18.94	1.27	17.67	172	1925	437	0	70.7
Hilleshög HIL2442	220	359.8	104	7609	95	58.81	108	1235	98	21.32	19.33	1.32	18.01	133	1928	487	0	69.4
Hilleshög HIL2443	227	337.3	97	8437	105	51.96	95	1297	103	25.08	18.18	1.31	16.87	188	1980	448	0	65.0
Maribo MA932	230	354.2	102	9076	113	57.10	105	1468	116	25.55	18.95	1.24	17.71	153	1888	430	0	72.2
Maribo MA942	223	355.3	103	8025	100	57.41	105	1303	103	22.48	18.92	1.17	17.75	130	1875	375	0	73.0
Maribo MA943	233	354.4	102	8050	100	57.19	105	1292	102	22.84	18.94	1.21	17.73	141	1865	413	0	68.6
Maribo MA944	221	357.1	103	7664	95	57.99	106	1241	98	21.52	19.13	1.28	17.85	186	1782	473	0	72.6
SV 215	217	342.6	99	8160	102	53.59	98	1276	101	23.84	18.43	1.28	17.14	144	2068	416	0	65.6
SV 321	209	337.6	98	8095	101	52.05	95	1259	100	23.74	18.14	1.27	16.87	139	1991	429	0	66.1
SV 322	236	350.6	101	8126	101	56.00	103	1300	103	23.12	18.70	1.19	17.51	144	1982	360	0	65.4
SV 324	205	340.6	98	8002	100	52.98	97	1245	98	23.50	18.39	1.35	17.03	173	2177	427	0	81.1
SX 1815	203	349.5	101	8208	102	55.67	102	1307	103	23.51	18.71	1.22	17.48	152	1976	388	0	86.1
SX 1816	206	332.1	96	8358	104	50.39	92	1274	101	25.04	17.88	1.28	16.60	190	1982	420	0	69.6
SX 1818	216	344.8	100	8736	109	54.26	99	1370	108	25.40	18.49	1.24	17.24	155	1982	401	0	73.5
SX 1829	207	341.8	99	7896	98	53.35	98	1242	98	22.90	18.30	1.21	17.09	170	2001	372	0	72.8
BTS 8572 (Check)	243	341.6	99	7694	96	53.28	98	1193	94	22.64	18.46	1.36	17.09	162	2012	487	0	69.2
BTS 8337 (1stYrBench)	244	354.8	103	8206	102	57.28	105	1319	104	23.24	19.10	1.35	17.75	171	2057	464	0	67.1
Crystal 578RR (1stYrBench)	245	340.9	99	7851	98	53.06	97	1228	97	22.91	18.33	1.30	17.03	203	2055	411	0	72.4
BTS 8815 (1stYrBench)	246	346.8	100	8352	104	54.85	100	1320	104	24.10	18.65	1.31	17.33	179	2066	421	0	54.9
Crystal 803 (1stYrBench)	247	355.4	103	8310	104	57.43	105	1359	107	23.06	19.07	1.32	17.75	151	1947	472	0	80.0
AP CK#55 CRYS247	248	337.4	97	8256	103	51.99	95	1264	100	24.64	18.20	1.32	16.88	194	2055	432	0	71.3
Comm Benchmark Mean		346.0		8026		54.62		1265		23.22	18.64	1.33		156	2007	443		75.8
Comm Trial Mean		342.4		8617		53.53		1346		25.20	18.40	1.28		169	1915	421		80.5
Coeff. of Var. (%)		2.2		9.4		4.2		10.0		9.3	1.9	5.3		14.1	2.8	9.8		10.8
Mean LSD (0.05)		6.7		708		2.01		117		2.06	0.31	0.06		21	49	38		7.7
Mean LSD (0.01)		8.8		932		2.65		154		2.71	0.41	0.08		28	64	50		10.1
Sig Lvl		**		**		**		**		**	**	**		**	**	**		**

2022 Data from Casselton ND

Created 10/28/2022

@ Statistics and trial mean are from Commercial trial including benchmark means. Experimental trial data adjusted to commercial status.
%Bnch = percentage of four commercial benchmark (CommBench) varieties used for approval of second year entries.
+ Revenue estimates are based on a $46.80 beet payment at 17.5% sugar & 1.5% loss to molasses and do not consider hauling costs.
Na, K, AmN, Bolter & Emergence not adjusted to commercial status.
++ Number of bolters observed at location.

Trial # = 228301

Table 11.
2022 Performance of Varieties - ACSC RR Official Trials
Averill MN

Description @	Code	Rec/T lbs.	%Bnch	Rec/A lbs.	%Bnch	Rev/T $ +	%Bnch	Rev/A $ +	%Bnch	Yield T/A	Sugar% Gross	LTM	Rec	Na ppm	K ppm	AmN ppm	Bolters ++	Emerg. %
Commercial Trial																		
BTS 8018	120	302.1	102	8769	110	41.42	105	1197	112	29.10	16.31	1.21	15.10	255	1478	449	0	62.7
BTS 8034	123	286.7	97	8610	108	36.81	93	1107	104	29.95	15.75	1.41	14.34	358	1768	493	0	65.4
BTS 8073	102	303.2	103	8872	111	41.77	106	1218	114	29.37	16.39	1.22	15.17	244	1470	469	0	65.0
BTS 8092	116	285.1	96	8629	108	36.33	92	1095	103	30.34	15.52	1.26	14.26	311	1527	458	0	65.7
BTS 8629	118	288.5	98	8616	108	37.34	94	1116	105	29.77	15.66	1.24	14.42	291	1500	454	0	69.9
BTS 8927	104	306.6	104	8673	109	42.79	108	1211	113	28.35	16.52	1.19	15.33	254	1414	457	0	71.4
BTS 8961	117	290.5	98	8754	110	37.93	96	1145	107	30.13	15.80	1.28	14.52	300	1710	423	0	68.8
Crystal 022	125	314.0	106	8558	107	44.99	114	1225	115	27.20	16.94	1.24	15.70	214	1534	477	0	65.2
Crystal 572	108	316.7	107	8041	101	45.80	116	1163	109	25.43	17.08	1.25	15.83	211	1494	493	0	71.4
Crystal 684	122	282.9	96	9176	115	35.67	90	1158	108	32.37	15.49	1.35	14.14	325	1731	464	0	64.7
Crystal 793	111	297.4	101	8659	108	40.03	101	1161	109	29.19	16.13	1.25	14.88	279	1534	461	0	59.8
Crystal 912	107	278.1	94	8856	111	34.22	87	1091	102	31.82	15.26	1.35	13.91	369	1573	492	0	66.0
Crystal 913	103	304.5	103	8740	109	42.15	107	1206	113	28.91	16.46	1.23	15.23	273	1494	460	0	66.7
Hilleshög HIL2317	112	302.9	102	8285	104	41.67	105	1143	107	27.29	16.32	1.17	15.15	282	1547	394	0	71.4
Hilleshög HIL2320	106	293.0	99	8196	103	38.71	98	1076	101	27.99	15.89	1.23	14.66	300	1503	448	0	70.6
Hilleshög HIL2366	119	282.2	95	7853	98	35.46	90	988	93	27.89	15.37	1.26	14.11	357	1465	456	0	65.2
Hilleshög HIL9708	124	300.7	102	8028	101	41.00	104	1091	102	26.77	16.25	1.22	15.03	312	1458	440	0	76.2
Hilleshög HIL9920	115	302.0	102	8453	106	41.40	105	1159	109	28.07	16.30	1.20	15.10	294	1594	400	0	65.0
Hilleshög HM9528RR	101	294.8	100	8246	103	39.25	99	1096	103	27.97	15.95	1.20	14.75	321	1468	426	0	66.8
Maribo MA717	121	283.1	96	8249	103	35.73	90	1040	97	28.99	15.53	1.38	14.15	339	1615	512	0	64.3
Maribo MA902	110	304.4	103	7899	99	42.13	107	1088	102	25.95	16.41	1.19	15.22	298	1471	420	0	73.6
SV 203	113	290.9	98	8020	100	38.08	96	1052	99	27.60	15.85	1.31	14.54	284	1801	428	0	50.9
SV 265	109	297.6	101	8325	104	40.08	101	1121	105	27.85	16.07	1.18	14.89	258	1614	395	0	65.3
SV 285	105	291.9	99	7533	94	38.35	97	989	93	25.88	15.90	1.31	14.59	297	1764	436	0	58.8
SX 1898	114	291.8	99	7877	99	38.32	97	1031	97	26.92	15.89	1.31	14.58	282	1760	440	0	56.9
BTS 8572 (CommBench)	126	309.1	105	8309	104	43.54	110	1172	110	26.90	16.71	1.26	15.45	253	1527	475	0	66.3
BTS 8337 (CommBench)	127	304.7	103	8093	101	42.22	107	1119	105	26.67	16.55	1.31	15.24	290	1689	460	0	66.1
Crystal 578RR (CommBench)	128	288.2	97	7882	99	37.25	94	1023	96	27.42	15.75	1.35	14.40	330	1741	459	0	68.5
BTS 8815 (CommBench)	129	280.8	95	7644	96	35.05	89	957	90	27.38	15.45	1.41	14.04	390	1818	468	0	57.6
Crystal 803 (Check)	130	302.2	102	8495	106	41.46	105	1167	109	28.22	16.32	1.21	15.11	242	1538	437	0	71.9
AP CK#55 CRYS247	131	283.9	96	8252	103	35.98	91	1043	98	29.17	15.59	1.39	14.20	397	1746	467	0	68.7
AP CK#59 BTS8606	132	288.1	97	8126	102	37.24	94	1051	98	27.96	15.72	1.31	14.41	316	1698	448	0	67.0
Experimental Trial (Comm status)																		
BTS 8100	208	294.8	100	8351	105	39.26	99	1112	104	28.52	16.07	1.33	14.75	257	1696	450	0	67.2
BTS 8133	215	272.2	92	8926	112	32.70	83	1077	101	32.70	14.99	1.39	13.60	316	1681	473	0	70.4
BTS 8156	218	294.5	100	8265	104	39.18	99	1104	103	28.11	16.16	1.44	14.72	278	1790	500	0	76.5
BTS 8205	234	292.7	99	8772	110	38.64	98	1161	109	29.99	16.01	1.37	14.64	239	1602	508	0	61.6
BTS 8217	237	283.8	96	8377	105	36.05	91	1066	100	29.51	15.66	1.48	14.18	317	1787	515	0	65.3
BTS 8226	219	315.3	107	9035	113	45.22	114	1303	122	28.71	16.87	1.09	15.78	185	1414	372	0	62.9
BTS 8242	204	301.6	102	8308	104	41.23	104	1132	106	27.81	16.44	1.37	15.08	240	1590	507	0	66.0
BTS 8248	238	299.0	101	8605	108	40.46	102	1166	109	28.82	16.21	1.27	14.95	226	1533	450	0	67.2
BTS 8270	211	306.7	104	8889	111	42.70	108	1241	116	28.95	16.60	1.27	15.34	201	1581	450	0	68.9
BTS 8299	235	295.9	100	8004	100	39.57	100	1073	100	27.28	16.03	1.24	14.79	206	1531	449	0	61.0
Crystal 021	226	274.9	93	8200	103	33.46	85	997	93	30.14	15.19	1.46	13.73	378	1644	519	0	59.8
Crystal 026	240	289.6	98	8494	106	37.75	96	1111	104	29.38	15.84	1.36	14.48	276	1761	445	0	70.7
Crystal 130	213	301.4	102	8540	107	41.18	104	1165	109	28.48	16.39	1.32	15.07	190	1607	486	0	65.8
Crystal 134	202	310.3	105	8195	103	43.74	111	1161	109	26.52	16.73	1.21	15.52	200	1444	450	0	60.5
Crystal 137	201	294.3	100	8302	104	39.11	99	1105	103	28.25	16.07	1.36	14.72	247	1775	453	0	67.9
Crystal 138	224	307.0	104	8684	109	42.78	108	1214	114	28.42	16.57	1.22	15.35	171	1487	461	0	64.9
Crystal 260	231	298.9	101	8665	109	40.46	102	1173	110	29.04	16.21	1.27	14.95	235	1596	434	0	76.8
Crystal 262	229	300.0	101	8544	107	40.76	103	1161	109	28.66	16.20	1.19	15.01	239	1492	404	0	64.9
Crystal 263	210	301.6	102	8502	107	41.23	104	1164	109	28.24	16.35	1.25	15.09	208	1615	435	0	60.0
Crystal 265	225	297.2	101	8081	101	39.96	101	1090	102	27.36	16.07	1.21	14.86	173	1530	441	0	67.1
Crystal 267	222	288.4	98	8438	106	37.38	95	1092	102	29.42	15.75	1.34	14.41	252	1749	440	0	62.7
Crystal 269	212	288.8	98	8449	106	37.49	95	1100	103	29.35	15.84	1.41	14.43	287	1652	507	0	59.7
Hilleshög HIL2367	242	295.3	100	7991	100	39.39	100	1065	100	27.12	16.02	1.25	14.77	262	1495	443	0	65.8
Hilleshög HIL2368	241	295.8	100	6554	82	39.53	100	884	83	22.20	16.02	1.23	14.79	285	1506	421	0	45.0
Hilleshög HIL2386	228	288.3	97	8183	103	37.34	95	1067	100	28.44	15.74	1.34	14.40	300	1476	494	0	70.8
Hilleshög HIL2389	239	299.1	101	8409	105	40.49	102	1144	107	27.91	16.23	1.28	14.95	233	1588	446	0	67.0
Hilleshög HIL2440	232	289.1	98	8163	102	37.60	95	1064	100	28.36	15.92	1.48	14.43	341	1704	529	0	60.5
Hilleshög HIL2441	214	302.5	102	7543	95	41.49	105	1038	97	25.05	16.44	1.32	15.12	277	1534	473	0	61.0
Hilleshög HIL2442	220	298.5	101	7431	93	40.33	102	1002	94	25.22	16.27	1.35	14.92	244	1601	491	0	59.3
Hilleshög HIL2443	227	284.6	96	8163	102	36.28	92	1046	98	28.68	15.50	1.28	14.22	282	1602	426	0	59.1
Maribo MA932	230	293.4	99	8298	104	38.85	98	1103	103	28.48	15.97	1.31	14.66	285	1496	472	0	68.7
Maribo MA942	223	298.9	101	8005	100	40.43	102	1085	102	26.84	16.22	1.28	14.94	214	1469	483	0	72.7
Maribo MA943	233	300.0	101	7976	100	40.77	103	1085	102	26.71	16.34	1.35	14.99	201	1553	515	0	63.4
Maribo MA944	221	300.2	102	7766	97	40.85	103	1054	99	25.97	16.32	1.31	15.01	267	1511	473	0	61.7
SV 215	217	287.2	97	7779	97	37.04	94	1009	95	27.23	15.59	1.24	14.35	232	1691	401	0	45.8
SV 321	209	269.4	91	8144	102	31.86	81	969	91	30.16	14.79	1.34	13.45	255	1733	440	0	56.0
SV 322	236	275.2	93	7424	93	33.58	85	910	85	26.99	15.06	1.31	13.75	280	1687	423	0	49.6
SV 324	205	279.8	95	7919	99	34.90	88	987	92	28.21	15.35	1.36	13.99	272	1773	443	0	53.2
SX 1815	203	304.2	103	8660	108	41.98	106	1195	112	28.57	16.45	1.24	15.21	207	1614	422	0	73.2
SX 1816	206	276.5	94	8001	100	33.94	86	984	92	29.08	15.20	1.39	13.81	308	1702	474	0	50.7
SX 1818	216	285.2	96	8376	105	36.44	92	1077	101	29.47	15.58	1.34	14.25	263	1730	446	0	59.7
SX 1829	207	273.3	92	7404	93	32.99	83	897	84	27.22	14.96	1.31	13.65	286	1650	434	0	50.0
BTS 8572 (Check)	243	307.0	104	8058	101	42.77	108	1127	106	26.27	16.65	1.30	15.35	200	1566	483	0	71.4
BTS 8337 (1stYrBench)	244	298.9	101	7715	97	40.45	102	1045	98	25.98	16.32	1.38	14.94	332	1667	471	0	68.9
Crystal 578RR (1stYrBench)	245	288.1	97	8562	107	37.30	94	1113	104	29.66	15.70	1.31	14.40	232	1691	444	0	71.3
BTS 8815 (1stYrBench)	246	288.9	98	7593	95	37.54	95	985	92	26.46	15.79	1.35	14.44	318	1737	432	0	55.2
Crystal 803 (1stYrBench)	247	299.4	101	8585	108	40.57	103	1169	109	28.85	16.25	1.29	14.96	228	1607	455	0	69.3
AP CK#55 CRYS247	248	290.8	98	8179	102	38.11	96	1071	100	28.14	15.91	1.37	14.54	331	1771	431	0	65.7
Comm Benchmark Mean		295.7		7982		39.52		1068		27.09	16.12	1.33		316	1694	465		64.6
Comm Trial Mean		295.3		8335		39.38		1109		28.27	16.03	1.27		298	1595	452		66.1
Coeff. of Var. (%)		3.1		5.8		6.9		8.3		5.3	2.5	6.6		18.3	4.3	10.5		13.5
Mean LSD (0.05)		8.1		411		2.42		80		1.28	0.36	0.08		48	61	42		7.5
Mean LSD (0.01)		10.6		541		3.19		105		1.68	0.47	0.10		64	80	56		9.8
Sig Lvl		**		**		**		**		**	**	**		**	**	**		**

2022 Data from Averill MN

Created 10/28/2022

@ Statistics and trial mean are from Commercial trial including benchmark and check means. Experimental trial data adjusted to commercial status.

%Bnch = percentage of four commercial benchmark (CommBench) varieties used for approval of second year entries.

+ Revenue estimates are based on a $46.80 beet payment at 17.5% sugar & 1.5% loss to molasses and do not consider hauling costs.

Trial # = 228302

Na, K, AmN, Bolter & Emergence not adjusted to commercial status.

++ Number of bolters observed at location.

Table 12.
2022 Performance of Varieties - ACSC RR Official Trials
Ada MN

Description @	Code	Rec/T lbs.	%Bnch	Rec/A lbs.	%Bnch	Rev/T $ +	%Bnch	Rev/A $ +	%Bnch	Yield T/A	Sugar% Gross	LTM	Rec	Na ppm	K ppm	AmN ppm	Bolters ++	Emerg. %
Commercial Trial																		
BTS 8018	120	342.1	100	11787	108	53.45	101	1839	108	34.51	18.05	0.95	17.10	181	1507	267	0	62.7
BTS 8034	123	335.3	98	11517	106	51.39	97	1767	104	34.31	17.82	1.06	16.76	223	1721	282	0	68.9
BTS 8073	102	347.3	102	11905	109	55.00	103	1886	111	34.31	18.32	0.95	17.37	172	1494	277	0	61.0
BTS 8092	116	326.0	96	10912	100	48.62	91	1628	96	33.44	17.27	0.97	16.30	172	1525	283	0	59.8
BTS 8629	118	332.4	97	11538	106	50.54	95	1752	103	34.71	17.62	1.00	16.62	211	1499	296	0	65.5
BTS 8927	104	355.8	104	11746	108	57.56	108	1898	112	33.10	18.66	0.87	17.79	151	1435	236	0	67.4
BTS 8961	117	336.8	99	11545	106	51.84	98	1779	105	34.29	17.81	0.97	16.84	199	1601	251	0	59.4
Crystal 022	125	351.6	103	11103	102	56.30	106	1777	105	31.58	18.47	0.89	17.58	123	1462	255	0	62.0
Crystal 572	108	350.9	103	11143	102	56.08	105	1781	105	31.72	18.52	0.98	17.54	151	1512	300	0	63.4
Crystal 684	122	330.5	97	12332	113	49.97	94	1862	110	37.40	17.55	1.02	16.53	214	1686	268	0	58.9
Crystal 793	111	336.5	99	11274	103	51.77	97	1735	102	33.54	17.75	0.92	16.83	182	1468	254	0	61.2
Crystal 912	107	340.8	100	12407	114	53.04	100	1927	113	36.55	17.94	0.90	17.04	177	1419	253	0	62.9
Crystal 913	103	343.1	101	11564	106	53.74	101	1812	107	33.60	18.11	0.95	17.16	208	1471	273	0	57.1
Hilleshög HIL2317	112	341.6	100	11753	108	53.28	100	1831	108	34.47	17.96	0.89	17.07	187	1513	217	0	55.9
Hilleshög HIL2320	106	338.7	99	11433	105	52.43	99	1768	104	33.83	17.93	1.00	16.93	188	1563	288	0	60.0
Hilleshög HIL2366	119	337.9	99	11174	102	52.19	98	1724	101	33.10	17.86	0.97	16.89	208	1552	261	0	64.5
Hilleshög HIL9708	124	339.1	99	11447	105	52.55	99	1773	104	33.80	17.85	0.89	16.96	203	1499	221	0	71.6
Hilleshög HIL9920	115	330.9	97	11327	104	50.09	94	1717	101	34.13	17.52	0.97	16.55	217	1596	253	0	63.3
Hilleshög HM9528RR	101	326.0	96	11063	101	48.59	91	1650	97	33.94	17.25	0.95	16.30	220	1560	243	0	62.1
Maribo MA717	121	334.3	98	11614	107	51.11	96	1774	104	34.75	17.66	0.94	16.72	198	1546	246	0	62.9
Maribo MA902	110	329.5	97	11074	102	49.66	93	1669	98	33.58	17.40	0.93	16.47	214	1514	239	0	72.0
SV 203	113	336.3	99	10159	93	51.71	97	1563	92	30.17	17.77	0.96	16.81	167	1640	245	0	44.9
SV 265	109	322.3	94	11085	102	47.49	89	1634	96	34.35	17.02	0.90	16.12	171	1507	237	0	47.3
SV 285	105	338.7	99	10091	93	52.41	99	1560	92	29.83	17.91	0.98	16.93	173	1668	255	0	43.3
SX 1898	114	335.7	98	10620	97	51.52	97	1632	96	31.65	17.78	0.99	16.79	171	1685	260	0	39.6
BTS 8572 (CommBench)	126	346.2	101	10928	100	54.68	103	1725	102	31.57	18.27	0.96	17.31	164	1510	287	0	60.2
BTS 8337 (CommBench)	127	354.5	104	11153	102	57.16	108	1800	106	31.47	18.71	0.99	17.72	202	1647	254	0	57.3
Crystal 578RR (CommBench)	128	328.8	96	11223	103	49.45	93	1692	100	34.01	17.48	1.05	16.43	217	1749	267	0	61.8
BTS 8815 (CommBench)	129	335.1	98	10306	95	51.34	97	1578	93	30.74	17.75	0.99	16.76	206	1651	256	0	52.3
Crystal 803 (Check)	130	342.3	100	11204	103	53.49	101	1751	103	32.72	18.09	0.97	17.12	169	1582	274	0	65.0
AP CK#55 CRYS247	131	327.4	96	11486	105	49.04	92	1724	101	34.92	17.34	0.97	16.37	238	1638	233	0	62.5
AP CK#59 BTS8606	132	333.1	98	11366	104	50.73	95	1731	102	34.14	17.63	0.97	16.66	187	1618	255	0	59.8
Experimental Trial (Comm status)																		
BTS 8100	208	340.7	100	10514	96	53.00	100	1631	96	30.93	18.00	0.96	17.04	183	1734	252	0	58.7
BTS 8133	215	337.1	99	12186	112	51.96	98	1876	110	36.20	17.82	0.97	16.85	204	1688	255	0	66.2
BTS 8156	218	350.0	103	11166	102	55.84	105	1781	105	31.90	18.47	0.96	17.50	185	1691	258	0	63.6
BTS 8205	234	331.2	97	11110	102	50.15	94	1686	99	33.43	17.52	0.95	16.57	213	1488	296	0	58.5
BTS 8217	237	338.1	99	10261	94	52.26	98	1584	93	30.39	17.79	0.89	16.90	179	1613	220	0	53.8
BTS 8226	219	356.0	104	11687	107	57.65	108	1897	112	32.73	18.66	0.87	17.79	158	1357	277	0	55.0
BTS 8242	204	359.4	105	10811	99	58.70	110	1765	104	30.08	18.88	0.91	17.97	160	1486	278	0	55.2
BTS 8248	238	347.0	102	10310	95	54.94	103	1631	96	29.67	18.25	0.91	17.35	167	1565	258	0	49.9
BTS 8270	211	348.6	102	11206	103	55.42	104	1781	105	32.17	18.36	0.94	17.42	164	1598	271	0	60.1
BTS 8299	235	340.1	100	11503	106	52.82	99	1786	105	33.75	17.90	0.90	17.01	165	1501	267	0	50.2
Crystal 021	226	335.9	98	10277	94	51.58	97	1579	93	30.60	17.69	0.90	16.79	192	1538	246	0	46.4
Crystal 026	240	344.6	101	11617	107	54.20	102	1828	108	33.70	18.18	0.95	17.23	194	1715	240	0	53.1
Crystal 130	213	355.2	104	11387	104	57.41	108	1840	108	32.06	18.62	0.87	17.75	164	1459	248	0	62.1
Crystal 134	202	347.8	102	10713	98	55.19	104	1697	100	30.86	18.28	0.90	17.39	170	1438	274	0	54.7
Crystal 137	201	351.0	103	11311	104	56.12	106	1807	106	32.20	18.53	0.98	17.54	193	1720	264	0	51.6
Crystal 138	224	346.7	102	11594	106	54.85	103	1835	108	33.46	18.24	0.92	17.33	166	1465	285	0	55.2
Crystal 260	231	342.2	100	11076	102	53.46	101	1730	102	32.32	18.00	0.90	17.11	179	1441	271	0	60.6
Crystal 262	229	340.3	100	11422	105	52.89	100	1776	105	33.56	17.87	0.87	17.00	166	1470	244	0	57.3
Crystal 263	210	354.1	104	9559	88	57.07	107	1539	91	27.07	18.65	0.94	17.70	156	1574	285	0	50.3
Crystal 265	225	335.3	98	10270	94	51.39	97	1578	93	30.61	17.63	0.88	16.75	163	1489	249	0	51.6
Crystal 267	222	345.5	101	11240	103	54.49	103	1769	104	32.62	18.28	1.01	17.27	205	1764	261	0	53.8
Crystal 269	212	351.2	103	10097	93	56.19	106	1614	95	28.75	18.51	0.94	17.56	191	1566	279	0	48.7
Hilleshög HIL2367	242	329.7	97	11359	104	49.67	93	1711	101	34.43	17.49	1.00	16.49	267	1517	308	0	54.2
Hilleshög HIL2368	241	339.6	100	8469	78	52.67	99	1318	78	24.86	17.97	0.99	16.98	236	1604	288	0	31.8
Hilleshög HIL2386	228	327.9	96	11839	109	49.12	92	1778	105	35.95	17.37	0.96	16.40	231	1485	299	0	62.9
Hilleshög HIL2389	239	330.2	97	11682	107	49.83	94	1761	104	35.40	17.46	0.95	16.50	198	1606	267	0	55.5
Hilleshög HIL2440	232	351.6	103	11176	103	56.31	106	1787	105	31.84	18.57	0.98	17.58	214	1599	292	0	46.7
Hilleshög HIL2441	214	341.5	100	10577	97	53.26	100	1650	97	30.98	18.03	0.96	17.07	214	1632	265	0	56.1
Hilleshög HIL2442	220	334.2	98	10217	94	51.06	96	1559	92	30.67	17.78	1.08	16.70	213	1515	378	0	45.8
Hilleshög HIL2443	227	330.0	97	11452	105	49.77	94	1723	101	34.73	17.46	0.95	16.50	221	1634	256	0	47.5
Maribo MA932	230	325.4	95	10866	100	48.39	91	1620	95	33.29	17.26	0.98	16.27	232	1572	287	0	64.4
Maribo MA942	223	338.5	99	10731	98	52.34	98	1661	98	31.71	17.80	0.89	16.91	161	1440	269	0	61.6
Maribo MA943	233	342.1	100	10408	95	53.44	101	1629	96	30.34	18.09	0.98	17.11	220	1521	307	0	52.2
Maribo MA944	221	338.7	99	10792	99	52.39	99	1670	98	31.86	17.86	0.93	16.93	187	1475	291	0	55.2
SV 215	217	317.2	93	9756	89	45.88	86	1409	83	30.76	16.84	0.98	15.86	193	1706	265	0	36.3
SV 321	209	320.1	94	10016	92	46.79	88	1460	86	31.35	16.99	0.97	16.01	174	1721	260	0	39.8
SV 322	236	326.4	96	9693	89	48.70	92	1441	85	29.75	17.27	0.94	16.32	235	1605	245	0	39.7
SV 324	205	323.8	95	10873	100	47.92	90	1609	95	33.52	17.20	1.00	16.19	243	1684	269	0	48.0
SX 1815	203	333.1	98	11210	103	50.73	95	1711	101	33.54	17.73	1.07	16.66	238	1749	307	0	56.5
SX 1816	206	335.2	98	10766	99	51.36	97	1650	97	32.20	17.75	0.99	16.76	209	1652	280	0	41.6
SX 1818	216	343.2	101	11172	102	53.78	101	1750	103	32.51	18.13	0.97	17.16	203	1611	283	0	46.8
SX 1829	207	339.8	100	10633	98	52.73	99	1653	97	31.26	17.89	0.92	16.98	200	1619	231	0	44.6
BTS 8572 (Check)	243	336.2	99	10936	100	51.67	97	1683	99	32.42	17.76	0.95	16.81	199	1499	296	0	63.3
BTS 8337 (1stYrBench)	244	348.4	102	11018	101	55.36	104	1750	103	31.63	18.46	1.03	17.42	216	1631	313	0	47.1
Crystal 578RR (1stYrBench)	245	324.3	95	11029	101	48.06	90	1640	97	33.88	17.28	1.06	16.22	284	1719	290	0	55.4
BTS 8815 (1stYrBench)	246	355.6	104	10628	97	57.53	108	1722	101	29.85	18.72	0.94	17.77	192	1646	251	0	43.5
Crystal 803 (1stYrBench)	247	347.1	102	11069	102	54.96	103	1754	103	31.81	18.27	0.92	17.36	173	1520	274	0	59.7
AP CK#55 CRYS247	248	326.7	96	11254	103	48.81	92	1685	99	34.34	17.34	1.00	16.34	265	1654	268	0	52.5
Comm Benchmark Mean		341.2		10903		53.16		1699		31.95	18.05	1.00		197	1639	266		57.9
Comm Trial Mean		337.7		11290		52.13		1742		33.44	17.85	0.96		190	1564	259		59.9
Coeff. of Var. (%)		2.8		5.5		5.4		7.1		4.9	2.5	6.6		18.2	4.5	10.7		15.3
Mean LSD (0.05)		8.5		557		2.55		111		1.46	0.40	0.06		31	63	25		8.0
Mean LSD (0.01)		11.2		733		3.36		146		1.93	0.52	0.08		41	83	33		10.5
Sig Lvl		**		**		**		**		**	**	**		**	**	**		**

2022 Data from Ada MN

Created 10/28/2022

@ Statistics and trial mean are from Commercial trial including benchmark means. Experimental trial data adjusted to commercial status.

%Bnch = percentage of four commercial benchmark (CommBench) varieties used for approval of second year entries.

+ Revenue estimates are based on a $46.80 beet payment at 17.5% sugar & 1.5% loss to molasses and do not consider hauling costs.

Trial # = 228304

Na, K, AmN, Bolter & Emergence not adjusted to commercial status.

++ Number of bolters observed at location.

Table 13.
2022 Performance of Varieties - ACSC RR Official Trials
Grand Forks ND

Description @	Code	Rec/T lbs.	Rec/T %Bnch	Rec/A lbs.	Rec/A %Bnch	Rev/T $ +	Rev/T %Bnch	Rev/A $ +	Rev/A %Bnch	Yield T/A	Sugar% Gross	Sugar% LTM	Sugar% Rec	Na ppm	K ppm	AmN ppm	Bolters ++	Emerg. %
Commercial Trial																		
BTS 8018	120	346.2	101	9711	116	54.67	102	1531	117	28.09	18.36	1.05	17.31	254	1576	303	0	81.5
BTS 8034	123	325.7	95	9140	109	48.52	90	1358	104	28.22	17.55	1.27	16.28	426	1770	356	0	83.3
BTS 8073	102	345.0	101	9444	113	54.31	101	1488	113	27.39	18.36	1.11	17.25	264	1549	356	0	79.4
BTS 8092	116	334.7	98	9697	116	51.21	95	1480	113	29.14	17.77	1.03	16.74	275	1550	291	0	78.7
BTS 8629	118	321.2	94	9478	113	47.15	88	1398	107	29.25	17.20	1.15	16.05	329	1569	350	0	81.8
BTS 8927	104	350.9	102	8875	106	56.10	104	1420	108	25.24	18.57	1.02	17.55	264	1461	308	0	84.4
BTS 8961	117	336.9	98	9294	111	51.87	96	1427	109	27.67	17.93	1.08	16.85	261	1661	303	0	81.3
Crystal 022	125	359.8	105	9156	109	58.77	109	1493	114	25.42	18.99	1.00	17.99	224	1476	302	0	75.3
Crystal 572	108	349.5	102	8802	105	55.66	103	1403	107	25.10	18.64	1.16	17.48	334	1505	379	0	81.0
Crystal 684	122	323.4	94	9683	116	47.83	89	1427	109	30.08	17.41	1.23	16.18	394	1770	341	0	78.1
Crystal 793	111	351.7	102	9850	118	56.32	105	1578	120	28.07	18.58	0.99	17.59	232	1538	279	0	80.5
Crystal 912	107	324.1	94	9639	115	48.05	89	1429	109	29.73	17.41	1.20	16.21	430	1458	383	0	79.7
Crystal 913	103	342.5	100	9661	115	53.57	100	1508	115	28.25	18.22	1.10	17.12	321	1489	336	0	76.3
Hilleshög HIL2317	112	335.7	98	8710	104	51.52	96	1334	102	25.93	17.79	1.01	16.78	271	1569	263	0	84.1
Hilleshög HIL2320	106	341.4	99	9628	115	53.24	99	1497	114	28.34	18.10	1.03	17.07	267	1564	285	0	79.2
Hilleshög HIL2366	119	336.5	98	9040	108	51.76	96	1387	106	26.90	17.90	1.07	16.83	341	1475	313	0	85.9
Hilleshög HIL9708	124	336.7	98	8618	103	51.82	96	1324	101	25.63	18.03	1.20	16.83	445	1447	380	0	86.5
Hilleshög HIL9920	115	334.5	97	8850	106	51.15	95	1350	103	26.55	17.86	1.14	16.72	384	1604	316	0	81.5
Hilleshög HM9528RR	101	333.5	97	9136	109	50.85	95	1393	106	27.45	17.73	1.06	16.67	317	1505	304	0	83.3
Maribo MA717	121	341.5	99	9558	114	53.26	99	1488	113	28.08	18.11	1.03	17.08	273	1522	296	0	80.0
Maribo MA902	110	335.6	98	8402	100	51.48	96	1286	98	25.05	17.94	1.16	16.78	360	1552	356	0	88.0
SV 203	113	345.3	101	8735	104	54.40	101	1378	105	25.32	18.35	1.08	17.27	238	1720	296	0	73.7
SV 265	109	341.3	99	8967	107	53.21	99	1397	107	26.33	18.16	1.09	17.07	284	1568	325	0	82.8
SV 285	105	344.5	100	8689	104	54.15	101	1367	104	25.23	18.32	1.10	17.22	301	1664	300	0	75.8
SX 1898	114	337.6	98	8617	103	52.10	97	1330	101	25.55	17.95	1.07	16.88	285	1729	265	0	75.5
BTS 8572 (CommBench)	126	354.0	103	8490	101	57.02	106	1372	105	23.95	18.87	1.17	17.70	227	1568	406	0	80.0
BTS 8337 (CommBench)	127	344.4	100	7452	89	54.13	101	1166	89	21.68	18.43	1.21	17.22	339	1650	374	0	73.4
Crystal 578RR (CommBench)	128	336.7	98	8818	105	51.83	96	1356	103	26.19	18.08	1.25	16.83	397	1677	375	0	80.7
BTS 8815 (CommBench)	129	337.8	98	8732	104	52.16	97	1352	103	25.76	18.06	1.16	16.90	290	1744	333	0	76.6
Crystal 803 (Check)	130	342.8	100	9664	115	53.64	100	1515	116	28.12	18.14	1.00	17.14	267	1605	252	0	85.4
AP CK#55 CRYS247	131	338.6	99	9137	109	52.38	97	1413	108	26.95	18.00	1.07	16.93	301	1698	269	0	83.6
AP CK#59 BTS8606	132	337.9	98	9214	110	52.18	97	1423	109	27.24	17.98	1.08	16.90	295	1658	290	0	83.1
Experimental Trial (Comm status)																		
BTS 8100	208	340.2	99	8744	104	52.88	98	1358	104	25.76	18.11	1.09	17.02	262	1798	274	0	81.6
BTS 8133	215	324.2	94	9647	115	48.08	89	1449	110	29.45	17.37	1.15	16.21	307	1792	300	0	87.9
BTS 8156	218	346.1	101	9833	117	54.63	102	1554	119	28.26	18.42	1.10	17.32	263	1746	296	0	87.1
BTS 8205	234	341.2	99	8809	105	53.20	99	1372	105	25.24	18.21	1.14	17.07	247	1611	364	0	76.6
BTS 8217	237	339.5	99	9433	113	52.69	98	1493	114	27.26	18.10	1.12	16.98	273	1708	317	0	81.3
BTS 8226	219	351.5	102	8898	106	56.28	105	1444	110	25.19	18.62	1.04	17.58	244	1508	314	0	83.6
BTS 8242	204	361.7	105	8625	103	59.34	110	1414	108	23.93	19.21	1.12	18.09	229	1573	368	0	79.3
BTS 8248	238	341.5	100	9075	108	53.29	99	1419	108	27.07	18.21	1.12	17.09	300	1608	328	0	76.6
BTS 8270	211	365.2	106	9270	111	60.42	112	1546	118	25.73	19.36	1.09	18.27	230	1644	327	0	75.0
BTS 8299	235	345.6	101	8315	99	54.50	101	1309	100	24.05	18.24	0.96	17.28	202	1509	266	0	79.7
Crystal 021	226	335.7	98	9601	115	51.53	96	1483	113	27.88	17.89	1.10	16.79	337	1631	294	0	81.3
Crystal 026	240	349.9	102	9737	116	55.78	104	1561	119	27.47	18.56	1.06	17.50	253	1741	267	0	81.3
Crystal 130	213	354.3	103	9343	112	57.11	106	1516	116	26.28	18.75	1.02	17.73	213	1611	290	0	78.9
Crystal 134	202	356.2	104	9184	110	57.67	107	1479	113	25.74	18.85	1.04	17.81	251	1542	304	0	76.2
Crystal 137	201	344.4	100	9759	117	54.12	101	1533	117	28.11	18.42	1.20	17.22	298	1879	320	0	82.0
Crystal 138	224	348.8	102	9742	116	55.47	103	1560	119	27.69	18.48	1.03	17.45	228	1603	288	0	73.4
Crystal 260	231	362.4	106	9328	111	59.56	111	1541	118	25.81	19.11	0.99	18.12	203	1583	272	0	82.4
Crystal 262	229	340.7	99	9057	108	53.05	99	1410	108	27.05	18.13	1.08	17.05	299	1572	310	0	80.5
Crystal 263	210	354.5	103	9054	108	57.19	106	1462	111	25.93	18.79	1.06	17.73	282	1581	299	0	80.1
Crystal 265	225	350.2	102	8910	106	55.88	104	1420	108	25.38	18.51	1.00	17.51	227	1522	288	0	79.3
Crystal 267	222	331.4	97	9945	119	50.23	93	1515	115	30.07	17.81	1.24	16.57	349	1846	342	0	83.2
Crystal 269	212	357.2	104	9892	118	58.00	108	1599	122	27.69	18.98	1.12	17.86	286	1683	313	0	73.8
Hilleshög HIL2367	242	348.0	101	9140	109	55.23	103	1440	110	26.72	18.54	1.13	17.41	330	1559	338	0	81.6
Hilleshög HIL2368	241	353.2	103	7652	91	56.80	106	1234	94	22.03	18.71	1.05	17.66	260	1618	282	0	58.6
Hilleshög HIL2386	228	348.1	101	9863	118	55.23	103	1559	119	28.42	18.46	1.05	17.41	262	1518	316	0	82.0
Hilleshög HIL2389	239	346.4	101	9116	109	54.72	102	1449	110	25.79	18.41	1.09	17.32	250	1624	321	0	77.0
Hilleshög HIL2440	232	341.9	100	8666	104	53.40	99	1364	104	25.22	18.32	1.23	17.09	346	1613	391	0	76.6
Hilleshög HIL2441	214	346.0	101	8384	100	54.60	102	1327	101	24.31	18.41	1.11	17.30	293	1572	331	0	81.3
Hilleshög HIL2442	220	359.1	105	8535	102	58.56	109	1384	106	23.61	19.03	1.07	17.96	198	1608	335	0	74.6
Hilleshög HIL2443	227	321.6	94	9186	110	47.27	88	1347	103	28.27	17.30	1.21	16.08	410	1619	359	0	76.2
Maribo MA932	230	346.1	101	9296	111	54.63	102	1454	111	26.92	18.41	1.11	17.30	293	1558	335	0	77.3
Maribo MA942	223	351.5	102	7941	95	56.27	105	1267	97	22.53	18.61	1.03	17.58	215	1480	328	0	82.0
Maribo MA943	233	338.5	99	8913	106	52.37	97	1383	105	26.20	18.04	1.10	16.94	310	1603	317	0	71.1
Maribo MA944	221	350.6	102	8838	106	55.99	104	1419	108	25.21	18.63	1.10	17.53	278	1550	341	0	76.2
SV 215	217	343.4	100	8887	106	53.83	100	1383	105	26.45	18.28	1.10	17.18	242	1790	289	0	79.3
SV 321	209	348.1	101	9347	112	55.23	103	1473	112	26.76	18.40	1.00	17.40	222	1607	269	0	69.5
SV 322	236	338.7	99	8525	102	52.44	97	1300	99	25.23	18.03	1.09	16.94	273	1658	304	0	78.9
SV 324	205	332.0	97	8319	99	50.43	94	1269	97	25.58	17.84	1.23	16.61	353	1908	312	0	73.8
SX 1815	203	349.3	102	9020	108	55.61	103	1439	110	25.47	18.52	1.05	17.47	231	1682	283	0	77.3
SX 1816	206	327.8	96	8807	105	49.15	91	1310	100	27.88	17.54	1.14	16.40	251	1725	326	0	73.4
SX 1818	216	336.7	98	9321	111	51.84	96	1427	109	27.43	17.93	1.08	16.85	240	1667	308	0	82.8
SX 1829	207	347.9	101	8627	103	55.19	103	1367	104	24.60	18.42	1.02	17.40	252	1646	263	0	73.1
BTS 8572 (Check)	243	350.0	102	8300	99	55.83	104	1321	101	23.82	18.70	1.19	17.51	256	1712	379	0	76.2
BTS 8337 (1stYrBench)	244	345.5	101	7781	93	54.45	101	1223	93	22.60	18.53	1.26	17.27	334	1765	381	0	76.6
Crystal 578RR (1stYrBench)	245	331.4	97	8686	104	50.23	93	1322	101	26.18	17.75	1.17	16.58	362	1737	312	0	82.4
BTS 8815 (1stYrBench)	246	346.1	101	8725	104	54.64	102	1381	105	24.98	18.46	1.16	17.30	285	1776	325	0	73.8
Crystal 803 (1stYrBench)	247	350.1	102	9558	114	55.86	104	1529	117	27.66	18.53	1.02	17.51	202	1601	291	0	84.8
AP CK#55 CRYS247	248	340.9	99	8904	106	53.10	99	1388	106	26.21	18.17	1.11	17.06	315	1769	276	0	81.3
Comm Benchmark Mean		343.2		8373		53.79		1312		24.40	18.36	1.20		313	1660	372		77.7
Comm Trial Mean		339.6		9090		52.70		1408		26.81	18.09	1.11		309	1590	321		80.6
Coeff. of Var. (%)		2.7		6.9		5.2		8.0		6.8	2.3	8.5		23.6	3.9	15.5		9.3
Mean LSD (0.05)		8.4		565		2.51		101		1.62	0.38	0.09		67	56	46		6.1
Mean LSD (0.01)		11.0		744		3.31		133		2.13	0.49	0.11		88	74	60		8.0
Sig Lvl		**		**		**		**		**	**	**		**	**	**		**

2022 Data from Grand Forks ND

Created 10/28/2022

@ Statistics and trial mean are from Commercial trial including benchmark means. Experimental trial data adjusted to commercial status.

%Bnch = percentage of four commercial benchmark (CommBench) varieties used for approval of second year entries.

+ Revenue estimates are based on a $46.80 beet payment at 17.5% sugar & 1.5% loss to molasses and do not consider hauling costs.

Trial # = 228307

Na, K, AmN, Bolter & Emergence not adjusted to commercial status.

++ Number of bolters observed at location.

Table 14.
2022 Performance of Varieties - ACSC RR Official Trials
Scandia MN

Description @	Code	Rec/T lbs.	Rec/T %Bnch	Rec/A lbs.	Rec/A %Bnch	Rev/T $ +	Rev/T %Bnch	Rev/A $ +	Rev/A %Bnch	Yield T/A	Sugar% Gross	Sugar% LTM	Sugar% Rec	Na ppm	K ppm	AmN ppm	Bolters ++	Emerg. %
Commercial Trial																		
BTS 8018	120	355.7	103	10207	109	57.52	105	1648	112	28.73	18.95	1.16	17.79	167	1489	443	0	82.2
BTS 8034	123	352.7	102	10599	114	56.62	103	1694	115	30.21	18.94	1.31	17.63	251	1642	486	0	80.8
BTS 8073	102	347.8	100	10501	113	55.16	101	1668	114	30.18	18.77	1.38	17.39	216	1560	574	0	74.2
BTS 8092	116	338.3	98	10767	115	52.30	95	1658	113	31.96	18.11	1.20	16.91	216	1488	453	0	79.6
BTS 8629	118	338.3	98	10987	118	52.31	95	1693	115	32.56	18.22	1.30	16.92	229	1504	524	0	79.8
BTS 8927	104	366.7	106	9835	105	60.83	111	1627	111	26.83	19.45	1.11	18.34	179	1421	418	0	78.8
BTS 8961	117	342.3	99	10312	111	53.52	98	1612	110	30.16	18.35	1.23	17.12	188	1566	469	0	79.8
Crystal 022	125	359.4	104	9776	105	58.64	107	1587	108	27.39	19.16	1.18	17.98	202	1457	455	0	77.6
Crystal 572	108	355.8	103	9940	107	57.56	105	1603	109	27.93	18.95	1.16	17.79	119	1414	479	0	81.7
Crystal 684	122	327.8	95	10895	117	49.14	90	1621	110	33.48	17.72	1.33	16.39	279	1634	496	0	79.7
Crystal 793	111	349.7	101	10550	113	55.73	102	1685	115	30.02	18.67	1.18	17.49	207	1448	454	0	80.5
Crystal 912	107	331.7	96	10980	118	50.33	92	1664	113	33.16	17.92	1.33	16.59	289	1530	518	0	78.9
Crystal 913	103	351.1	101	10383	111	56.15	102	1655	113	29.74	18.79	1.24	17.55	224	1470	484	0	78.6
Hilleshög HIL2317	112	350.4	101	9616	103	55.94	102	1531	104	27.49	18.67	1.15	17.52	204	1578	395	0	73.9
Hilleshög HIL2320	106	349.7	101	10029	108	55.72	102	1594	109	28.70	18.61	1.12	17.49	203	1450	411	0	79.3
Hilleshög HIL2366	119	342.3	99	10109	108	53.51	98	1576	107	29.69	18.23	1.12	17.11	210	1468	399	0	77.9
Hilleshög HIL9708	124	345.4	100	9075	97	54.42	99	1424	97	26.33	18.44	1.18	17.26	202	1437	458	0	78.3
Hilleshög HIL9920	115	338.5	98	9640	103	52.37	95	1486	101	28.60	18.07	1.14	16.93	241	1537	385	0	79.9
Hilleshög HM9528RR	101	342.2	99	9961	107	53.48	97	1554	106	29.18	18.26	1.15	17.11	239	1453	415	0	79.0
Maribo MA717	121	342.3	99	10201	109	53.50	97	1586	108	30.07	18.22	1.11	17.11	247	1525	363	0	76.2
Maribo MA902	110	334.5	96	8799	94	51.17	93	1339	91	26.47	17.88	1.16	16.72	252	1448	418	0	82.0
SV 203	113	342.1	99	9714	104	53.45	97	1508	103	28.56	18.26	1.16	17.10	162	1596	414	0	67.0
SV 265	109	340.4	98	9949	107	52.94	96	1542	105	29.33	18.20	1.17	17.03	208	1484	439	0	84.7
SV 285	105	350.0	101	9316	100	55.80	102	1483	101	26.77	18.71	1.21	17.50	212	1642	424	0	75.2
SX 1898	114	334.0	96	9798	105	51.02	93	1496	102	29.40	18.00	1.30	16.70	265	1658	473	0	70.3
BTS 8572 (CommBench)	126	348.0	100	9195	99	55.21	101	1453	99	26.47	18.65	1.25	17.40	190	1544	491	0	79.0
BTS 8337 (CommBench)	127	359.5	104	8852	95	58.67	107	1443	98	24.68	19.19	1.22	17.97	187	1546	465	0	83.0
Crystal 578RR (CommBench)	128	336.0	97	9630	103	51.62	94	1475	100	28.72	18.10	1.30	16.80	250	1608	490	0	80.7
BTS 8815 (CommBench)	129	343.9	99	9625	103	53.99	98	1505	102	28.09	18.49	1.29	17.20	223	1680	472	0	70.6
Crystal 803 (Check)	130	345.4	100	10217	110	54.44	99	1614	110	29.53	18.49	1.21	17.28	195	1480	477	0	84.2
AP CK#55 CRYS247	131	340.0	98	9512	102	52.81	96	1467	100	28.15	18.21	1.21	17.00	244	1582	427	0	79.0
AP CK#59 BTS8606	132	341.5	98	9843	106	53.26	97	1530	104	28.96	18.35	1.28	17.07	224	1616	477	0	77.5
Experimental Trial (Comm status)																		
BTS 8100	208	360.3	104	9738	104	59.00	108	1592	108	27.20	19.10	1.12	17.98	178	1517	474	0	77.1
BTS 8133	215	337.8	97	10453	112	52.11	95	1615	110	31.04	18.08	1.20	16.88	248	1638	488	0	86.6
BTS 8156	218	366.5	106	9791	105	60.89	111	1631	111	26.36	19.44	1.13	18.31	238	1596	433	0	83.9
BTS 8205	234	346.9	100	10212	110	54.86	100	1637	111	29.24	18.56	1.23	17.33	215	1399	585	0	82.3
BTS 8217	237	359.2	104	10465	112	58.67	107	1703	116	29.19	19.02	1.08	17.94	197	1565	420	0	79.6
BTS 8226	219	372.7	107	10561	113	62.81	114	1768	120	28.30	19.55	0.94	18.61	153	1318	402	0	81.7
BTS 8242	204	370.3	107	9860	106	62.10	113	1651	112	26.60	19.50	1.02	18.48	124	1446	432	0	79.4
BTS 8248	238	359.3	104	9958	107	58.69	107	1619	110	27.31	18.99	1.04	17.95	197	1518	404	0	71.8
BTS 8270	211	356.9	103	10493	113	57.97	106	1701	116	29.52	18.96	1.13	17.83	212	1460	489	0	76.9
BTS 8299	235	359.5	104	9404	101	58.76	107	1519	103	25.91	19.01	1.04	17.97	187	1462	425	0	81.4
Crystal 021	226	349.7	101	10516	113	55.77	102	1678	114	29.82	18.58	1.10	17.48	214	1562	434	0	77.7
Crystal 026	240	353.2	102	10367	111	56.83	104	1674	114	28.84	18.83	1.16	17.67	261	1598	459	0	81.2
Crystal 130	213	357.2	103	10309	111	58.07	106	1688	115	28.77	18.99	1.15	17.84	228	1530	470	0	80.8
Crystal 134	202	367.9	106	10021	107	61.35	112	1668	114	27.18	19.35	0.98	18.36	161	1445	388	0	74.2
Crystal 137	201	347.7	100	9835	105	55.14	100	1563	106	28.50	18.60	1.24	17.36	268	1766	470	0	83.7
Crystal 138	224	364.4	105	10780	116	60.27	110	1769	120	29.59	19.24	1.05	18.20	173	1437	448	0	77.3
Crystal 260	231	363.9	105	10765	115	60.11	110	1786	122	29.43	19.36	1.18	18.17	221	1534	504	0	82.7
Crystal 262	229	356.0	103	10900	117	57.68	105	1766	120	30.51	18.89	1.10	17.79	234	1437	464	0	80.8
Crystal 263	210	376.7	109	10451	112	64.07	117	1764	120	27.54	19.79	0.98	18.81	166	1498	378	0	78.5
Crystal 265	225	352.2	102	9774	105	56.50	103	1581	108	27.48	18.68	1.09	17.59	182	1454	474	0	78.9
Crystal 267	222	356.6	103	10166	109	57.87	105	1652	112	28.47	18.96	1.15	17.81	233	1640	448	0	77.0
Crystal 269	212	361.3	104	10169	109	59.32	108	1663	113	28.59	19.21	1.17	18.04	219	1498	515	0	76.2
Hilleshög HIL2367	242	343.2	99	9426	101	53.74	98	1474	100	27.73	18.26	1.12	17.14	279	1399	468	0	83.9
Hilleshög HIL2368	241	350.5	101	8107	87	56.02	102	1288	88	23.11	18.62	1.10	17.52	231	1509	449	0	67.4
Hilleshög HIL2386	228	353.0	102	10521	113	56.76	103	1696	115	29.62	18.72	1.08	17.64	223	1469	444	0	78.9
Hilleshög HIL2389	239	352.6	102	9980	107	56.63	103	1593	108	28.39	18.71	1.10	17.61	251	1437	457	0	80.4
Hilleshög HIL2440	232	347.5	100	7975	86	55.05	100	1262	86	23.07	18.70	1.33	17.38	292	1492	611	0	73.3
Hilleshög HIL2441	214	345.7	100	9226	99	54.54	99	1448	99	26.98	18.40	1.14	17.26	221	1439	495	0	80.9
Hilleshög HIL2442	220	355.5	102	8892	95	57.52	105	1422	97	25.29	18.99	1.22	17.77	228	1521	549	0	77.7
Hilleshög HIL2443	227	331.4	96	10171	109	50.11	91	1549	105	30.44	17.70	1.14	16.56	272	1534	452	0	75.3
Maribo MA932	230	342.5	99	9738	104	53.54	98	1526	104	28.39	18.26	1.15	17.11	248	1528	465	0	79.4
Maribo MA942	223	354.9	102	9100	98	57.34	105	1469	100	25.43	18.79	1.06	17.72	179	1482	436	0	78.7
Maribo MA943	233	339.5	98	9065	97	52.59	96	1405	96	26.88	18.16	1.20	16.96	261	1543	511	0	70.0
Maribo MA944	221	350.3	101	8830	95	55.93	102	1397	95	25.31	18.64	1.14	17.51	255	1453	479	0	78.2
SV 215	217	344.0	99	10935	117	53.99	98	1716	117	31.57	18.24	1.05	17.18	183	1657	388	0	68.0
SV 321	209	344.6	99	10500	113	54.17	99	1652	112	30.23	18.30	1.08	17.22	195	1592	418	0	77.3
SV 322	236	343.8	99	9399	101	53.94	98	1477	101	27.56	18.31	1.15	17.16	240	1566	455	0	75.9
SV 324	205	335.6	97	9759	105	51.39	94	1500	102	29.19	18.13	1.36	16.78	299	1745	562	0	77.8
SX 1815	203	356.3	103	9893	106	57.76	105	1594	109	27.60	18.92	1.11	17.81	227	1545	452	0	83.1
SX 1816	206	342.3	99	9975	107	53.47	97	1550	106	29.21	18.27	1.16	17.11	196	1606	480	0	73.1
SX 1818	216	335.8	97	9844	106	51.47	94	1510	103	29.51	17.91	1.15	16.76	245	1552	451	0	78.0
SX 1829	207	355.9	103	9491	102	57.64	105	1537	105	26.14	18.78	1.00	17.78	209	1614	341	0	76.3
BTS 8572 (Check)	243	347.9	100	9005	97	55.18	101	1426	97	26.00	18.63	1.25	17.39	220	1597	535	0	76.3
BTS 8337 (1stYrBench)	244	359.7	104	8186	88	58.83	107	1315	89	23.08	19.21	1.23	17.98	253	1604	523	0	78.9
Crystal 578RR (1stYrBench)	245	336.9	97	10452	112	51.81	94	1614	110	30.72	18.21	1.34	16.87	324	1644	585	0	82.4
BTS 8815 (1stYrBench)	246	343.0	99	9659	104	53.66	98	1521	104	28.16	18.38	1.25	17.13	260	1614	527	0	80.3
Crystal 803 (1stYrBench)	247	351.0	101	10140	109	56.13	102	1635	111	28.40	18.61	1.07	17.54	169	1455	457	0	80.4
AP CK#55 CRYS247	248	330.8	95	9666	104	49.96	91	1456	99	28.82	17.70	1.15	16.55	311	1570	440	0	81.4
Comm Benchmark Mean		346.9		9326		54.87		1469		26.99	18.61	1.27		212	1595	480		78.3
Comm Trial Mean		345.1		9963		54.35		1563		28.99	18.47	1.21		216	1530	455		78.4
Coeff. of Var. (%)		2.5		6.8		4.8		7.8		6.5	2.1	8.2		22.6	4.7	12.9		10.1
Mean LSD (0.05)		7.9		591		2.36		108		1.66	0.36	0.09		44	64	53		6.5
Mean LSD (0.01)		10.4		778		3.11		142		2.18	0.47	0.12		58	84	70		8.6
Sig Lvl		**		**		**		**		**	**	**		**	**	**		**

2022 Data from Scandia MN

Created 10/28/2022

@ Statistics and trial mean are from Commercial trial including benchmark means. Experimental trial data adjusted to commercial status.

%Bnch = percentage of four commercial benchmark (CommBench) varieties used for approval of second year entries.

+ Revenue estimates are based on a $46.80 beet payment at 17.5% sugar & 1.5% loss to molasses and do not consider hauling costs.

Trial # = 228308

Na, K, AmN, Bolter & Emergence not adjusted to commercial status.

++ Number of bolters observed at location.

Table 15.
2022 Performance of Varieties - ACSC RR Official Trials
Alvarado MN

Description @	Code	Rec/T lbs.	Rec/T %Bnch	Rec/A lbs.	Rec/A %Bnch	Rev/T $ +	Rev/T %Bnch	Rev/A $ +	Rev/A %Bnch	Yield T/A	Sugar% Gross	Sugar% LTM	Sugar% Rec	Na ppm	K ppm	AmN ppm	Bolters ++	Emerg. %
Commercial Trial																		
BTS 8018	120	314.1	101	9018	106	45.03	102	1290	106	28.82	16.79	1.09	15.70	279	1451	356	0	84.2
BTS 8034	123	298.4	96	8737	102	40.33	91	1181	97	29.24	16.16	1.24	14.92	392	1584	396	0	84.7
BTS 8073	102	315.3	101	9267	109	45.39	103	1328	109	29.29	16.88	1.12	15.76	248	1357	414	0	79.6
BTS 8092	116	306.7	98	9158	107	42.80	97	1274	105	29.95	16.51	1.17	15.34	382	1378	404	0	75.2
BTS 8629	118	305.4	98	9040	106	42.43	96	1253	103	29.58	16.42	1.15	15.27	318	1405	398	0	82.9
BTS 8927	104	322.0	103	8874	104	47.41	107	1306	107	27.59	17.06	0.95	16.11	229	1286	316	0	83.4
BTS 8961	117	294.5	95	8483	99	39.14	88	1127	93	28.92	15.92	1.20	14.72	369	1568	376	0	83.5
Crystal 022	125	322.3	103	8851	104	47.49	107	1309	108	27.27	17.21	1.11	16.10	176	1375	425	0	78.3
Crystal 572	108	325.5	104	8930	105	48.47	109	1326	109	27.42	17.43	1.14	16.29	266	1422	412	1	86.6
Crystal 684	122	295.1	95	8807	103	39.33	89	1178	97	29.74	15.98	1.23	14.75	366	1595	391	0	84.8
Crystal 793	111	325.8	105	9274	109	48.54	110	1378	113	28.47	17.39	1.10	16.29	218	1412	396	0	84.7
Crystal 912	107	299.2	96	9361	110	40.56	92	1265	104	31.34	16.11	1.15	14.96	380	1384	384	0	85.4
Crystal 913	103	318.0	102	9081	106	46.19	104	1320	109	28.59	17.07	1.18	15.89	324	1462	401	0	84.4
Hilleshög HIL2317	112	315.7	101	8679	102	45.50	103	1251	103	27.51	16.84	1.06	15.78	279	1514	318	0	86.4
Hilleshög HIL2320	106	305.8	98	8892	104	42.53	96	1235	102	29.09	16.36	1.07	15.29	295	1333	370	0	82.9
Hilleshög HIL2366	119	309.0	99	8818	103	43.51	98	1246	102	28.51	16.55	1.11	15.44	360	1354	365	0	86.5
Hilleshög HIL9708	124	310.2	100	8611	101	43.86	99	1205	99	27.92	16.65	1.13	15.52	352	1420	370	0	87.1
Hilleshög HIL9920	115	323.1	104	9140	107	47.73	108	1352	111	28.30	17.24	1.08	16.16	234	1490	358	0	87.8
Hilleshög HM9528RR	101	311.3	100	9073	106	44.20	100	1295	107	29.20	16.65	1.09	15.56	271	1390	372	0	84.8
Maribo MA717	121	301.1	97	8845	104	41.13	93	1204	99	29.18	16.27	1.22	15.05	303	1452	448	0	83.1
Maribo MA902	110	311.2	100	8799	103	44.15	100	1246	102	28.22	16.69	1.13	15.56	357	1428	360	0	90.1
SV 203	113	310.1	100	8070	95	43.85	99	1137	94	26.09	16.78	1.26	15.52	333	1646	420	0	59.7
SV 265	109	313.4	101	8506	100	44.82	101	1218	100	27.20	16.75	1.08	15.67	234	1414	373	1	78.0
SV 285	105	312.7	100	8373	98	44.62	101	1193	98	26.71	16.85	1.22	15.63	253	1695	402	0	62.1
SX 1898	114	311.3	100	8477	99	44.19	100	1200	99	27.44	16.76	1.19	15.57	357	1593	370	0	67.9
BTS 8572 (CommBench)	126	308.0	99	8633	101	43.21	98	1215	100	28.10	16.62	1.23	15.39	344	1478	428	0	82.7
BTS 8337 (CommBench)	127	324.2	104	8660	101	48.06	109	1288	106	26.68	17.34	1.14	16.20	252	1568	371	0	87.9
Crystal 578RR (CommBench)	128	305.6	98	8595	101	42.49	96	1202	99	28.30	16.43	1.16	15.27	327	1498	376	0	87.9
BTS 8815 (CommBench)	129	308.4	99	8249	97	43.32	98	1158	95	26.84	16.58	1.16	15.42	268	1644	365	0	72.2
Crystal 803 (Check)	130	316.4	102	8500	100	45.74	103	1230	101	26.70	16.88	1.07	15.81	239	1417	362	0	90.5
AP CK#55 CRYS247	131	306.4	98	8723	102	42.73	97	1224	101	28.26	16.45	1.14	15.31	261	1555	365	0	85.0
AP CK#59 BTS8606	132	299.6	96	8681	102	40.68	92	1181	97	28.98	16.18	1.21	14.97	356	1590	379	0	85.7
Experimental Trial (Comm status)																		
BTS 8100	208	310.7	100	9054	106	43.99	99	1287	106	29.18	16.72	1.20	15.53	274	1506	389	0	87.6
BTS 8133	215	303.1	97	9019	106	41.69	94	1247	103	29.76	16.32	1.20	15.12	367	1582	329	0	91.0
BTS 8156	218	321.6	103	8837	104	47.35	107	1306	107	27.54	17.22	1.14	16.08	205	1647	349	0	87.4
BTS 8205	234	314.8	101	9357	110	45.27	102	1355	111	29.67	16.83	1.10	15.72	188	1459	359	0	88.5
BTS 8217	237	312.6	100	8900	104	44.58	101	1278	105	28.45	16.78	1.16	15.61	280	1632	335	0	83.5
BTS 8226	219	333.9	107	9430	110	51.10	115	1451	119	28.27	17.71	1.02	16.69	204	1327	323	0	83.1
BTS 8242	204	326.1	105	9185	108	48.69	110	1378	113	28.21	17.43	1.11	16.31	220	1432	376	0	84.5
BTS 8248	238	321.3	103	8832	103	47.25	107	1306	107	27.47	17.12	1.09	16.03	201	1420	362	0	73.2
BTS 8270	211	325.5	104	8982	105	48.52	110	1346	111	27.62	17.40	1.12	16.27	191	1446	386	0	80.4
BTS 8299	235	314.1	101	8498	100	45.04	102	1225	101	27.07	16.73	1.04	15.69	185	1362	352	0	84.5
Crystal 021	226	303.0	97	9205	108	41.67	94	1273	105	30.39	16.32	1.19	15.13	301	1494	375	0	85.2
Crystal 026	240	308.5	99	8737	102	43.35	98	1232	101	28.34	16.60	1.20	15.41	331	1563	351	0	85.1
Crystal 130	213	322.2	103	9167	107	47.52	107	1359	112	28.47	17.16	1.06	16.10	271	1380	329	0	84.9
Crystal 134	202	327.9	105	8524	100	49.27	111	1288	106	26.00	17.49	1.08	16.41	237	1400	342	0	77.5
Crystal 137	201	313.4	101	8335	98	44.83	101	1196	98	26.63	16.81	1.18	15.63	256	1596	350	0	84.6
Crystal 138	224	320.9	103	8892	104	47.13	106	1311	108	27.74	17.12	1.07	16.05	202	1389	354	0	88.5
Crystal 260	231	326.3	105	9434	111	48.77	110	1417	117	28.93	17.36	1.06	16.30	185	1413	343	0	85.5
Crystal 262	229	315.8	101	8789	103	45.57	103	1276	105	27.85	16.86	1.06	15.80	264	1268	346	0	83.6
Crystal 263	210	323.8	104	8876	104	47.98	108	1318	108	27.52	17.29	1.14	16.15	261	1441	373	0	83.3
Crystal 265	225	315.9	101	8549	100	45.61	103	1237	102	27.13	16.83	1.06	15.77	270	1350	329	0	86.1
Crystal 267	222	308.3	99	9350	110	43.29	98	1319	108	30.37	16.64	1.22	15.43	270	1629	380	0	85.3
Crystal 269	212	318.6	102	9190	108	46.40	105	1343	110	28.92	17.23	1.31	15.92	298	1492	469	0	78.5
Hilleshög HIL2367	242	314.5	101	8112	95	45.17	102	1171	96	25.81	16.80	1.10	15.69	303	1355	345	0	82.2
Hilleshög HIL2368	241	318.0	102	7142	84	46.21	104	1043	86	22.48	17.02	1.14	15.88	244	1345	407	0	63.5
Hilleshög HIL2386	228	319.2	102	8973	105	46.58	105	1318	108	28.11	17.07	1.13	15.94	281	1375	378	0	86.0
Hilleshög HIL2389	239	319.2	102	8536	100	46.59	105	1253	103	26.77	17.04	1.09	15.95	184	1434	355	0	89.4
Hilleshög HIL2440	232	311.4	100	8303	97	44.22	100	1188	98	26.63	16.79	1.23	15.56	274	1443	430	0	75.1
Hilleshög HIL2441	214	310.5	100	8227	96	43.92	99	1170	96	26.54	16.60	1.08	15.52	219	1353	361	1	83.3
Hilleshög HIL2442	220	315.2	101	8498	100	45.39	103	1229	101	26.99	16.90	1.14	15.75	219	1358	414	0	81.5
Hilleshög HIL2443	227	307.1	99	9449	111	42.92	97	1327	109	30.79	16.39	1.04	15.35	229	1436	313	0	82.9
Maribo MA932	230	317.5	102	9126	107	46.07	104	1332	110	28.75	16.93	1.07	15.86	210	1322	372	0	87.0
Maribo MA942	223	322.5	104	8304	97	47.62	108	1234	102	25.72	17.19	1.08	16.11	187	1389	368	0	86.3
Maribo MA943	233	318.3	102	8566	100	46.32	105	1253	103	26.90	16.97	1.09	15.88	238	1318	375	0	80.5
Maribo MA944	221	315.7	101	8380	98	45.55	103	1215	100	26.56	16.90	1.12	15.77	294	1372	358	0	83.9
SV 215	217	303.6	97	7604	89	41.83	94	1052	86	25.09	16.26	1.07	15.19	225	1503	314	0	56.3
SV 321	209	305.1	98	8661	101	42.30	96	1207	99	28.41	16.37	1.12	15.25	205	1531	363	0	71.5
SV 322	236	311.2	100	7701	90	44.14	100	1096	90	24.80	16.62	1.09	15.53	229	1553	323	0	67.3
SV 324	205	297.7	96	7833	92	40.03	90	1059	87	26.32	16.10	1.25	14.86	264	1646	388	0	66.7
SX 1815	203	321.5	103	9047	106	47.32	107	1340	110	28.13	17.13	1.06	16.07	172	1535	329	0	81.2
SX 1816	206	307.6	99	8199	96	43.05	97	1153	95	26.68	16.58	1.20	15.39	300	1521	381	0	59.5
SX 1818	216	323.1	104	8948	105	47.81	108	1332	110	27.69	17.31	1.16	16.15	232	1534	376	0	75.5
SX 1829	207	307.4	99	7363	86	43.00	97	1036	85	23.95	16.48	1.11	15.37	241	1491	346	0	61.4
BTS 8572 (Check)	243	321.9	103	8846	104	47.43	107	1309	108	27.50	17.21	1.14	16.07	206	1485	379	0	85.0
BTS 8337 (1stYrBench)	244	320.2	103	8060	94	46.92	106	1187	98	25.21	17.20	1.19	16.02	264	1488	393	0	81.3
Crystal 578RR (1stYrBench)	245	291.9	94	8460	99	38.26	86	1115	92	29.02	15.79	1.20	14.59	326	1563	361	0	89.2
BTS 8815 (1stYrBench)	246	312.2	100	8770	103	44.47	100	1252	103	28.19	16.77	1.16	15.60	272	1573	354	0	72.5
Crystal 803 (1stYrBench)	247	314.2	101	8384	98	45.09	102	1208	99	26.72	16.86	1.16	15.69	238	1480	382	0	84.2
AP CK#55 CRYS247	248	316.9	102	9035	106	45.88	104	1314	108	28.55	16.92	1.11	15.81	218	1540	346	0	85.6
Comm Benchmark Mean		311.6		8534		44.27		1216		27.48	16.74	1.17		298	1547	385		82.7
Comm Trial Mean		310.8		8788		44.04		1244		28.30	16.68	1.14		301	1474	383		82.1
Coeff. of Var. (%)		2.5		5.8		5.3		7.8		4.9	2.1	7.6		31.8	4.7	11.7		8.6
Mean LSD (0.05)		7.0		435		2.10		84		1.21	0.32	0.08		84	62	41		6.0
Mean LSD (0.01)		9.2		573		2.77		110		1.60	0.42	0.10		110	82	53		7.9
Sig Lvl		**		**		**		**		**	**	**		**	**	**		**

2022 Data from Alvarado MN

Created 10/28/2022

@ Statistics and trial mean are from Commercial trial including benchmark means. Experimental trial data adjusted to commercial status.

%Bnch = percentage of four commercial benchmark (CommBench) varieties used for approval of second year entries.

+ Revenue estimates are based on a $46.80 beet payment at 17.5% sugar & 1.5% loss to molasses and do not consider hauling costs.

Trial # = 228310

Na, K, AmN, Bolter & Emergence not adjusted to commercial status.

++ Number of bolters observed at location.

Table 16.
2022 Performance of Varieties - ACSC RR Official Trials
St. Thomas ND

Description @	Code	Rec/T lbs.	Rec/T %Bnch	Rec/A lbs.	Rec/A %Bnch	Rev/T $ +	Rev/T %Bnch	Rev/A $ +	Rev/A %Bnch	Yield T/A	Sugar% Gross	Sugar% LTM	Sugar% Rec	Na ppm	K ppm	AmN ppm	Bolters ++	Emerg. %
Commercial Trial																		
BTS 8018	120	319.0	107	9433	109	46.50	115	1374	117	29.70	16.78	0.83	15.95	145	1297	245	0	80.2
BTS 8034	123	285.6	96	7571	87	36.46	90	966	83	26.45	15.27	0.99	14.28	284	1455	280	0	76.8
BTS 8073	102	307.0	103	8840	102	42.90	106	1237	106	28.75	16.25	0.89	15.36	187	1308	278	0	77.4
BTS 8092	116	302.8	102	8961	103	41.63	103	1229	105	29.68	15.96	0.82	15.14	187	1266	228	0	78.4
BTS 8629	118	287.2	96	8883	102	36.95	92	1140	97	30.95	15.28	0.92	14.36	269	1321	262	0	85.4
BTS 8927	104	312.3	105	8859	102	44.50	110	1266	108	28.28	16.42	0.80	15.62	194	1222	227	0	80.2
BTS 8961	117	289.1	97	8206	94	37.54	93	1059	90	28.46	15.41	0.95	14.46	254	1460	258	0	80.0
Crystal 022	125	318.4	107	8832	102	46.33	115	1283	110	27.79	16.73	0.81	15.92	151	1313	227	0	76.6
Crystal 572	108	315.5	106	9242	106	45.44	113	1329	114	29.30	16.62	0.85	15.77	171	1272	257	0	78.7
Crystal 684	122	296.4	99	9479	109	39.72	99	1268	108	32.05	15.75	0.93	14.82	244	1438	253	0	76.6
Crystal 793	111	306.1	103	9156	105	42.62	106	1274	109	29.84	16.16	0.85	15.31	183	1311	244	0	78.9
Crystal 912	107	297.4	100	9268	107	40.03	99	1248	107	31.13	15.71	0.84	14.87	228	1250	233	0	78.4
Crystal 913	103	308.0	103	9246	106	43.20	107	1295	111	30.09	16.23	0.84	15.39	200	1274	237	0	76.0
Hilleshög HIL2317	112	302.2	101	7985	92	41.47	103	1094	93	26.43	15.90	0.79	15.11	237	1222	198	0	75.3
Hilleshög HIL2320	106	303.4	102	8747	101	41.81	104	1202	103	28.93	16.01	0.84	15.17	232	1282	224	0	79.2
Hilleshög HIL2366	119	301.1	101	8421	97	41.13	102	1151	98	28.01	15.87	0.81	15.06	232	1185	231	0	81.0
Hilleshög HIL9708	124	302.7	101	8490	98	41.61	103	1165	100	28.06	15.91	0.78	15.13	204	1187	212	0	82.3
Hilleshög HIL9920	115	306.1	103	8615	99	42.64	106	1197	102	28.18	16.18	0.87	15.31	245	1309	237	0	75.0
Hilleshög HM9528RR	101	298.0	100	8582	99	40.19	100	1158	99	28.72	15.74	0.84	14.90	209	1264	241	0	78.1
Maribo MA717	121	312.4	105	8871	102	44.52	110	1263	108	28.38	16.47	0.85	15.62	202	1329	235	0	78.4
Maribo MA902	110	309.1	104	8642	99	43.53	108	1218	104	27.92	16.26	0.80	15.46	220	1228	213	0	81.3
SV 203	113	302.5	101	8041	93	41.55	103	1103	94	26.68	16.07	0.95	15.12	227	1346	295	0	69.5
SV 265	109	296.9	100	8611	99	39.86	99	1157	99	29.00	15.68	0.84	14.84	207	1254	239	0	81.5
SV 285	105	300.8	101	8110	93	41.04	102	1104	94	26.94	15.99	0.95	15.04	215	1402	284	0	74.0
SX 1898	114	294.5	99	7960	92	39.15	97	1055	90	27.16	15.72	1.00	14.72	272	1406	302	0	74.0
BTS 8572 (CommBench)	126	312.9	105	9277	107	44.68	111	1322	113	29.72	16.53	0.89	15.64	193	1346	261	0	73.7
BTS 8337 (CommBench)	127	309.6	104	8577	99	43.68	108	1207	103	27.76	16.38	0.90	15.48	243	1371	243	0	82.8
Crystal 578RR (CommBench)	128	289.9	97	9023	104	37.77	94	1168	100	31.30	15.37	0.88	14.49	269	1329	229	0	79.7
BTS 8815 (CommBench)	129	280.9	94	7887	91	35.08	87	984	84	28.05	15.03	0.98	14.05	309	1447	261	0	77.6
Crystal 803 (Check)	130	308.9	104	9019	104	43.48	108	1267	108	29.29	16.31	0.87	15.44	175	1338	254	0	80.5
AP CK#55 CRYS247	131	300.3	101	9207	106	40.89	101	1245	106	30.91	15.93	0.92	15.01	274	1413	236	0	74.5
AP CK#59 BTS8606	132	296.1	99	9031	104	39.62	98	1206	103	30.60	15.72	0.92	14.80	256	1392	247	0	82.0
Experimental Trial (Comm status)																		
BTS 8100	208	296.4	99	8357	96	39.75	99	1113	95	28.25	15.76	0.95	14.81	179	1497	247	0	82.3
BTS 8133	215	270.4	91	8158	94	32.37	80	975	83	30.22	14.51	1.00	13.51	239	1557	255	0	86.6
BTS 8156	218	281.3	94	7483	86	35.46	88	940	80	26.77	15.12	1.09	14.03	273	1581	304	0	89.4
BTS 8205	234	307.1	103	9060	104	42.79	106	1259	108	29.58	16.25	0.89	15.35	147	1403	253	0	82.7
BTS 8217	237	283.4	95	7046	81	36.05	89	894	76	24.86	15.17	1.01	14.16	240	1532	263	0	74.8
BTS 8226	219	319.5	107	9340	107	46.31	115	1350	115	29.28	16.77	0.79	15.97	149	1234	211	0	83.3
BTS 8242	204	306.9	103	8855	102	42.74	106	1228	105	29.04	16.20	0.85	15.35	151	1396	222	0	81.1
BTS 8248	238	301.6	101	8710	100	41.24	102	1189	102	28.85	15.92	0.84	15.08	165	1299	227	0	73.8
BTS 8270	211	301.2	101	9299	107	41.13	102	1263	108	30.91	15.98	0.90	15.08	178	1445	233	0	83.2
BTS 8299	235	298.9	100	9015	104	40.49	100	1220	104	30.15	15.76	0.81	14.95	145	1297	218	0	85.2
Crystal 021	226	294.7	99	9083	105	39.29	97	1204	103	30.88	15.64	0.88	14.75	196	1456	209	0	76.6
Crystal 026	240	283.0	95	8441	97	35.95	89	1063	91	30.11	15.06	0.92	14.15	231	1439	228	0	88.4
Crystal 130	213	308.9	104	8985	103	43.31	107	1253	107	29.28	16.31	0.87	15.43	152	1389	231	0	75.3
Crystal 134	202	313.5	105	8517	98	44.63	111	1203	103	27.35	16.48	0.80	15.68	159	1256	212	0	76.8
Crystal 137	201	286.3	96	7479	86	36.87	91	952	81	26.45	15.34	1.04	14.30	241	1632	263	0	81.6
Crystal 138	224	303.2	102	8799	101	41.70	103	1201	103	29.11	16.03	0.86	15.17	152	1331	238	0	81.4
Crystal 260	231	303.7	102	9213	106	41.83	104	1266	108	30.38	16.05	0.87	15.17	160	1322	249	0	82.7
Crystal 262	229	297.7	100	9576	110	40.13	100	1285	110	32.26	15.69	0.80	14.89	175	1280	198	0	84.0
Crystal 263	210	321.3	108	9293	107	46.84	116	1347	115	28.94	16.95	0.87	16.07	144	1442	220	0	81.9
Crystal 265	225	308.9	104	8406	97	43.29	107	1174	100	27.30	16.27	0.83	15.44	149	1344	215	0	78.9
Crystal 267	222	273.4	92	7093	82	33.20	82	858	73	25.99	14.68	1.04	13.64	257	1495	291	0	79.6
Crystal 269	212	302.2	101	9045	104	41.40	103	1234	105	30.21	15.99	0.89	15.10	173	1448	228	0	73.7
Hilleshög HIL2367	242	309.3	104	9443	109	43.44	108	1320	113	30.66	16.30	0.82	15.47	178	1314	206	0	81.2
Hilleshög HIL2368	241	307.0	103	6675	77	42.76	106	929	79	21.89	16.22	0.88	15.34	175	1335	245	0	60.8
Hilleshög HIL2386	228	297.0	100	8952	103	39.92	99	1198	102	30.40	15.67	0.83	14.84	198	1237	230	0	81.3
Hilleshög HIL2389	239	302.3	101	8752	101	41.44	103	1200	103	28.92	15.94	0.83	15.11	167	1329	215	0	82.9
Hilleshög HIL2440	232	313.8	105	8781	101	44.72	111	1244	106	28.01	16.63	0.94	15.70	164	1431	265	0	74.7
Hilleshög HIL2441	214	310.1	104	8581	99	43.66	108	1198	102	27.91	16.38	0.87	15.51	158	1433	224	0	84.9
Hilleshög HIL2442	220	314.0	105	8208	94	44.78	111	1163	99	26.22	16.60	0.89	15.71	155	1391	250	0	73.6
Hilleshög HIL2443	227	297.3	100	9645	111	40.02	99	1296	111	32.40	15.68	0.82	14.86	179	1311	206	0	78.6
Maribo MA932	230	311.4	104	9060	104	44.02	109	1277	109	29.23	16.42	0.86	15.56	187	1292	236	0	83.3
Maribo MA942	223	299.3	100	8530	98	40.59	101	1153	98	28.55	15.83	0.86	14.96	180	1264	248	0	80.6
Maribo MA943	233	302.9	102	8563	99	41.60	103	1164	99	28.43	16.01	0.85	15.16	169	1332	228	0	77.3
Maribo MA944	221	309.0	104	8752	101	43.32	107	1221	104	28.38	16.27	0.82	15.45	177	1216	229	0	78.3
SV 215	217	286.8	96	8035	92	37.03	92	1029	88	28.23	15.26	0.94	14.33	177	1586	224	0	68.1
SV 321	209	292.5	98	8444	97	38.62	96	1113	95	28.97	15.45	0.84	14.61	137	1366	223	0	71.4
SV 322	236	288.4	97	6878	79	37.48	93	891	76	23.90	15.34	0.93	14.41	182	1490	238	0	72.2
SV 324	205	284.7	95	7528	87	36.44	90	961	82	26.49	15.18	0.95	14.23	185	1574	231	0	75.3
SX 1815	203	299.0	100	9244	106	40.50	100	1251	107	31.02	15.84	0.88	14.95	164	1418	235	0	84.8
SX 1816	206	288.9	97	8409	97	37.64	93	1086	93	29.29	15.36	0.92	14.44	189	1420	244	0	79.0
SX 1818	216	289.7	97	7930	91	37.85	94	1036	89	27.47	15.34	0.86	14.48	170	1359	232	0	79.4
SX 1829	207	279.7	94	5932	68	34.99	87	730	62	21.49	14.97	1.00	13.97	223	1475	277	0	74.8
BTS 8572 (Check)	243	302.5	101	8912	103	41.48	103	1221	104	29.59	16.03	0.92	15.11	173	1379	261	0	81.2
BTS 8337 (1stYrBench)	244	309.0	104	9155	105	43.34	108	1282	110	29.61	16.36	0.92	15.45	170	1473	236	0	74.7
Crystal 578RR (1stYrBench)	245	285.8	96	8751	101	36.73	91	1124	96	30.66	15.16	0.86	14.29	213	1381	208	0	85.6
BTS 8815 (1stYrBench)	246	296.1	99	7946	91	39.65	98	1054	90	26.97	15.76	0.96	14.80	216	1571	228	0	72.9
Crystal 803 (1stYrBench)	247	309.3	104	9167	105	43.42	108	1283	110	29.67	16.33	0.86	15.46	167	1360	229	0	81.1
AP CK#55 CRYS247	248	284.3	95	9172	106	36.32	90	1172	100	32.19	15.10	0.89	14.20	250	1440	205	0	84.0
Comm Benchmark Mean		298.3		8691		40.30		1170		29.21	15.83	0.91		254	1373	249		78.5
Comm Trial Mean		302.3		8721		41.49		1195		28.89	15.99	0.87		222	1320	246		78.2
Coeff. of Var. (%)		2.5		6.3		5.5		8.1		5.6	2.3	5.5		16.3	4.8	10.8		10.9
Mean LSD (0.05)		6.9		487		2.08		87		1.43	0.33	0.04		33	57	24		6.9
Mean LSD (0.01)		9.1		642		2.74		114		1.88	0.43	0.06		43	75	32		9.1
Sig Lvl		**		**		**		**		**	**	**		**	**	**		**

2022 Data from St. Thomas ND

Created 10/28/2022

@ Statistics and trial mean are from Commercial trial including benchmark means. Experimental trial data adjusted to commercial status.

%Bnch = percentage of four commercial benchmark (CommBench) varieties used for approval of second year entries.

+ Revenue estimates are based on a $46.80 beet payment at 17.5% sugar & 1.5% loss to molasses and do not consider hauling costs.

Trial # = 228311

Na, K, AmN, Bolter & Emergence not adjusted to commercial status.

++ Number of bolters observed at location.

Table 17.
2022 Performance of Varieties - ACSC RR Official Trials
Hallock MN

Description @	Code	Rec/T lbs.	Rec/T %Bnch	Rec/A lbs.	Rec/A %Bnch	Rev/T $ +	Rev/T %Bnch	Rev/A $ +	Rev/A %Bnch	Yield T/A	Sugar% Gross	Sugar% LTM	Sugar% Rec	Na ppm	K ppm	AmN ppm	Bolters ++	Emerg. %
Commercial Trial																		
BTS 8018	120	328.3	98	9469	103	49.29	95	1418	100	28.84	17.72	1.30	16.42	354	1646	438	0	82.6
BTS 8034	123	324.4	96	9857	107	48.14	93	1467	104	30.37	17.60	1.37	16.23	432	1992	377	0	85.9
BTS 8073	102	334.4	99	9959	108	51.11	99	1514	107	29.40	17.85	1.13	16.72	256	1617	348	0	82.8
BTS 8092	116	334.5	99	9940	108	51.15	99	1516	107	29.99	17.97	1.25	16.72	369	1699	384	0	82.9
BTS 8629	118	336.7	100	10054	109	51.81	100	1550	109	30.13	18.12	1.30	16.82	400	1648	416	0	86.7
BTS 8927	104	353.3	105	9347	102	56.80	110	1502	106	26.58	18.74	1.08	17.66	217	1582	338	0	87.2
BTS 8961	117	326.3	97	9895	107	48.70	94	1476	104	30.30	17.72	1.40	16.32	379	1876	448	0	86.8
Crystal 022	125	344.5	102	9506	103	54.16	105	1491	105	27.35	18.30	1.07	17.23	239	1626	308	1	83.3
Crystal 572	108	345.5	103	9436	102	54.45	105	1491	105	27.41	18.38	1.11	17.27	211	1578	359	0	89.5
Crystal 684	122	329.9	98	9907	108	49.77	96	1491	105	30.14	17.80	1.31	16.49	390	1905	369	0	83.3
Crystal 793	111	343.8	102	9880	107	53.94	104	1546	109	28.72	18.25	1.06	17.19	275	1620	292	0	83.8
Crystal 912	107	319.4	95	9974	108	46.62	90	1456	103	31.23	17.29	1.33	15.96	481	1587	429	0	84.8
Crystal 913	103	337.1	100	9531	104	51.95	100	1466	104	28.09	18.03	1.15	16.88	289	1610	360	0	89.1
Hilleshög HIL2317	112	343.0	102	9323	101	53.72	104	1464	103	27.43	18.19	1.05	17.14	253	1703	268	0	82.6
Hilleshög HIL2320	106	323.3	96	9676	105	47.80	92	1427	101	30.03	17.42	1.26	16.16	452	1623	381	0	86.8
Hilleshög HIL2366	119	326.8	97	9704	105	48.85	94	1450	102	29.81	17.53	1.19	16.34	387	1641	348	0	82.8
Hilleshög HIL9708	124	322.2	96	9913	108	47.45	92	1463	103	30.73	17.33	1.21	16.12	430	1619	351	0	88.9
Hilleshög HIL9920	115	339.7	101	9952	108	52.74	102	1545	109	29.11	18.18	1.18	17.00	339	1803	316	0	84.1
Hilleshög HM9528RR	101	320.3	95	9710	105	46.90	91	1423	101	30.62	17.17	1.16	16.01	378	1652	325	0	87.2
Maribo MA717	121	320.8	95	10112	110	47.03	91	1481	105	31.51	17.27	1.24	16.03	424	1632	367	0	86.3
Maribo MA902	110	321.7	96	9461	103	47.31	91	1394	98	29.30	17.29	1.19	16.10	406	1623	347	0	92.2
SV 203	113	333.9	99	9183	100	50.97	99	1399	99	27.41	17.93	1.23	16.70	322	1812	357	0	71.3
SV 265	109	317.5	94	8845	96	46.04	89	1284	91	27.78	17.04	1.16	15.88	371	1660	326	0	87.0
SV 285	105	331.9	99	8885	97	50.37	97	1350	95	26.66	17.81	1.22	16.59	325	1779	353	0	70.0
SX 1898	114	343.5	102	9407	102	53.85	104	1475	104	27.51	18.30	1.14	17.16	284	1797	300	0	73.3
BTS 8572 (CommBench)	126	332.7	99	9145	99	50.63	98	1391	98	27.49	17.89	1.26	16.63	294	1646	427	0	82.9
BTS 8337 (CommBench)	127	347.7	103	8878	96	55.13	107	1402	99	25.51	18.60	1.21	17.39	303	1809	351	0	81.3
Crystal 578RR (CommBench)	128	335.2	100	9930	108	51.36	99	1529	108	29.54	18.15	1.39	16.76	441	1970	393	0	89.9
BTS 8815 (CommBench)	129	329.9	98	8872	96	49.77	96	1341	95	26.82	17.85	1.36	16.49	451	1937	373	0	74.6
Crystal 803 (Check)	130	345.7	103	9508	103	54.52	105	1498	106	27.60	18.43	1.15	17.28	267	1677	347	0	89.9
AP CK#55 CRYS247	131	328.7	98	9072	99	49.42	96	1361	96	27.65	17.76	1.32	16.44	488	1931	329	0	89.9
AP CK#59 BTS8606	132	331.7	99	9588	104	50.30	97	1458	103	28.93	17.91	1.34	16.57	395	1917	381	0	85.0
Experimental Trial (Comm status)																		
BTS 8100	208	333.1	99	9259	101	50.75	98	1412	100	27.72	17.99	1.32	16.68	317	1786	382	0	83.4
BTS 8133	215	331.1	98	10396	113	50.16	97	1579	112	31.21	17.90	1.34	16.57	399	1875	346	0	90.1
BTS 8156	218	336.9	100	9977	108	51.89	100	1540	109	29.38	18.15	1.27	16.88	345	1950	301	0	88.1
BTS 8205	234	337.0	100	10061	109	51.91	100	1553	110	29.69	18.05	1.18	16.87	232	1635	358	1	85.3
BTS 8217	237	331.4	99	9837	107	50.26	97	1497	106	29.55	17.93	1.37	16.56	368	1930	372	0	82.1
BTS 8226	219	354.4	105	9719	106	57.03	110	1571	111	27.33	18.85	1.14	17.71	246	1630	321	0	79.9
BTS 8242	204	343.6	102	9220	100	53.87	104	1446	102	26.77	18.41	1.20	17.21	255	1660	356	0	88.7
BTS 8248	238	330.1	98	9069	99	49.86	96	1377	97	27.42	17.70	1.22	16.48	310	1740	325	0	76.0
BTS 8270	211	336.7	100	10002	109	51.82	100	1541	109	29.69	18.05	1.21	16.84	283	1699	347	0	82.4
BTS 8299	235	330.2	98	9062	98	49.91	97	1371	97	27.40	17.80	1.26	16.54	308	1709	370	0	88.6
Crystal 021	226	329.1	98	9645	105	49.57	96	1459	103	29.08	17.82	1.37	16.46	373	1821	400	0	81.0
Crystal 026	240	327.3	97	10319	112	49.04	95	1551	110	31.29	17.83	1.46	16.37	401	1924	431	0	88.6
Crystal 130	213	334.7	99	9476	103	51.21	99	1447	102	28.23	17.97	1.19	16.78	276	1648	342	0	85.8
Crystal 134	202	347.8	103	9283	101	55.11	107	1470	104	26.66	18.56	1.13	17.43	221	1600	333	0	80.4
Crystal 137	201	339.1	101	9284	101	52.54	102	1439	102	27.28	18.30	1.33	16.97	303	1991	345	0	83.4
Crystal 138	224	333.1	99	9562	104	50.74	98	1459	103	28.64	17.87	1.20	16.67	266	1606	370	0	89.6
Crystal 260	231	342.0	102	9686	105	53.39	103	1515	107	28.13	18.31	1.19	17.12	256	1674	345	0	87.9
Crystal 262	229	337.9	100	10091	110	52.18	101	1558	110	29.83	18.22	1.31	16.91	370	1676	389	0	80.5
Crystal 263	210	338.0	100	9302	101	52.23	101	1441	102	27.36	18.16	1.24	16.92	276	1708	365	0	87.5
Crystal 265	225	342.6	102	9774	106	53.59	104	1531	108	28.40	18.28	1.14	17.14	238	1642	321	0	85.5
Crystal 267	222	332.3	99	9976	108	50.51	98	1520	107	29.90	18.01	1.40	16.61	372	1959	389	0	81.8
Crystal 269	212	354.0	105	10605	115	56.93	110	1707	121	29.90	18.98	1.26	17.72	284	1804	358	0	83.8
Hilleshög HIL2367	242	314.6	94	9741	106	45.27	88	1402	99	30.92	17.16	1.45	15.71	488	1704	440	0	83.6
Hilleshög HIL2368	241	316.3	94	8871	96	45.80	89	1293	91	27.87	17.09	1.28	15.81	385	1684	367	0	72.7
Hilleshög HIL2386	228	308.4	92	9710	105	43.46	84	1372	97	31.30	16.77	1.33	15.45	379	1637	415	0	84.4
Hilleshög HIL2389	239	344.3	102	9783	106	54.07	105	1537	109	28.36	18.42	1.19	17.23	246	1751	324	0	84.8
Hilleshög HIL2440	232	332.4	99	9714	106	50.53	98	1478	104	29.18	18.02	1.40	16.62	406	1713	438	0	78.1
Hilleshög HIL2441	214	328.6	98	9572	104	49.43	96	1440	102	29.13	17.82	1.38	16.45	358	1719	439	0	86.8
Hilleshög HIL2442	220	332.1	99	9213	100	50.47	98	1403	99	27.63	17.87	1.25	16.62	251	1690	391	0	82.8
Hilleshög HIL2443	227	322.6	96	9869	107	47.65	92	1459	103	30.50	17.38	1.22	16.16	346	1685	338	0	74.7
Maribo MA932	230	319.9	95	9936	108	46.82	91	1454	103	31.05	17.34	1.35	15.99	377	1710	406	0	82.6
Maribo MA942	223	335.0	100	8641	94	51.33	99	1328	94	25.69	17.98	1.22	16.76	270	1639	371	0	81.0
Maribo MA943	233	341.7	102	9546	104	53.31	103	1489	105	27.94	18.38	1.28	17.09	286	1688	395	0	81.3
Maribo MA944	221	332.8	99	9808	107	50.65	98	1496	106	29.43	17.89	1.26	16.63	319	1592	400	0	83.8
SV 215	217	315.1	94	8698	94	45.44	88	1259	89	27.53	17.04	1.29	15.75	335	1961	321	0	64.3
SV 321	209	330.9	98	9207	100	50.12	97	1398	99	27.80	17.67	1.12	16.56	262	1735	281	0	79.4
SV 322	236	328.1	98	8210	89	49.29	95	1229	87	25.01	17.73	1.28	16.45	337	1742	365	0	68.7
SV 324	205	315.8	94	8623	94	45.66	88	1246	88	27.22	17.07	1.26	15.81	318	1912	313	0	73.7
SX 1815	203	331.5	99	9161	100	50.29	97	1393	98	27.51	17.86	1.28	16.58	339	1749	358	0	83.8
SX 1816	206	331.8	99	9152	99	50.38	97	1392	98	27.50	17.87	1.26	16.61	325	1759	356	0	73.2
SX 1818	216	334.7	99	9630	105	51.21	99	1478	104	28.69	17.97	1.22	16.75	335	1783	313	0	82.5
SX 1829	207	331.1	98	8109	88	50.17	97	1230	87	24.42	17.86	1.31	16.56	368	1790	355	0	72.6
BTS 8572 (Check)	243	332.8	99	8608	93	50.66	98	1314	93	25.80	17.84	1.20	16.64	251	1713	348	0	80.7
BTS 8337 (1stYrBench)	244	356.7	106	8794	96	57.73	112	1428	101	24.59	19.06	1.23	17.83	288	1754	338	0	78.3
Crystal 578RR (1stYrBench)	245	327.3	97	10457	114	49.04	95	1571	111	31.79	17.78	1.43	16.35	397	1902	412	0	84.7
BTS 8815 (1stYrBench)	246	328.7	98	8967	97	49.46	96	1349	95	27.18	17.80	1.36	16.45	414	1936	338	0	76.1
Crystal 803 (1stYrBench)	247	349.7	104	9633	105	55.68	108	1538	109	27.43	18.69	1.20	17.49	262	1718	341	0	91.3
AP CK#55 CRYS247	248	328.8	98	9120	99	49.50	96	1375	97	27.71	17.77	1.34	16.44	385	1911	341	0	87.7
Comm Benchmark Mean		336.4		9206		51.72		1416		27.34	18.12	1.31		372	1841	386		82.2
Comm Trial Mean		332.9		9560		50.69		1454		28.75	17.87	1.22		353	1726	360		84.2
Coeff. of Var. (%)		3.3		5.7		6.4		7.9		4.7	2.7	8.5		23.8	3.7	14.9		8.2
Mean LSD (0.05)		9.8		460		2.94		101		1.16	0.44	0.09		74	57	46		5.7
Mean LSD (0.01)		12.9		605		3.87		133		1.53	0.58	0.12		97	75	61		7.5
Sig Lvl		**		**		**		**		**	**	**		**	**	**		**

2022 Data from Hallock MN

Created 10/28/2022

@ Statistics and trial mean are from Commercial trial including benchmark means. Experimental trial data adjusted to commercial status.

%Bnch = percentage of four commercial benchmark (CommBench) varieties used for approval of second year entries.

+ Revenue estimates are based on a $46.80 beet payment at 17.5% sugar & 1.5% loss to molasses and do not consider hauling costs.

Trial # = 228312

Na, K, AmN, Bolter & Emergence not adjusted to commercial status.

++ Number of bolters observed at location.

Table 18.
2022 Performance of Varieties - ACSC RR Official Trials
Bathgate ND

Description @	Code	Rec/T lbs.	Rec/T %Bnch	Rec/A lbs.	Rec/A %Bnch	Rev/T $ +	Rev/T %Bnch	Rev/A $ +	Rev/A %Bnch	Yield T/A	Sugar% Gross	Sugar% LTM	Sugar% Rec	Na ppm	K ppm	AmN ppm	Bolters ++	Emerg. %
Commercial Trial																		
BTS 8018	120	306.0	101	10143	108	42.60	102	1413	109	33.13	16.45	1.15	15.30	295	1568	363	0	65.3
BTS 8034	123	289.3	96	9952	106	37.59	90	1294	100	34.31	15.89	1.42	14.47	412	1880	452	0	65.4
BTS 8073	102	291.9	96	10112	107	38.36	92	1331	103	34.56	15.92	1.32	14.60	354	1631	463	0	54.7
BTS 8092	116	288.9	95	9883	105	37.47	90	1281	99	34.24	15.77	1.32	14.45	399	1589	450	0	62.6
BTS 8629	118	288.5	95	9802	104	37.36	90	1268	98	34.04	15.74	1.32	14.42	449	1559	441	0	68.4
BTS 8927	104	325.2	107	9958	106	48.38	116	1484	115	30.63	17.35	1.08	16.27	258	1467	351	0	72.4
BTS 8961	117	295.6	98	9668	103	39.49	95	1290	100	32.75	16.15	1.38	14.77	382	1781	454	0	64.4
Crystal 022	125	322.3	107	10215	108	47.50	114	1508	117	31.67	17.24	1.13	16.11	215	1601	368	0	66.2
Crystal 572	108	314.6	104	10022	106	45.18	109	1440	111	31.76	16.96	1.23	15.73	264	1594	429	0	72.0
Crystal 684	122	290.7	96	10209	108	38.00	91	1333	103	35.25	15.81	1.27	14.54	387	1805	362	0	73.2
Crystal 793	111	319.9	106	10261	109	46.78	113	1498	116	32.15	17.12	1.12	16.00	258	1597	349	0	71.3
Crystal 912	107	289.8	96	10100	107	37.73	91	1318	102	34.74	15.89	1.40	14.49	455	1626	482	0	65.9
Crystal 913	103	308.6	102	9952	106	43.38	104	1400	108	32.16	16.66	1.23	15.43	339	1521	423	0	63.9
Hilleshög HIL2317	112	302.7	100	9619	102	41.61	100	1322	102	31.90	16.28	1.15	15.13	344	1704	313	0	67.6
Hilleshög HIL2320	106	308.0	102	9928	105	43.20	104	1395	108	32.19	16.59	1.18	15.41	339	1612	366	0	71.2
Hilleshög HIL2366	119	296.7	98	9579	102	39.82	96	1290	100	32.07	16.12	1.29	14.83	423	1615	414	0	67.9
Hilleshög HIL9708	124	301.3	100	9775	104	41.19	99	1338	104	32.43	16.20	1.14	15.06	354	1560	341	0	69.7
Hilleshög HIL9920	115	300.2	99	9823	104	40.85	98	1338	104	32.73	16.23	1.22	15.01	364	1731	354	0	68.8
Hilleshög HM9528RR	101	309.7	102	9822	104	43.70	105	1382	107	31.81	16.62	1.15	15.47	326	1585	348	0	71.0
Maribo MA717	121	300.6	99	10007	106	40.98	99	1367	106	33.16	16.23	1.21	15.02	369	1591	375	0	69.7
Maribo MA902	110	299.8	99	9412	100	40.75	98	1276	99	31.50	16.19	1.20	14.99	433	1591	350	0	72.0
SV 203	113	292.2	97	9166	97	38.46	93	1204	93	31.37	16.03	1.42	14.61	434	1839	451	0	50.4
SV 265	109	292.1	97	9338	99	38.43	92	1227	95	31.98	15.89	1.28	14.61	358	1740	399	0	64.7
SV 285	105	295.1	98	9191	98	39.34	95	1225	95	31.21	16.02	1.26	14.76	350	1841	362	0	54.4
SX 1898	114	291.1	96	8950	95	38.14	92	1172	91	30.72	15.86	1.30	14.56	421	1815	370	0	51.2
BTS 8572 (CommBench)	126	305.9	101	9535	101	42.58	102	1328	103	31.18	16.56	1.26	15.30	290	1665	427	0	67.0
BTS 8337 (CommBench)	127	310.2	103	8930	95	43.87	106	1258	97	28.91	16.82	1.31	15.51	380	1750	408	0	65.3
Crystal 578RR (CommBench)	128	297.4	98	9947	106	40.03	96	1338	104	33.36	16.25	1.38	14.87	427	1814	427	0	71.8
BTS 8815 (CommBench)	129	296.8	98	9258	98	39.83	96	1243	96	31.13	16.14	1.31	14.83	416	1791	385	0	59.8
Crystal 803 (Check)	130	313.1	103	9932	105	44.73	108	1421	110	31.67	16.86	1.20	15.66	284	1570	411	0	70.5
AP CK#55 CRYS247	131	294.4	97	9368	99	39.12	94	1242	96	31.94	15.95	1.23	14.72	383	1778	341	0	68.7
AP CK#59 BTS8606	132	294.9	97	9629	102	39.27	94	1279	99	32.77	16.12	1.38	14.74	441	1738	444	0	68.9
Experimental Trial (Comm status)																		
BTS 8100	208	303.2	100	9776	104	41.76	100	1353	105	32.08	16.42	1.26	15.16	300	1735	405	0	66.9
BTS 8133	215	295.9	98	10161	108	39.57	95	1364	106	34.45	16.01	1.22	14.79	281	1906	335	0	73.1
BTS 8156	218	309.3	102	10202	108	43.60	105	1438	111	33.14	16.73	1.26	15.47	290	1905	360	0	75.3
BTS 8205	234	307.9	102	10050	107	43.18	104	1409	109	32.72	16.64	1.23	15.41	198	1737	422	0	68.5
BTS 8217	237	308.1	102	9609	102	43.24	104	1349	104	31.18	16.78	1.38	15.40	333	1915	439	0	67.5
BTS 8226	219	309.8	102	9848	105	43.74	105	1394	108	31.62	16.69	1.19	15.50	327	1508	400	0	64.3
BTS 8242	204	320.9	106	10014	106	47.04	113	1470	114	31.21	17.16	1.12	16.04	210	1653	348	0	75.5
BTS 8248	238	310.5	103	10317	110	43.96	106	1459	113	33.34	16.64	1.11	15.53	274	1525	351	0	58.3
BTS 8270	211	309.7	102	10218	109	43.70	105	1440	111	33.15	16.71	1.24	15.47	273	1681	415	0	65.5
BTS 8299	235	315.1	104	10307	109	45.31	109	1478	114	32.90	16.80	1.07	15.73	214	1586	327	0	71.5
Crystal 021	226	295.8	98	10307	109	39.56	95	1388	107	34.59	16.13	1.30	14.83	390	1747	401	0	60.9
Crystal 026	240	302.4	100	10512	112	41.51	100	1450	112	34.59	16.40	1.27	15.13	318	1842	381	0	70.5
Crystal 130	213	303.3	100	9405	100	41.77	100	1305	101	30.94	16.44	1.24	15.20	286	1749	390	0	60.5
Crystal 134	202	323.3	107	10029	106	47.73	115	1483	115	30.93	17.23	1.09	16.14	238	1569	338	0	63.0
Crystal 137	201	309.7	102	10219	109	43.71	105	1435	111	33.28	16.75	1.29	15.46	285	1925	385	0	58.7
Crystal 138	224	315.6	104	10219	109	45.47	109	1474	114	32.44	16.96	1.16	15.80	205	1686	375	0	63.2
Crystal 260	231	317.2	105	10406	111	45.93	110	1512	117	32.83	17.00	1.11	15.89	245	1611	345	0	66.3
Crystal 262	229	293.3	97	10445	111	38.80	93	1383	107	35.50	15.92	1.28	14.64	349	1699	412	0	68.9
Crystal 263	210	318.3	105	9515	101	46.27	111	1379	107	30.14	17.06	1.13	15.93	258	1644	346	0	58.2
Crystal 265	225	307.6	102	9723	103	43.09	104	1369	106	31.63	16.55	1.14	15.41	229	1667	355	0	68.5
Crystal 267	222	296.8	98	10111	107	39.85	96	1360	105	34.07	16.23	1.40	14.83	370	1957	428	0	70.2
Crystal 269	212	317.6	105	10123	107	46.06	111	1473	114	32.03	17.05	1.15	15.90	254	1707	346	0	58.4
Hilleshög HIL2367	242	304.3	101	9714	103	42.08	101	1343	104	32.09	16.42	1.21	15.21	321	1621	387	0	68.2
Hilleshög HIL2368	241	312.4	103	8511	90	44.50	107	1211	94	27.49	16.82	1.22	15.60	300	1726	375	0	37.3
Hilleshög HIL2386	228	309.0	102	10524	112	43.50	105	1483	115	34.24	16.68	1.22	15.46	334	1646	388	1	65.9
Hilleshög HIL2389	239	301.6	100	10142	108	41.29	99	1386	107	33.80	16.37	1.30	15.07	321	1828	402	0	71.7
Hilleshög HIL2440	232	303.9	100	10210	108	41.97	101	1417	110	33.46	16.53	1.32	15.21	346	1620	466	0	54.2
Hilleshög HIL2441	214	302.6	100	9432	100	41.57	100	1294	100	31.34	16.38	1.27	15.11	271	1707	429	0	63.4
Hilleshög HIL2442	220	317.7	105	9679	103	46.08	111	1408	109	30.49	17.17	1.24	15.93	303	1632	419	0	61.1
Hilleshög HIL2443	227	291.4	96	9141	97	38.23	92	1202	93	31.40	15.77	1.20	14.56	316	1805	330	0	59.5
Maribo MA932	230	298.4	99	10010	106	40.32	97	1357	105	33.66	16.17	1.23	14.94	326	1710	380	0	67.1
Maribo MA942	223	303.5	100	9332	99	41.83	101	1296	100	30.53	16.40	1.21	15.19	294	1658	387	0	64.3
Maribo MA943	233	299.3	99	9564	102	40.60	98	1301	101	32.01	16.25	1.28	14.97	298	1725	422	0	62.1
Maribo MA944	221	303.2	100	9226	98	41.76	100	1278	99	30.21	16.46	1.27	15.19	339	1698	408	0	64.4
SV 215	217	289.7	96	8640	92	37.74	91	1129	87	29.94	15.83	1.30	14.52	317	1926	383	0	52.6
SV 321	209	298.6	99	9886	105	40.38	97	1339	104	33.11	16.13	1.19	14.94	281	1711	366	0	60.2
SV 322	236	298.1	99	8582	91	40.23	97	1161	90	28.93	16.10	1.19	14.91	293	1760	345	0	50.3
SV 324	205	289.8	96	9170	97	37.77	91	1200	93	31.59	15.89	1.40	14.49	374	1993	417	0	59.7
SX 1815	203	305.6	101	9766	104	42.47	102	1359	105	31.89	16.40	1.09	15.31	228	1793	290	0	62.5
SX 1816	206	305.6	101	9628	102	42.45	102	1332	103	31.77	16.47	1.22	15.25	290	1774	365	0	61.7
SX 1818	216	293.4	97	9527	101	38.83	93	1265	98	32.35	15.96	1.28	14.68	302	1776	412	0	58.2
SX 1829	207	313.3	104	9122	97	44.78	108	1304	101	29.26	16.70	1.04	15.66	187	1679	288	0	54.2
BTS 8572 (Check)	243	296.2	98	9264	98	39.67	95	1243	96	31.08	16.21	1.41	14.80	393	1678	499	0	67.5
BTS 8337 (1stYrBench)	244	319.7	106	9086	96	46.70	112	1328	103	28.41	17.19	1.20	15.99	272	1707	381	0	61.5
Crystal 578RR (1stYrBench)	245	287.9	95	9946	106	37.22	90	1288	100	34.51	15.75	1.34	14.40	367	1860	405	0	69.1
BTS 8815 (1stYrBench)	246	306.5	101	9374	100	42.72	103	1307	101	30.57	16.62	1.30	15.32	349	1954	365	0	57.3
Crystal 803 (1stYrBench)	247	314.8	104	10165	108	45.23	109	1462	113	32.36	16.92	1.15	15.77	230	1570	391	0	62.7
AP CK#55 CRYS247	248	288.2	95	10155	108	37.31	90	1320	102	35.23	15.82	1.39	14.42	412	1927	412	0	73.0
Comm Benchmark Mean		302.6		9418		41.58		1292		31.15	16.44	1.32		378	1755	412		66.0
Comm Trial Mean		301.1		9734		41.12		1328		32.36	16.31	1.26		363	1673	396		66.1
Coeff. of Var. (%)		3.0		5.4		6.6		7.7		5.0	2.4	7.5		18.5	4.1	13.3		13.8
Mean LSD (0.05)		8.2		473		2.45		92		1.38	0.36	0.09		61	62	48		7.6
Mean LSD (0.01)		10.8		623		3.23		121		1.82	0.47	0.11		81	82	63		10.0
Sig Lvl		**		**		**		**		**	**	**		**	**	**		**

2022 Data from Bathgate ND
Created 10/28/2022

@ Statistics and trial mean are from Commercial trial including benchmark means. Experimental trial data adjusted to commercial status.
%Bnch = percentage of four commercial benchmark (CommBench) varieties used for approval of second year entries.
+ Revenue estimates are based on a $46.80 beet payment at 17.5% sugar & 1.5% loss to molasses and do not consider hauling costs.
Trial # = 228313
Na, K, AmN, Bolter & Emergence not adjusted to commercial status.
++ Number of bolters observed at location.

Table 19

Calculation for Approval of Sugarbeet Varieties for ACSC Market for 2023

		Rec/Ton				Rev/Acre++				R/T +	Cercospora Rating +				
Description	Approval Status	2021	2022	2 Yr	% Bench	2021	2022	2 Yr	% Bench	$/A Bench	2020	2021	2022	2 Yr Mean	3 Yr Mean
Previously Approved (3 Yr)															**<=5.30**
BTS 8018	Approved	338.0	328.6	333.3	101.2	1622	1447	1535	112.6	213.8	2.41	2.31	2.03	2.17	2.25
BTS 8034	Approved	323.2	315.1	319.2	97.0	1587	1362	1475	108.2	205.1	2.70	2.56	2.28	2.42	2.51
BTS 8073	Approved	332.4	326.9	329.7	100.1	1533	1461	1497	109.8	210.0	4.68	4.56	4.55	4.55	4.59
BTS 8092	Approved	332.2	317.5	324.9	98.7	1611	1406	1509	110.7	209.3	4.26	4.62	4.26	4.44	4.38
BTS 8629	Approved	322.9	313.5	318.2	96.7	1590	1385	1488	109.1	205.8	4.55	4.78	4.52	4.65	4.62
BTS 8927	Approved	343.3	338.8	341.1	103.6	1572	1452	1512	110.9	214.5	4.42	4.48	4.42	4.45	4.44
BTS 8961	Approved	328.5	316.4	322.5	98.0	1556	1369	1463	107.3	205.2	4.69	4.53	4.54	4.53	4.58
Crystal 021	Approved	330.0	317.6	323.8	98.4	1620	1390	1505	110.4	208.8	2.20	2.28	2.08	2.18	2.19
Crystal 022	Approved	340.7	339.2	340.0	103.3	1543	1449	1496	109.7	213.0	4.71	4.97	4.60	4.78	4.76
Crystal 026	Approved	327.9	322.3	325.1	98.8	1602	1430	1516	111.2	210.0	4.76	4.43	4.69	4.56	4.63
Crystal 572	Approved	337.9	335.7	336.8	102.3	1530	1424	1477	108.4	210.7	4.46	4.75	4.50	4.63	4.57
Crystal 684	Approved	320.8	311.9	316.4	96.1	1533	1411	1472	108.0	204.1	4.44	4.54	4.59	4.57	4.52
Crystal 793	Approved	339.3	330.6	335.0	101.8	1625	1476	1551	113.7	215.5	4.31	4.13	4.10	4.12	4.18
Crystal 912	Approved	328.2	312.6	320.4	97.3	1665	1433	1549	113.6	211.0	4.75	5.13	4.81	4.97	4.90
Crystal 913	Approved	339.5	329.1	334.3	101.6	1579	1458	1519	111.4	213.0	4.13	4.10	3.73	3.92	3.99
Hilleshög HIL2317	Approved	334.5	326.8	330.7	100.4	1451	1371	1411	103.5	204.0	5.05	4.57	5.13	4.85	4.92
Hilleshög HIL2320	Approved	324.3	322.8	323.6	98.3	1411	1403	1407	103.2	201.5	5.11	4.78	5.01	4.90	4.97
Hilleshög HIL2366	Approved	331.3	319.3	325.3	98.8	1481	1351	1416	103.9	202.7	4.94	5.01	5.00	5.00	4.98
Hilleshög HIL2367	Approved	327.3	323.0	325.2	98.8	1443	1356	1400	102.7	201.4	5.08	4.75	4.75	4.75	4.86
Hilleshög HIL2368	Approved	337.7	329.1	333.4	101.3	1339	1154	1247	91.4	192.7	4.69	4.66	4.56	4.61	4.64
Hilleshög HIL9708	Approved	326.9	322.5	324.7	98.6	1402	1342	1372	100.7	199.3	4.97	4.65	4.86	4.76	4.83
Hilleshög HIL9920	Approved	335.4	324.5	330.0	100.2	1497	1383	1440	105.6	205.9	4.82	4.75	4.92	4.84	4.83
Hilleshög HM9528RR	Approved	320.3	319.4	319.9	97.2	1392	1368	1380	101.2	198.4	4.84	4.52	4.76	4.64	4.71
Maribo MA717	Approved	317.4	318.6	318.0	96.6	1414	1397	1406	103.1	199.7	5.11	4.68	5.05	4.86	4.95
Maribo MA902	Approved	326.9	321.2	324.1	98.4	1427	1310	1369	100.4	198.8	4.96	4.63	4.95	4.79	4.85
SV 203	Approved	337.8	322.0	329.9	100.2	1478	1296	1387	101.8	202.0	5.03	4.75	4.74	4.74	4.84
SV 265	Approved	326.9	318.1	322.5	98.0	1416	1321	1369	100.4	198.4	4.55	4.30	4.46	4.38	4.44
SV 285	Approved	335.8	322.6	329.2	100.0	1524	1276	1400	102.7	202.7	4.50	4.78	4.72	4.75	4.66
SX 1898	Approved	335.6	320.4	328.0	99.6	1479	1297	1388	101.8	201.5	4.73	4.76	4.72	4.74	4.74
Candidates for Approval (2 Yr)														**<=5.00**	
BTS 8100	Approved	339.2	325.4	332.3	100.9	1544	1363	1454	106.6	207.6	--	4.01	3.87	3.94	--
BTS 8133	Not Approved	322.1	311.5	316.8	96.2	1601	1392	1497	109.8	206.0	--	2.30	2.23	2.26	--
BTS 8156	Approved	330.2	327.5	328.9	99.9	1551	1410	1481	108.6	208.5	--	2.48	2.43	2.46	--
Crystal 130	Approved	338.1	332.3	335.2	101.8	1620	1436	1528	112.1	213.9	--	2.38	2.10	2.24	--
Crystal 134	Approved	347.6	340.5	344.1	104.5	1574	1430	1502	110.2	214.7	--	4.59	4.47	4.53	--
Crystal 137	Approved	330.7	324.6	327.7	99.5	1628	1390	1509	110.7	210.2	--	2.53	2.57	2.55	--
Crystal 138	Approved	336.6	332.5	334.6	101.6	1561	1471	1516	111.2	212.8	--	4.74	4.87	4.80	--
Hilleshög HIL2386	Approved	332.3	322.3	327.3	99.4	1499	1424	1462	107.2	206.6	--	4.30	4.54	4.42	--
Hilleshög HIL2389	Approved	334.1	326.8	330.5	100.4	1483	1407	1445	106.0	206.4	--	4.85	4.69	4.77	--
Maribo MA932	Approved	328.4	323.8	326.1	99.1	1486	1406	1446	106.1	205.1	--	4.85	4.78	4.82	--
SV 215	Not Approved	331.3	314.6	323.0	98.1	1427	1252	1340	98.3	196.4	--	5.11	4.66	4.88	--
SX 1815	Approved	338.7	328.4	333.6	101.3	1545	1403	1474	108.1	209.5	--	4.78	5.07	4.93	--
SX 1816	Not Approved	328.3	316.1	322.2	97.9	1518	1302	1410	103.4	201.3	--	4.63	4.51	4.57	--
SX 1818	Approved	332.5	321.4	327.0	99.3	1555	1361	1458	107.0	206.3	--	4.86	4.72	4.79	--

Benchmark Varieties		2020	2021	2022	2020	2021	2022
Crystal 355RR(Check)	Benchmark	333.8	330.5		1200	1292	
BTS 8572 (Check)	Benchmark	335.2	333.2	329.3	1292	1412	1355
BTS 8337 (Check)	Benchmark	342.6	340.4	334.4	1262	1447	1324
Crystal 578RR (Check)	Benchmark	323.5	330.5	318.2	1296	1460	1345
BTS 8815 (Check)	Benchmark			317.0			1270

				2yr	3yr				2yr	3yr
Benchmark mean		333.8	333.7	324.7	329.2	330.7	1263	1403	1324	1363	1330

++2022 Revenue estimate based on a $46.80 beet payment (5-yr ave) at 17.5% crop with a 1.5% loss to molasses and 2021 Revenue estimate based on a $45.65 beet payment. Revenue does not consider hauling or production costs.

+ All Cercospora ratings 2020-2022 were adjusted to 1982 basis.

Created 11/04/2022

Variety approval criteria include: 1) 2 years of official trial data, 2) Cercospora rating must not exceed 5.00 (1982 adjusted data), 3a) R/T >= 100% of Bench or 3b) R/T >= 97% and R/T + $/A >= 202% of Bench. 3 yrs of data may be considered for initial approval.

To maintain approval, the 3-year Cercospora rating must not exceed 5.30 (1982 adjusted data).

Table 20

2022 First Year Experimental Varieties

New Benchmark Comparison

Projected Calculation for Approval of Sugarbeet Varieties for ACSC Market

Description	Approval ^ Likely	Rec/Ton 2022	Rec/Ton % Bench	Rev/Acre 2022	Rev/Acre % Bench	R/T + $/A Bench	CR Rating ^^ 2022
Candidates for Retesting (1 Yr)							
BTS 8205	On Track	325.1	99.7	1426	105.4	205.1	4.27
BTS 8217	Not On Track	323.1	99.1	1373	101.5	200.5	2.25
BTS 8226	On Track	343.0	105.2	1521	112.4	217.6	2.00
BTS 8242	On Track	340.4	104.4	1441	106.5	210.9	4.35
BTS 8248	On Track	328.9	100.9	1403	103.7	204.5	1.96
BTS 8270	On Track	333.6	102.3	1472	108.8	211.1	1.97
BTS 8299	On Track	328.3	100.7	1359	100.4	201.1	2.02
Crystal 260	On Track	333.9	102.4	1488	110.0	212.4	2.05
Crystal 262	On Track	325.3	99.8	1463	108.1	207.9	4.43
Crystal 263	On Track	338.1	103.7	1418	104.8	208.5	3.80
Crystal 265	On Track	330.3	101.3	1366	100.9	202.2	2.06
Crystal 267	Not On Track	320.0	98.1	1389	102.6	200.8	2.25
Crystal 269	On Track	333.8	102.4	1466	108.3	210.7	4.60
Hilleshög HIL2440	On Track	327.7	100.5	1343	99.2	199.7	4.98
Hilleshög HIL2441	On Track	327.0	100.3	1312	97.0	197.2	4.01
Hilleshög HIL2442	On Track	331.7	101.7	1312	97.0	198.7	4.39
Hilleshög HIL2443	Not On Track	313.8	96.2	1361	100.6	196.8	5.16
Maribo MA942	On Track	328.8	100.8	1310	96.8	197.6	4.57
Maribo MA943	On Track	326.3	100.1	1333	98.5	198.6	4.28
Maribo MA944	On Track	328.7	100.8	1334	98.6	199.4	4.29
SV 321	Not On Track	316.7	97.1	1320	97.5	194.7	4.52
SV 322	Not On Track	317.9	97.5	1201	88.8	186.2	3.80
SV 324	Not On Track	310.8	95.3	1231	91.0	186.3	5.22
SX 1829	Not On Track	321.2	98.5	1221	90.2	188.7	3.51
Benchmarks							
BTS 8337 (Check)		334.8	102.7	1322	97.7		
Crystal 578RR (Check)		313.1	96.0	1339	98.9		
BTS 8815 (Check)		324.9	99.6	1320	97.5		
Crystal 803 (Check)		331.6	101.7	1433	105.9		
Benchmark Mean		326.1		1353			

^ Not on Track = not on track for approval. On Track = data is tracking for potential approval. Created 11/04/2022

^^ All Cercospora ratings 2022 were adjusted to 1982 basis.

Full market approval criteria include: 1) 2 years of official trial data, 2) Cercospora rating must not exceed 5.00 (1982 adjusted data), 3a) R/T >= 100% of Bench or 3b) R/T >= 97% and R/T + $/A equal to 202% of Bench.

Bench for 2022 first year entries added Crystal 803 and dropped BTS 8572

Table 21

Calculation for Approval of Sugarbeet Varieties for ACSC Aphanomyces Specialty Market for 2023

Description	Approval Status	Aph. Root Rating					Cercospora Rating *				
		2020	2021	2022	2 Yr	3 Yr	2020	2021	2022	2 Yr	3 Yr
Previously Approved (3 Yrs)						**<=4.50**					**<=5.30**
BTS 8018	Approved	3.87	4.52	4.00	4.26	4.13	2.41	2.31	2.03	2.17	2.25
BTS 8034	Approved	4.36	3.24	3.89	3.57	3.83	2.70	2.56	2.28	2.42	2.51
BTS 8073	Approved	3.45	4.30	4.01	4.16	3.92	4.68	4.56	4.55	4.56	4.60
BTS 8092	Approved	3.85	4.11	3.86	3.99	3.94	4.26	4.62	4.26	4.44	4.38
BTS 8629	Approved	3.92	4.24	4.50	4.37	4.22	4.55	4.78	4.52	4.65	4.62
BTS 8927	Approved	3.87	4.51	4.00	4.26	4.13	4.42	4.48	4.42	4.45	4.44
BTS 8961	Approved	4.04	4.80	4.47	4.64	4.44	4.69	4.53	4.54	4.54	4.59
Crystal 021	Approved	3.46	4.19	3.74	3.97	3.80	2.20	2.28	2.08	2.18	2.19
Crystal 022	Approved	3.81	4.79	4.03	4.41	4.21	4.71	4.97	4.60	4.79	4.76
Crystal 026	Approved	3.75	3.74	3.76	3.75	3.75	4.76	4.43	4.69	4.56	4.63
Crystal 572	Approved	4.28	4.47	4.60	4.54	4.45	4.46	4.75	4.50	4.63	4.57
Crystal 684	Approved	3.97	3.60	3.81	3.71	3.79	4.44	4.54	4.59	4.57	4.52
Crystal 793	Approved	3.87	3.74	3.82	3.78	3.81	4.31	4.13	4.10	4.12	4.18
Crystal 912	Approved	3.67	3.95	3.44	3.70	3.69	4.75	5.13	4.81	4.97	4.90
Crystal 913	Approved	3.75	4.39	3.79	4.09	3.98	4.13	4.10	3.73	3.92	3.99
Hilleshög HIL2317	Approved	3.86	5.01	3.91	4.46	4.26	5.05	4.57	5.13	4.85	4.92
Hilleshög HIL2320	Approved	3.55	4.66	4.00	4.33	4.07	5.11	4.78	5.01	4.90	4.97
Hilleshög HIL2367	Approved	3.51	5.13	4.17	4.65	4.27	5.08	4.75	4.75	4.75	4.86
Hilleshög HIL9708	Not Approved	3.96	6.34	4.45	5.40	4.92	4.97	4.65	4.86	4.76	4.83
Hilleshög HIL9920	Approved	3.65	4.65	4.33	4.49	4.21	4.82	4.75	4.92	4.84	4.83
Hilleshög HM9528RR	Approved	3.72	5.51	4.07	4.79	4.43	4.84	4.52	4.76	4.64	4.71
Maribo MA717	Not Approved	3.77	6.75	4.39	5.57	4.97	5.11	4.68	5.05	4.87	4.95
SV 203	Approved	4.34	4.35	4.24	4.30	4.31	5.03	4.75	4.74	4.75	4.84
SV 285	Approved	4.28	4.48	4.35	4.42	4.37	4.50	4.78	4.72	4.75	4.67
SX 1898	Approved	3.76	4.97	4.25	4.61	4.33	4.73	4.76	4.72	4.74	4.74
Candidates for Approval (2 Yrs)					**<=4.20**					**<=5.00**	
BTS 8100	Approved	--	3.89	3.78	3.84	--	--	4.01	3.87	3.94	--
BTS 8133	Approved	--	3.46	3.57	3.52	--	--	2.30	2.23	2.27	--
BTS 8156	Approved	--	3.64	4.21	3.93	--	--	2.48	2.43	2.46	--
Crystal 130	Approved	--	4.23	3.57	3.90	--	--	2.38	2.10	2.24	--
Crystal 134	Approved	--	4.39	3.70	4.05	--	--	4.59	4.47	4.53	--
Crystal 137	Approved	--	3.13	4.25	3.69	--	--	2.53	2.57	2.55	--
Crystal 138	Approved	--	4.19	3.87	4.03	--	--	4.74	4.87	4.81	--
Hilleshög HIL2366	Not Approved	3.81	5.81	4.32	5.07	4.65	4.94	5.01	5.00	5.01	4.98
Hilleshög HIL2368	Not Approved	3.70	5.25	4.63	4.94	4.53	4.69	4.66	4.56	4.61	4.64
Hilleshög HIL2386	Not Approved	--	5.98	4.31	5.15	--	--	4.30	4.54	4.42	--
Hilleshög HIL2389	Approved	--	3.86	3.78	3.82	--	--	4.85	4.69	4.77	--
Maribo MA902	Not Approved	4.01	6.96	4.59	5.78	5.19	4.96	4.63	4.95	4.79	4.85
Maribo MA932	Not Approved	--	4.60	4.28	4.44	--	--	4.85	4.78	4.82	--
SV 215	Not Approved	--	5.03	5.07	5.05	--	--	5.11	4.66	4.89	--
SV 265	Not Approved	3.98	4.95	4.30	4.63	4.41	4.55	4.30	4.46	4.38	4.44
SX 1815	Not Approved	--	4.19	4.28	4.24	--	--	4.78	5.07	4.93	--
SX 1816	Not Approved	--	5.21	4.97	5.09	--	--	4.63	4.51	4.57	--
SX 1818	Not Approved	--	5.56	4.82	5.19	--	--	4.86	4.72	4.79	--
Approval Criteria new varieties					4.20					5.00	
Criteria to Maintain Approval						4.50					5.30

* All Cercospora ratings 2020-2022 were adjusted to 1982 basis. Created 11/09/2022

Aphanomyces approval criteria include: 1) Cercospora rating 2 year mean must not exceed 5.00 (1982 adjusted data), 2) Aph root rating 2 year mean <= 4.20.

Three years of data may be considered for initial approval.

To maintain Aphanomyces approval, criteria include: 1) Cercospora 3 year mean must not exceed 5.30, 2) Aph root rating 3 year mean <= 4.50.

Previously approved varieties not meeting current approval standards may be sold in 2023.

Table 22
Calculation for Approval of Sugarbeet Varieties for ACSC Rhizoctonia Specialty Market for 2023

Description	Approval Status	Rhizoctonia Root Rating 2020	2021	2022	2 Yr Mn	3 Yr Mn	Cercospora Rating 2020	2021	2022	2 Yr Mn	3 Yr Mn
Previously Approved (3 Yr)						**<=4.12**					**<=5.30**
BTS 8092	Approved	3.81	3.81	3.58	3.70	3.73	4.26	4.62	4.26	4.44	4.38
Crystal 912	Approved	3.54	3.77	3.28	3.53	3.53	4.75	5.13	4.81	4.97	4.90
Crystal 021	Approved	3.88	3.38	3.58	3.48	3.61	2.20	2.28	2.08	2.18	2.19
Crystal 022	Approved	3.49	3.53	4.10	3.82	3.71	4.71	4.97	4.60	4.79	4.76
Crystal 026	Approved	3.57	3.34	3.28	3.31	3.40	4.76	4.43	4.69	4.56	4.63
Hilleshög HIL9708	Approved	3.83	3.78	3.78	3.78	3.80	4.97	4.65	4.86	4.76	4.83
Hilleshög HIL2368	Approved	3.52	2.92	3.46	3.19	3.30	4.69	4.66	4.56	4.61	4.64
Candidates for Approval (2 Yr)					**<=3.82**					**<=5.00**	
BTS 8018	Not Approved	4.16	3.83	3.93	3.88	3.97	2.41	2.31	2.03	2.17	2.25
BTS 8034	Not Approved	4.56	3.88	4.49	4.19	4.31	2.70	2.56	2.28	2.42	2.51
BTS 8073	Not Approved	4.11	3.67	4.21	3.94	4.00	4.68	4.56	4.55	4.56	4.60
BTS 8100	Approved	--	3.09	3.73	3.41	--	--	4.01	3.87	3.94	--
BTS 8133	Approved	--	3.87	3.44	3.66	--	--	2.30	2.23	2.27	--
BTS 8156	Not Approved	--	3.81	4.24	4.03	--	--	2.48	2.43	2.46	--
BTS 8629	Not Approved	4.30	4.22	3.72	3.97	4.08	4.55	4.78	4.52	4.65	4.62
BTS 8927	Not Approved	4.37	3.68	4.13	3.91	4.06	4.42	4.48	4.42	4.45	4.44
BTS 8961	Approved	4.11	3.75	3.75	3.75	3.87	4.69	4.53	4.54	4.54	4.59
Crystal 130	Not Approved	--	3.57	4.08	3.83	--	--	2.38	2.10	2.24	--
Crystal 134	Approved	--	3.44	3.63	3.54	--	--	4.59	4.47	4.53	--
Crystal 137	Not Approved	--	3.53	4.18	3.86	--	--	2.53	2.57	2.55	--
Crystal 138	Approved	--	3.52	3.81	3.67	--	--	4.74	4.87	4.81	--
Crystal 572	Not Approved	4.21	3.88	4.28	4.08	4.12	4.46	4.75	4.50	4.63	4.57
Crystal 684	Not Approved	4.15	3.82	4.24	4.03	4.07	4.44	4.54	4.59	4.57	4.52
Crystal 793	Not Approved	4.84	4.36	4.73	4.55	4.64	4.31	4.13	4.10	4.12	4.18
Crystal 913	Not Approved	4.58	3.94	4.23	4.09	4.25	4.13	4.10	3.73	3.92	3.99
Hilleshög HIL2317	Not Approved	4.95	4.76	4.71	4.74	4.81	5.05	4.57	5.13	4.85	4.92
Hilleshög HIL2320	Not Approved	4.64	3.80	3.88	3.84	4.11	5.11	4.78	5.01	4.90	4.97
Hilleshög HIL2366	Not Approved	4.24	3.98	3.92	3.95	4.05	4.94	5.01	5.00	5.01	4.98
Hilleshög HIL2367	Not Approved	4.26	4.10	3.90	4.00	4.09	5.08	4.75	4.75	4.75	4.86
Hilleshög HIL2386	Not Approved	--	4.20	3.51	3.86	--	--	4.30	4.54	4.42	--
Hilleshög HIL2389	Not Approved	--	3.99	3.92	3.96	--	--	4.85	4.69	4.77	--
Hilleshög HIL9920	Not Approved	5.12	4.70	4.58	4.64	4.80	4.82	4.75	4.92	4.84	4.83
Hilleshög HM9528RR	Not Approved	4.57	4.47	4.01	4.24	4.35	4.84	4.52	4.76	4.64	4.71
Maribo MA717	Not Approved	4.61	4.31	3.92	4.12	4.28	5.11	4.68	5.05	4.87	4.95
Maribo MA902	Approved	3.93	3.80	3.57	3.69	3.77	4.96	4.63	4.95	4.79	4.85
Maribo MA932	Not Approved	--	4.03	3.75	3.89	--	--	4.85	4.78	4.82	--
SV 203	Not Approved	4.29	4.34	4.19	4.27	4.27	5.03	4.75	4.74	4.75	4.84
SV 215	Not Approved	--	3.79	4.20	4.00	--	--	5.11	4.66	4.89	--
SV 265	Not Approved	4.21	4.17	3.96	4.07	4.11	4.55	4.30	4.46	4.38	4.44
SV 285	Not Approved	4.03	4.26	4.53	4.40	4.27	4.50	4.78	4.72	4.75	4.67
SX 1815	Not Approved	--	4.40	4.12	4.26	--	--	4.78	5.07	4.93	--
SX 1816	Not Approved	--	4.09	4.24	4.17	--	--	4.63	4.51	4.57	--
SX 1818	Not Approved	--	4.41	4.16	4.29	--	--	4.86	4.72	4.79	--
SX 1898	Not Approved	4.16	4.34	4.12	4.23	4.21	4.73	4.76	4.72	4.74	4.74
Approval Criteria new varieties					3.82					5.00	
Criteria to Maintain Approval						4.12					5.30

Rhc and CR ratings were adjusted based upon check performance.

Created 10/08/2022

+ Root Rating based on a scale of 0 (healthy) to 7 (dead).

++ Candidates must have 2yr Rhizoctonia rating less than or equal to 3.82. To maintain approval, 3 yr Rhizoctonia rating must be less than or equal to 4.12.

Previously approved varieties not meeting current approval standards may be sold in 2023.

Table 23.
2022 Aphanomyces Ratings for Official Trial Entries
ACSC (Perley, MN) - KWS (Shakopee, MN) - Magno (Glyndon, MN)

		Unadjusted ^^			Adjusted ++								
Chk++	Code Description	Perl 9/8	Clim Shak NA 8/24	Glyn 9/1	Perl 9/8	Clim NA	Shak 8/24	Glyn 9/1	2022	2 Yr	3 Yr	2021 ++	2020 ++	Trial Yrs $$
	524 BTS 8018	5.18	3.53	4.14	4.14		3.65	4.21	4.00	4.26	4.13	4.52	3.87	3
	567 BTS 8034	5.21	3.06	4.26	4.16		3.17	4.33	3.89	3.56	3.83	3.24	4.36	3
	533 BTS 8073	5.32	3.77	3.81	4.25		3.90	3.87	4.01	4.15	3.92	4.30	3.45	3
	511 BTS 8092	5.20	3.12	4.11	4.16		3.23	4.18	3.86	3.98	3.94	4.11	3.85	3
	527 BTS 8100	5.09	3.49	3.59	4.07		3.61	3.65	3.78	3.83	--	3.89	--	2
	526 BTS 8133	4.59	2.99	3.89	3.67		3.10	3.96	3.57	3.51	--	3.46	--	2
	555 BTS 8156	5.18	3.92	4.37	4.14		4.06	4.44	4.21	3.93	--	3.64	--	2
	501 BTS 8205	4.80	2.95	4.12	3.84		3.05	4.19	3.69	--	--	--	--	1
	508 BTS 8217	5.49	3.21	4.43	4.39		3.32	4.50	4.07	--	--	--	--	1
	542 BTS 8226	5.03	3.30	3.87	4.02		3.42	3.94	3.79	--	--	--	--	1
	537 BTS 8242	5.72	4.27	4.35	4.57		4.42	4.42	4.47	--	--	--	--	1
	509 BTS 8248	5.64	3.21	3.89	4.51		3.32	3.96	3.93	--	--	--	--	1
	540 BTS 8270	5.04	3.42	3.97	4.03		3.54	4.04	3.87	--	--	--	--	1
	551 BTS 8299	5.03	3.27	3.80	4.02		3.39	3.86	3.76	--	--	--	--	1
	503 BTS 8629	5.79	4.10	4.55	4.63		4.24	4.63	4.50	4.37	4.22	4.24	3.92	7
	510 BTS 8927	5.45	3.32	4.13	4.36		3.44	4.20	4.00	4.26	4.13	4.51	3.87	4
	557 BTS 8961	5.21	4.02	4.99	4.16		4.16	5.07	4.47	4.64	4.44	4.80	4.04	4
	566 Crystal 021	4.97	3.21	3.86	3.97		3.32	3.93	3.74	3.97	3.80	4.19	3.46	3
	559 Crystal 022	4.70	3.81	4.31	3.76		3.94	4.38	4.03	4.41	4.21	4.79	3.81	3
	563 Crystal 026	4.13	3.44	4.34	3.30		3.56	4.41	3.76	3.75	3.75	3.74	3.75	3
	528 Crystal 130	4.79	2.98	3.73	3.83		3.09	3.79	3.57	3.90	--	4.23	--	2
	543 Crystal 134	4.68	3.30	3.89	3.74		3.42	3.96	3.70	4.05	--	4.39	--	2
	515 Crystal 137	5.04	3.31	5.21	4.03		3.43	5.30	4.25	3.69	--	3.13	--	2
	565 Crystal 138	4.75	3.46	4.16	3.80		3.58	4.23	3.87	4.03	--	4.19	--	2
	553 Crystal 260	5.22	3.74	3.57	4.17		3.87	3.63	3.89	--	--	--	--	1
	505 Crystal 262	4.35	3.37	3.23	3.48		3.49	3.28	3.42	--	--	--	--	1
	552 Crystal 263	4.27	3.65	4.04	3.41		3.78	4.11	3.77	--	--	--	--	1
	544 Crystal 265	4.49	3.61	3.87	3.59		3.74	3.94	3.75	--	--	--	--	1
	520 Crystal 267	4.55	3.06	4.06	3.64		3.17	4.13	3.64	--	--	--	--	1
	548 Crystal 269	4.64	3.20	3.37	3.71		3.31	3.43	3.48	--	--	--	--	1
	516 Crystal 572	6.05	4.70	4.03	4.84		4.87	4.10	4.60	4.54	4.45	4.47	4.28	8
	539 Crystal 684	5.28	3.45	3.58	4.22		3.57	3.64	3.81	3.71	3.79	3.60	3.97	7
	558 Crystal 793	4.97	3.67	3.63	3.97		3.80	3.69	3.82	3.78	3.81	3.74	3.87	6
	530 Crystal 912	4.86	2.87	3.42	3.89		2.97	3.48	3.44	3.70	3.69	3.95	3.67	4
	564 Crystal 913	5.06	3.31	3.83	4.04		3.43	3.89	3.79	4.09	3.98	4.39	3.75	4
	541 Hilleshög HIL2317	4.78	3.26	4.46	3.82		3.38	4.54	3.91	4.46	4.26	5.01	3.86	4
	517 Hilleshög HIL2320	5.31	4.01	3.55	4.24		4.15	3.61	4.00	4.33	4.07	4.66	3.55	4
	521 Hilleshög HIL2366	5.64	4.47	3.77	4.51		4.63	3.83	4.32	5.07	4.65	5.81	3.81	3
	545 Hilleshög HIL2367	5.27	4.67	3.41	4.21		4.83	3.47	4.17	4.65	4.27	5.13	3.51	3
	560 Hilleshög HIL2368	5.82	4.28	4.73	4.65		4.43	4.81	4.63	4.94	4.53	5.25	3.70	3
	547 Hilleshög HIL2386	5.72	4.37	3.77	4.57		4.52	3.83	4.31	5.14	--	5.98	--	2
	512 Hilleshög HIL2389	5.02	3.75	3.38	4.01		3.88	3.44	3.78	3.82	--	3.86	--	2
	514 Hilleshög HIL2440	5.70	4.45	3.80	4.56		4.61	3.86	4.34	--	--	--	--	1
	538 Hilleshög HIL2441	4.84	4.00	3.66	3.87		4.14	3.72	3.91	--	--	--	--	1
	507 Hilleshög HIL2442	6.06	4.65	4.74	4.84		4.81	4.82	4.83	--	--	--	--	1
	518 Hilleshög HIL2443	4.81	4.55	3.68	3.85		4.71	3.74	4.10	--	--	--	--	1
	504 Hilleshög HIL9708	5.29	4.14	4.74	4.23		4.29	4.82	4.45	5.39	4.91	6.34	3.96	8
	519 Hilleshög HIL9920	5.03	4.73	4.01	4.02		4.90	4.08	4.33	4.49	4.21	4.65	3.65	6
	535 Hilleshög HM9528RR	5.51	4.01	3.58	4.40		4.15	3.64	4.07	4.79	4.43	5.51	3.72	9
	536 Maribo MA717	4.77	4.50	4.63	3.81		4.66	4.71	4.39	5.57	4.97	6.75	3.77	6
	531 Maribo MA902	5.93	4.71	4.08	4.74		4.88	4.15	4.59	5.78	5.19	6.96	4.01	4
	523 Maribo MA932	5.40	4.28	4.02	4.32		4.43	4.09	4.28	4.44	--	4.60	--	2
	550 Maribo MA942	5.51	4.11	3.86	4.40		4.26	3.93	4.20	--	--	--	--	1
	556 Maribo MA943	4.87	4.08	4.43	3.89		4.22	4.50	4.21	--	--	--	--	1
	502 Maribo MA944	5.60	4.35	4.07	4.48		4.50	4.14	4.37	--	--	--	--	1

Table 23.

2022 Aphanomyces Ratings for Official Trial Entries

ACSC (Perley, MN) - KWS (Shakopee, MN) - Magno (Glyndon, MN)

		Unadjusted ^^			Adjusted ++								
		Perl	Clim	Shak	Glyn	Perl	Clim	Shak	Glyn					Trial
Chk++	Code Description	9/8	NA	8/24	9/1	9/8	NA	8/24	9/1	2022	2 Yr	3 Yr	2021 ++	2020 ++	Yrs $$
	554 SV 203	5.06		4.47	3.99	4.04		4.63	4.06	4.24	4.30	4.31	4.35	4.34	3
	522 SV 215	6.02		5.05	5.08	4.81		5.23	5.17	5.07	5.05	--	5.03	--	2
	513 SV 265	5.57		4.45	3.79	4.45		4.61	3.85	4.30	4.63	4.41	4.95	3.98	7
	532 SV 285	5.25		4.64	3.98	4.20		4.80	4.05	4.35	4.42	4.37	4.48	4.28	5
	546 SV 321	6.36		5.43	4.63	5.08		5.62	4.71	5.14	--	--	--	--	1
	549 SV 322	5.98		4.88	4.57	4.78		5.05	4.65	4.83	--	--	--	--	1
	534 SV 324	5.90		5.28	3.96	4.72		5.47	4.03	4.74	--	--	--	--	1
	529 SX 1815	5.28		4.80	3.60	4.22		4.97	3.66	4.28	4.24	--	4.19	--	2
	525 SX 1816	5.79		5.36	4.65	4.63		5.55	4.73	4.97	5.09	--	5.21	--	2
	562 SX 1818	5.68		5.24	4.41	4.54		5.42	4.48	4.82	5.19	--	5.56	--	2
	561 SX 1829	5.79		4.28	4.12	4.63		4.43	4.19	4.42	--	--	--	--	1
	506 SX 1898	5.09		4.49	3.96	4.07		4.65	4.03	4.25	4.61	4.33	4.97	3.76	4
1	1001 AP CK#32 CRYS981	4.95		3.07	4.29	3.96		3.18	4.36	3.83	3.96	3.97	4.09	3.99	14
1	1002 AP CK#33 CRYS768	6.32		3.98	4.56	5.05		4.12	4.64	4.60	4.21	4.43	3.82	4.87	16
1	1003 AP CK#35 BETA87RR5	6.68		4.80	5.85	5.34		4.97	5.95	5.42	5.11	4.96	4.79	4.68	16
1	1004 AP CK#41 CRYS765	7.02		5.51	5.61	5.61		5.70	5.70	5.67	5.28	5.45	4.89	5.78	12
1	1005 AP CK#43 BTS80RR32	5.72		4.87	4.69	4.57		5.04	4.77	4.79	4.87	4.88	4.94	4.92	13
1	1006 AP CK#44 SEEDVISIO	6.50		5.53	5.58	5.20		5.73	5.67	5.53	4.84	4.94	4.14	5.15	14
1	1007 AP CK#45 CRYS986	5.38		4.29	3.94	4.30		4.44	4.01	4.25	4.91	4.84	5.57	4.71	14
1	1008 AP CK#47 CRYS101	4.78		3.50	4.59	3.82		3.62	4.67	4.04	4.24	4.11	4.45	3.86	12
1	1009 AP CK#59 BTS8606	5.67		3.97	4.17	4.53		4.11	4.24	4.29	4.68	4.64	5.06	4.56	7
1	1010 AP CK#51 CRYS246	6.08		4.77	4.54	4.86		4.94	4.62	4.81	4.65	4.71	4.50	4.82	11
1	1011 AP CK#52 HILL4094RR	5.75		5.37	4.71	4.60		5.56	4.79	4.98	4.96	4.72	4.94	4.23	15
1	1012 AP CK#55 CRYS247	6.32		4.79	4.65	5.05		4.96	4.73	4.91	4.82	4.96	4.73	5.22	11
1	1013 AP CK#56 BTS8363	6.16		5.10	4.65	4.92		5.28	4.73	4.98	5.23	5.15	5.49	4.99	10
1	1014 AP CK#57 CRYS578	5.66		4.66	4.26	4.52		4.82	4.33	4.56	4.76	4.72	4.95	4.66	8
1	1015 AP CK#58 CRYS572	6.03		4.53	3.89	4.82		4.69	3.96	4.49	4.64	4.61	4.79	4.56	8
	1016 AP CK MOD RES RR	6.28		4.47	4.70	5.02		4.63	4.78	4.81	4.23	4.36	3.65	4.61	16
	1017 Crystal 684 (Filler)	5.38		3.35	3.44	4.30		3.47	3.50	3.76	3.68	3.77	3.60	3.97	7
15	Check Mean	5.93		4.58	4.67	4.74		4.74	4.74	4.74					
	Trial Mean	5.37		4.06	4.16	4.29		4.20	4.23	4.24					
	Coeff. of Var. (%)	9.5		13.3	12.6										
	Mean LSD (0.05)	0.59		0.68	0.77										
	Mean LSD (0.01)	0.78		0.89	1.01										
	Sig Lvl	**		**	**										
	Adjustment Factor					0.799		1.035	1.017						

^^ 2022 Root Rating was taken in early fall (1=healthy, 9+=severe damage).

++ Ratings adjusted to 2003 basis. (2000-2002 Aph nurseries). Ratings adjusted on the basis of checks.

Climax(Clim)-Abandoned due to lack of Aph pressure

Ratings in green font indicate good resistance.

Ratings in red font indicate a level of concern.

Table 24.
2022 Cercospora Ratings for Official Trial Entries
KWS (Randolph, MN) - BSDF (Saginaw, MI) - ACSC (Foxhome, MN)

Chk	Code	Description	Unadjusted			Adjusted to 1982 Basis++								Trial
			Randolph Avg 8 Dates+	BSDF Avg 5 Dates+	Foxhome Avg 4 Dates+	Randolph Avg 8 Dates+	BSDF Avg 5 Dates+	Foxhome Avg 4 Dates+	2022 3 loc	2 Yr	3 Yr	2021	2020	Yrs $$
	524	BTS 8018	1.56	2.54	1.78	1.73	2.34	2.03	2.03	2.17	2.25	2.31	2.41	3
	567	BTS 8034	1.75	2.81	2.04	1.94	2.59	2.33	2.28	2.42	2.51	2.56	2.70	3
	533	BTS 8073	3.64	5.30	4.16	4.03	4.88	4.75	4.55	4.55	4.59	4.56	4.68	3
	511	BTS 8092	3.85	5.03	3.40	4.26	4.63	3.88	4.26	4.44	4.38	4.62	4.26	3
	527	BTS 8100	3.59	4.05	3.42	3.97	3.73	3.90	3.87	3.94	--	4.01	--	2
	526	BTS 8133	1.87	2.62	1.94	2.07	2.41	2.21	2.23	2.26	--	2.30	--	2
	555	BTS 8156	1.83	3.17	2.05	2.02	2.92	2.34	2.43	2.46	--	2.48	--	2
	501	BTS 8205	3.55	4.85	3.88	3.93	4.47	4.43	4.27	--	--	--	--	1
	508	BTS 8217	1.75	2.94	1.84	1.94	2.71	2.10	2.25	--	--	--	--	1
	542	BTS 8226	1.39	2.88	1.60	1.54	2.65	1.83	2.00	--	--	--	--	1
	537	BTS 8242	3.50	5.40	3.69	3.87	4.97	4.21	4.35	--	--	--	--	1
	509	BTS 8248	1.34	2.91	1.51	1.48	2.68	1.72	1.96	--	--	--	--	1
	540	BTS 8270	1.44	2.47	1.79	1.59	2.27	2.04	1.97	--	--	--	--	1
	551	BTS 8299	1.68	2.30	1.84	1.86	2.12	2.10	2.02	--	--	--	--	1
	503	BTS 8629	4.39	4.71	3.83	4.85	4.34	4.37	4.52	4.65	4.62	4.78	4.55	7
	510	BTS 8927	3.72	5.02	3.96	4.11	4.62	4.52	4.42	4.45	4.44	4.48	4.42	4
	557	BTS 8961	3.58	5.50	4.02	3.96	5.06	4.59	4.54	4.53	4.58	4.53	4.69	4
	566	Crystal 021	1.93	2.66	1.46	2.13	2.45	1.67	2.08	2.18	2.19	2.28	2.20	3
	559	Crystal 022	3.37	5.41	4.46	3.73	4.98	5.09	4.60	4.78	4.76	4.97	4.71	3
	563	Crystal 026	3.75	5.84	3.99	4.15	5.38	4.55	4.69	4.56	4.63	4.43	4.76	3
	528	Crystal 130	1.46	2.84	1.82	1.61	2.61	2.08	2.10	2.24	--	2.38	--	2
	543	Crystal 134	3.65	5.34	3.90	4.04	4.92	4.45	4.47	4.53	--	4.59	--	2
	515	Crystal 137	1.91	3.29	2.25	2.11	3.03	2.57	2.57	2.55	--	2.53	--	2
	565	Crystal 138	4.05	5.89	4.13	4.48	5.42	4.71	4.87	4.80	--	4.74	--	2
	553	Crystal 260	1.44	2.72	1.80	1.59	2.50	2.05	2.05	--	--	--	--	1
	505	Crystal 262	4.03	5.00	3.70	4.46	4.60	4.22	4.43	--	--	--	--	1
	552	Crystal 263	3.26	4.39	3.28	3.60	4.04	3.74	3.80	--	--	--	--	1
	544	Crystal 265	1.76	2.55	1.65	1.95	2.35	1.88	2.06	--	--	--	--	1
	520	Crystal 267	1.75	2.81	1.95	1.94	2.59	2.23	2.25	--	--	--	--	1
	548	Crystal 269	4.43	4.92	3.83	4.90	4.53	4.37	4.60	--	--	--	--	1
	516	Crystal 572	3.78	5.40	3.81	4.18	4.97	4.35	4.50	4.63	4.57	4.75	4.46	8
	539	Crystal 684	4.66	4.31	4.07	5.15	3.97	4.64	4.59	4.57	4.52	4.54	4.44	7
	558	Crystal 793	3.90	4.44	3.43	4.31	4.09	3.91	4.10	4.12	4.18	4.13	4.31	6
	530	Crystal 912	4.26	5.48	4.10	4.71	5.05	4.68	4.81	4.97	4.90	5.13	4.75	4
	564	Crystal 913	3.18	4.16	3.38	3.52	3.83	3.86	3.73	3.92	3.99	4.10	4.13	4
	541	Hilleshög HIL2317	4.88	5.12	4.63	5.40	4.71	5.28	5.13	4.85	4.92	4.57	5.05	4
	517	Hilleshög HIL2320	4.63	5.19	4.51	5.12	4.78	5.15	5.01	4.90	4.97	4.78	5.11	4
	521	Hilleshög HIL2366	4.76	5.31	4.25	5.26	4.89	4.85	5.00	5.00	4.98	5.01	4.94	3
	545	Hilleshög HIL2367	4.40	5.27	3.98	4.87	4.85	4.54	4.75	4.75	4.86	4.75	5.08	3
	560	Hilleshög HIL2368	4.25	5.04	3.80	4.70	4.64	4.34	4.56	4.61	4.64	4.66	4.69	3
	547	Hilleshög HIL2386	4.17	5.46	3.50	4.61	5.03	3.99	4.54	4.42	--	4.30	--	2
	512	Hilleshög HIL2389	4.59	4.65	4.12	5.08	4.28	4.70	4.69	4.77	--	4.85	--	2
	514	Hilleshög HIL2440	4.41	5.91	4.06	4.88	5.44	4.63	4.98	--	--	--	--	1
	538	Hilleshög HIL2441	3.80	4.64	3.11	4.20	4.27	3.55	4.01	--	--	--	--	1
	507	Hilleshög HIL2442	3.79	5.30	3.58	4.19	4.88	4.08	4.39	--	--	--	--	1
	518	Hilleshög HIL2443	4.83	5.61	4.35	5.34	5.16	4.96	5.16	--	--	--	--	1
	504	Hilleshög HIL9708	4.58	5.32	4.06	5.06	4.90	4.63	4.86	4.76	4.83	4.65	4.97	8
	519	Hilleshög HIL9920	4.63	5.07	4.37	5.12	4.67	4.99	4.92	4.84	4.83	4.75	4.82	6
	535	Hilleshög HM9528RR	4.56	5.26	3.86	5.04	4.84	4.40	4.76	4.64	4.71	4.52	4.84	9
	536	Maribo MA717	4.90	5.46	4.13	5.42	5.03	4.71	5.05	4.86	4.95	4.68	5.11	6
	531	Maribo MA902	4.49	5.58	4.15	4.96	5.14	4.74	4.95	4.79	4.85	4.63	4.96	4
	523	Maribo MA932	4.48	5.30	3.95	4.95	4.88	4.51	4.78	4.82	--	4.85	--	2
	550	Maribo MA942	4.20	4.88	4.01	4.64	4.49	4.58	4.57	--	--	--	--	1
	556	Maribo MA943	3.59	5.20	3.58	3.97	4.79	4.08	4.28	--	--	--	--	1
	502	Maribo MA944	3.82	5.23	3.36	4.22	4.81	3.83	4.29	--	--	--	--	1
	554	SV 203	4.72	4.53	4.23	5.22	4.17	4.83	4.74	4.74	4.84	4.75	5.03	3
	522	SV 215	4.37	4.84	4.10	4.83	4.46	4.68	4.66	4.88	--	5.11	--	2
	513	SV 265	4.05	4.49	4.19	4.48	4.13	4.78	4.46	4.38	4.44	4.30	4.55	7
	532	SV 285	4.62	4.74	4.10	5.11	4.36	4.68	4.72	4.75	4.66	4.78	4.50	5
	546	SV 321	4.18	4.96	3.84	4.62	4.57	4.38	4.52	--	--	--	--	1
	549	SV 322	3.37	4.46	3.12	3.73	4.11	3.56	3.80	--	--	--	--	1
	534	SV 324	5.22	5.16	4.49	5.77	4.75	5.12	5.22	--	--	--	--	1

Table 24.

2022 Cercospora Ratings for Official Trial Entries

KWS (Randolph, MN) - BSDF (Saginaw, MI) - ACSC (Foxhome, MN)

			Unadjusted			Adjusted to 1982 Basis++								
Chk	Code	Description	Randolph Avg 8 Dates+	BSDF Avg 5 Dates+	Foxhome Avg 4 Dates+	Randolph Avg 8 Dates+	BSDF Avg 5 Dates+	Foxhome Avg 4 Dates+	2022 3 loc	2 Yr	3 Yr	2021	2020 Yrs	Trial $$
	529	SX 1815	4.87	5.07	4.53	5.39	4.67	5.17	5.07	4.93	--	4.78	--	2
	525	SX 1816	4.20	4.73	3.97	4.64	4.35	4.53	4.51	4.57	--	4.63	--	2
	562	SX 1818	4.28	4.75	4.44	4.73	4.37	5.07	4.72	4.79	--	4.86	--	2
	561	SX 1829	3.06	3.92	3.10	3.38	3.61	3.54	3.51	--	--	--	--	1
	506	SX 1898	4.74	4.83	3.92	5.24	4.45	4.47	4.72	4.74	4.74	4.76	4.73	4
1	1101	CR CK#19 CRYS808	4.58	5.81	4.96	5.06	5.35	5.66	5.36	5.25	5.22	5.14	5.17	5
1	1102	CR CK#24 HILL4012RR	4.42	5.41	4.56	4.89	4.98	5.20	5.02	5.07	5.15	5.12	5.30	17
1	1103	CR CK#52 MARI717	4.42	5.00	4.10	4.89	4.60	4.68	4.72	4.75	4.87	4.79	5.11	6
1	1104	CR CK#41 CRYS981RR	5.04	5.97	4.17	5.57	5.50	4.76	5.28	5.11	5.09	4.95	5.04	14
1	1105	CR CK#43 CRYS246RR	4.78	4.68	4.26	5.29	4.31	4.86	4.82	4.90	4.85	4.98	4.74	11
1	1106	CR CK#44 BETA80RR32	5.12	5.64	4.37	5.66	5.19	4.99	5.28	5.17	5.04	5.06	4.80	13
1	1107	CR CK#45 HILL4448RR	4.66	6.14	4.48	5.15	5.65	5.11	5.31	5.28	5.38	5.25	5.59	11
1	1108	CR CK#47 HILL4094RR	3.18	4.85	3.71	3.52	4.47	4.23	4.07	4.19	4.20	4.31	4.22	15
1	1109	CR CK#48 MARI504	4.59	5.08	4.43	5.08	4.68	5.05	4.94	5.02	5.16	5.11	5.43	8
1	1110	CR CK#49 CRYS578RR	4.60	5.33	4.37	5.09	4.91	4.99	4.99	5.03	4.95	5.07	4.78	8
1	1111	CR CK#50 CRYS101RR	4.34	5.40	3.97	4.80	4.97	4.53	4.77	4.57	4.61	4.38	4.68	12
1	1112	CR CK#51 CRYS355RR	3.63	4.78	4.33	4.01	4.40	4.94	4.45	4.66	4.67	4.86	4.71	10
	1113	CR CK MOD SUS #6	4.80	5.68	4.73	5.31	5.23	5.40	5.31	5.29	5.22	5.28	5.07	5
	1114	CR CK MOD RES #4	3.43	4.98	3.89	3.79	4.58	4.44	4.27	4.43	4.51	4.58	4.69	15
	1115	CR CK MOD SUS #7	3.96	4.75	4.07	4.38	4.37	4.64	4.47	4.61	4.56	4.75	4.46	8
	1116	CR CK MOD SUS #8	4.40	5.20	3.93	4.87	4.79	4.48	4.71	4.92	4.86	5.13	4.75	4
	1117	Crystal 684 (Filler)	4.54	4.63	3.68	5.02	4.26	4.20	4.49	4.52	4.49	4.54	4.44	7
12		Check Mean	4.45	5.34	4.31	4.92	4.92	4.92	4.92					
		Trial Mean	3.75	4.67	3.61	4.15	4.30	4.12	4.19					
		Coeff. of Var. (%)	7.3	6.50	9.0									
		Mean LSD (0.05)	0.36	0.49	0.42									
		Mean LSD (0.01)	0.47	0.65	0.55									
		Sig Mrk	**	**	**									
		Adj Factor				1.10577	0.92064	1.14105						

* Lower numbers indicate better Cercospora resistance (1-Ex,9=Poor).

++ Ratings adjusted to 1982 basis (5.5 equivalent in 1978-81 CR nurseries). Ratings adjusted on the basis of checks.

Chk = varieties used to adjust CR readings to 1982 basis. Ratings * (Adj. factor) = Adj Rating.

$$ Trial years indicates how many years the entry has been in the official trials.

\+ Average rating based upon multiple rating dates.

Ratings in green font indicate good resistance.

Ratings in red font indicate a level of concern.

Created 11/02/2022

Table 25
2022 Rhizoctonia Ratings for OVT Entries
BSDF (Saginaw, MI) - ACSC (Moorhead, MN) - ACSC (NWROC)

Chk		Unadjusted				Adjusted @									
@	Code Description	BSDF 8/11	TSC-E 10/6	TSC-W NA	NWROC 8/9	BSDF 8/11	TSC-E 10/6	TSC-W NA	NWROC 8/9	2022	2 Yr	3 Yr	2021	2020	Years
	524 BTS 8018	4.40	3.50		3.42	3.76	4.05		3.98	3.93	3.88	3.97	3.83	4.16	3
	567 BTS 8034	5.13	4.18		3.64	4.39	4.84		4.24	4.49	4.18	4.31	3.88	4.56	3
	533 BTS 8073	4.78	3.89		3.47	4.09	4.50		4.04	4.21	3.94	4.00	3.67	4.11	3
	511 BTS 8092	4.56	2.97		2.92	3.90	3.44		3.40	3.58	3.70	3.73	3.81	3.81	3
	527 BTS 8100	4.82	2.79		3.29	4.12	3.23		3.83	3.73	3.41	--	3.09	--	2
	526 BTS 8133	4.36	2.56		3.11	3.73	2.96		3.62	3.44	3.65	--	3.87	--	2
	555 BTS 8156	4.91	3.64		3.69	4.20	4.21		4.30	4.24	4.02	--	3.81	--	2
	501 BTS 8205	4.90	3.03		3.23	4.19	3.51		3.76	3.82	--	--	--	--	1
	508 BTS 8217	4.51	3.87		3.51	3.86	4.48		4.09	4.14	--	--	--	--	1
	542 BTS 8226	4.46	3.30		3.08	3.81	3.82		3.59	3.74	--	--	--	--	1
	537 BTS 8242	4.64	3.46		3.46	3.97	4.01		4.03	4.00	--	--	--	--	1
	509 BTS 8248	5.05	3.35		3.39	4.32	3.88		3.95	4.05	--	--	--	--	1
	540 BTS 8270	4.94	3.96		3.59	4.22	4.59		4.18	4.33	--	--	--	--	1
	551 BTS 8299	4.47	3.68		2.85	3.82	4.26		3.32	3.80	--	--	--	--	1
	503 BTS 8629	4.53	2.89		3.38	3.87	3.35		3.94	3.72	3.97	4.08	4.22	4.30	7
	510 BTS 8927	5.14	3.61		3.28	4.40	4.18		3.82	4.13	3.91	4.06	3.68	4.37	4
	557 BTS 8961	4.61	3.01		3.28	3.94	3.49		3.82	3.75	3.75	3.87	3.75	4.11	4
	566 Crystal 021	4.09	3.04		3.19	3.50	3.52		3.71	3.58	3.48	3.61	3.38	3.88	3
	559 Crystal 022	5.10	3.38		3.47	4.36	3.91		4.04	4.10	3.82	3.71	3.53	3.49	3
	563 Crystal 026	4.15	2.78		2.65	3.55	3.22		3.09	3.28	3.31	3.40	3.34	3.57	3
	528 Crystal 130	4.86	3.67		3.29	4.16	4.25		3.83	4.08	3.82	--	3.57	--	2
	543 Crystal 134	4.34	2.86		3.32	3.71	3.31		3.87	3.63	3.53	--	3.44	--	2
	515 Crystal 137	4.58	3.89		3.55	3.92	4.50		4.13	4.18	3.86	--	3.53	--	2
	565 Crystal 138	4.53	3.29		3.23	3.87	3.81		3.76	3.81	3.67	--	3.52	--	2
	553 Crystal 260	4.85	3.08		2.92	4.15	3.57		3.40	3.70	--	--	--	--	1
	505 Crystal 262	3.83	2.82		3.10	3.28	3.27		3.61	3.38	--	--	--	--	1
	552 Crystal 263	5.14	3.95		3.68	4.40	4.57		4.28	4.42	--	--	--	--	1
	544 Crystal 265	4.35	3.09		2.62	3.72	3.58		3.05	3.45	--	--	--	--	1
	520 Crystal 267	4.73	3.44		3.60	4.04	3.98		4.19	4.07	--	--	--	--	1
	548 Crystal 269	4.66	3.75		3.66	3.98	4.34		4.26	4.20	--	--	--	--	1
	516 Crystal 572	5.31	3.60		3.56	4.54	4.17		4.14	4.28	4.08	4.13	3.88	4.21	8
	539 Crystal 684	4.98	3.76		3.54	4.26	4.35		4.12	4.24	4.03	4.07	3.82	4.15	7
	558 Crystal 793	4.84	4.43		4.22	4.14	5.13		4.91	4.73	4.55	4.64	4.36	4.84	6
	530 Crystal 912	4.13	2.66		2.78	3.53	3.08		3.24	3.28	3.53	3.53	3.77	3.54	4
	564 Crystal 913	4.50	4.06		3.56	3.85	4.70		4.14	4.23	4.08	4.25	3.94	4.58	4
	541 Hilleshög HIL2317	4.94	4.58		3.95	4.22	5.30		4.60	4.71	4.73	4.81	4.76	4.95	4
	517 Hilleshög HIL2320	4.64	3.56		3.06	3.97	4.12		3.56	3.88	3.84	4.11	3.80	4.64	4
	521 Hilleshög HIL2366	4.76	3.43		3.19	4.07	3.97		3.71	3.92	3.95	4.05	3.98	4.24	3
	545 Hilleshög HIL2367	4.87	3.18		3.31	4.16	3.68		3.85	3.90	4.00	4.09	4.10	4.26	3
	560 Hilleshög HIL2368	4.95	2.80		2.50	4.23	3.24		2.91	3.46	3.19	3.30	2.92	3.52	3
	547 Hilleshög HIL2386	4.20	3.06		2.92	3.59	3.54		3.40	3.51	3.85	--	4.20	--	2
	512 Hilleshög HIL2389	4.87	3.33		3.22	4.16	3.86		3.75	3.92	3.96	--	3.99	--	2
	514 Hilleshög HIL2440	5.24	3.26		3.41	4.48	3.77		3.97	4.08	--	--	--	--	1
	538 Hilleshög HIL2441	4.19	3.18		3.08	3.58	3.68		3.59	3.62	--	--	--	--	1
	507 Hilleshög HIL2442	4.82	3.08		2.92	4.12	3.57		3.40	3.70	--	--	--	--	1
	518 Hilleshög HIL2443	4.57	4.02		3.60	3.91	4.65		4.19	4.25	--	--	--	--	1
	504 Hilleshög HIL9708	4.72	3.52		2.76	4.04	4.08		3.21	3.78	3.78	3.80	3.78	3.83	8
	519 Hilleshög HIL9920	4.83	4.26		4.02	4.13	4.93		4.68	4.58	4.64	4.80	4.70	5.12	6
	535 Hilleshög HM9528RR	4.59	3.64		3.34	3.92	4.21		3.89	4.01	4.24	4.35	4.47	4.57	9
	536 Maribo MA717	4.47	3.57		3.28	3.82	4.13		3.82	3.92	4.12	4.28	4.31	4.61	6
	531 Maribo MA902	4.72	2.84		2.92	4.04	3.29		3.40	3.57	3.69	3.77	3.80	3.93	4
	523 Maribo MA932	3.90	3.58		3.24	3.33	4.15		3.77	3.75	3.89	--	4.03	--	2
	550 Maribo MA942	4.85	3.57		3.67	4.15	4.13		4.27	4.18	--	--	--	--	1
	556 Maribo MA943	5.00	3.36		3.40	4.28	3.89		3.96	4.04	--	--	--	--	1
	502 Maribo MA944	4.47	3.41		3.45	3.82	3.95		4.02	3.93	--	--	--	--	1
	554 SV 203	4.63	3.87		3.54	3.96	4.48		4.12	4.19	4.26	4.27	4.34	4.29	3
	522 SV 215	4.79	3.85		3.47	4.10	4.46		4.04	4.20	3.99	--	3.79	--	2
	513 SV 265	4.85	3.18		3.47	4.15	3.68		4.04	3.96	4.06	4.11	4.17	4.21	7
	532 SV 285	5.23	4.41		3.45	4.47	5.11		4.02	4.53	4.39	4.27	4.26	4.03	5
	546 SV 321	5.49	3.78		3.77	4.69	4.38		4.39	4.49	--	--	--	--	1
	549 SV 322	5.15	4.27		4.03	4.40	4.94		4.69	4.68	--	--	--	--	1
	534 SV 324	5.10	4.48		3.67	4.36	5.19		4.27	4.61	--	--	--	--	1
	529 SX 1815	4.80	3.69		3.42	4.10	4.27		3.98	4.12	4.26	--	4.40	--	2
	525 SX 1816	5.07	3.82		3.41	4.34	4.42		3.97	4.24	4.17	--	4.09	--	2
	562 SX 1818	4.71	3.79		3.49	4.03	4.39		4.06	4.16	4.28	--	4.41	--	2
	561 SX 1829	4.91	4.14		3.69	4.20	4.79		4.30	4.43	--	--	--	--	1
	506 SX 1898	4.67	3.73		3.47	3.99	4.32		4.04	4.12	4.23	4.21	4.34	4.16	4

2022 Rhizoctonia Ratings for OVT Entries
BSDF (Saginaw, MI) - ACSC (Moorhead, MN) - ACSC (NWROC)

Chk			Unadjusted				Adjusted @									
			BSDF	TSC-E	TSC-W	NWROC	BSDF	TSC-E	TSC-W	NWROC						
@	Code	Description	8/11	10/6	NA	8/9	8/11	10/6	NA	8/9	2022	2 Yr	3 Yr	2021	2020	Years
1	1301	RH CK#55 CRYS803	4.76	4.42		4.12	4.07	5.12		4.80	4.66	4.81	4.87	4.96	5.00	5
1	1302	RH CK#21 CRYS768	5.02	3.54		3.96	4.29	4.10		4.61	4.33	4.33	4.39	4.32	4.50	14
1	1303	RH CK#25 HILL4043RR	5.59	4.15		3.89	4.78	4.81		4.53	4.70	4.59	4.69	4.47	4.89	14
1	1304	RH CK#35 SES36812RR	5.08	3.49		3.75	4.34	4.04		4.37	4.25	4.18	4.27	4.11	4.46	15
1	1305	RH CK#58 CRYS793	4.77	4.12		3.96	4.08	4.77		4.61	4.49	4.43	4.56	4.36	4.84	6
1	1306	RH CK#57 BTS8606	5.50	3.62		3.62	4.70	4.19		4.21	4.37	4.43	4.53	4.48	4.75	7
1	1307	RH CK#40 CRYS101	5.43	3.83		4.01	4.64	4.43		4.67	4.58	4.81	4.71	5.04	4.52	12
1	1308	RH CK#56 MARI504	5.00	3.77		3.34	4.28	4.37		3.89	4.18	4.38	4.53	4.58	4.83	8
1	1309	RH CK#47 SES36272RR	5.51	4.45		3.46	4.71	5.15		4.03	4.63	4.36	4.36	4.09	4.36	11
1	1310	RH CK#48 HILL4094RR	4.92	2.71		3.00	4.21	3.14		3.49	3.61	3.42	3.48	3.22	3.61	15
1	1311	RH CK#49 CRYS247	5.01	3.64		3.80	4.28	4.21		4.42	4.31	4.50	4.47	4.70	4.41	11
1	1312	RH CK#51 SXWinchester	5.27	3.99		3.89	4.51	4.62		4.53	4.55	4.46	4.39	4.37	4.25	10
1	1313	RH CK#52 CRYS573	5.03	3.96		4.01	4.30	4.59		4.67	4.52	4.40	4.70	4.29	5.31	8
1	1314	RH CK#53 BTS8500	4.83	3.91		3.88	4.13	4.53		4.52	4.39	4.29	4.32	4.18	4.39	8
1	1315	RH CK#54 CRYS574	5.30	3.28		3.88	4.53	3.80		4.52	4.28	4.18	4.09	4.08	3.92	8
	1316	MOD RHC #10	4.85	4.49		4.07	4.15	5.20		4.74	4.69	4.80	4.86	4.90	5.00	5
	1317	Crystal 684 (Filler)	5.34	3.20		3.48	4.57	3.71		4.05	4.11	3.97	4.03	3.82	4.15	7
15		Mean of Check Varieties	5.13	3.79		3.77	4.39	4.39		4.39						
		Trial Mean	4.80	3.57		3.44	4.10	4.13		4.01						
		Coeff. of Var. (%)	11.7	11.8		10.4										
		Mean LSD (0.05)	0.76	0.62		0.46										
		Mean LSD (0.01)	1.00	0.82		0.60										
		Sig Lvl	**	**		**										
		Adjustment Factor					0.8551	1.1579		1.1643						

@ Ratings adjusted to 2009 basis (2007-2009) RH nurseries. Ratings adjusted on the basis of checks
Lower numbers indicate better tolerance (0=Ex, 7=Poor).
Rhizoctonia Specialty Approval criteria is based upon a 3.82 as of 2022.
TSC-W- Ratings not used due to poor stand.
Ratings in green font indicate good resistance.
Ratings in red font indicate a level of concern.

Table 26.

2022 Fusarium Ratings for Official Trial Entries

ACSC (North Moorhead, MN) - ACSC (Sabin, MN)

Chk @	Code	Description	Unadjusted N Mhd 4Dates+	Unadjusted Sab 4Dates+	Adjusted N Mhd 4Dates+	Adjusted Sab 4Dates+	2022	2 Yr	3 Yr	2021	2020	Years
	524	BTS 8018	2.99	3.38	2.79	3.16	2.98	3.10	2.89	3.22	2.47	3
	567	BTS 8034	2.16	2.46	2.02	2.30	2.16	2.43	2.38	2.71	2.26	3
	533	BTS 8073	3.09	3.46	2.89	3.24	3.06	3.35	3.09	3.63	2.58	3
	511	BTS 8092	3.90	4.38	3.64	4.10	3.87	3.97	3.88	4.07	3.70	3
	527	BTS 8100	2.30	2.66	2.15	2.49	2.32	2.56	--	2.80	--	2
	526	BTS 8133	2.97	3.50	2.77	3.27	3.02	3.32	--	3.62	--	2
	555	BTS 8156	2.30	2.62	2.15	2.45	2.30	2.51	--	2.72	--	2
	501	BTS 8205	2.74	3.35	2.56	3.13	2.85	--	--	--	--	1
	508	BTS 8217	2.54	2.90	2.37	2.71	2.54	--	--	--	--	1
	542	BTS 8226	3.57	3.86	3.33	3.61	3.47	--	--	--	--	1
	537	BTS 8242	3.40	3.92	3.18	3.67	3.42	--	--	--	--	1
	509	BTS 8248	3.42	4.18	3.19	3.91	3.55	--	--	--	--	1
	540	BTS 8270	2.98	3.56	2.78	3.33	3.06	--	--	--	--	1
	551	BTS 8299	3.56	4.21	3.32	3.94	3.63	--	--	--	--	1
	503	BTS 8629	3.96	4.50	3.70	4.21	3.95	4.08	3.98	4.21	3.78	7
	510	BTS 8927	3.04	3.62	2.84	3.39	3.11	3.56	3.23	4.00	2.59	4
	557	BTS 8961	2.92	3.27	2.73	3.06	2.89	3.11	2.80	3.33	2.19	4
	566	Crystal 021	3.09	4.16	2.89	3.89	3.39	3.79	3.47	4.18	2.85	3
	559	Crystal 022	3.02	3.86	2.82	3.61	3.22	3.36	3.11	3.50	2.60	3
	563	Crystal 026	3.03	2.99	2.83	2.80	2.81	2.80	2.64	2.79	2.31	3
	528	Crystal 130	3.07	3.81	2.87	3.57	3.22	3.22	--	3.22	--	2
	543	Crystal 134	3.22	4.00	3.01	3.74	3.37	3.74	--	4.11	--	2
	515	Crystal 137	2.43	2.60	2.27	2.43	2.35	2.30	--	2.25	--	2
	565	Crystal 138	3.13	3.62	2.92	3.39	3.16	3.45	--	3.75	--	2
	553	Crystal 260	3.15	3.39	2.94	3.17	3.06	--	--	--	--	1
	505	Crystal 262	3.25	3.74	3.04	3.50	3.27	--	--	--	--	1
	552	Crystal 263	3.35	4.58	3.13	4.29	3.71	--	--	--	--	1
	544	Crystal 265	4.05	3.64	3.78	3.41	3.59	--	--	--	--	1
	520	Crystal 267	2.31	2.48	2.16	2.32	2.24	--	--	--	--	1
	548	Crystal 269	2.87	4.32	2.68	4.04	3.36	--	--	--	--	1
	516	Crystal 572	2.48	3.69	2.32	3.45	2.88	3.11	2.86	3.34	2.36	8
	539	Crystal 684	2.14	2.74	2.00	2.56	2.28	2.52	2.45	2.76	2.32	7
	558	Crystal 793	2.84	3.65	2.65	3.42	3.03	2.92	2.82	2.80	2.61	6
	530	Crystal 912	3.43	4.39	3.20	4.11	3.66	3.88	3.79	4.11	3.61	4
	564	Crystal 913	2.87	3.83	2.68	3.58	3.13	3.40	3.13	3.68	2.59	4
	541	Hilleshög HIL2317	6.10	5.99	5.70	5.60	5.65	5.86	5.89	6.06	5.97	4
	517	Hilleshög HIL2320	4.96	5.17	4.63	4.84	4.73	4.62	4.60	4.50	4.56	4
	521	Hilleshög HIL2366	5.04	5.29	4.71	4.95	4.83	4.74	4.68	4.65	4.55	3
	545	Hilleshög HIL2367	3.95	5.03	3.69	4.71	4.20	4.23	4.30	4.27	4.44	3
	560	Hilleshög HIL2368	4.47	4.80	4.17	4.49	4.33	4.39	4.21	4.44	3.86	3
	547	Hilleshög HIL2386	3.45	4.53	3.22	4.24	3.73	3.99	--	4.26	--	2
	512	Hilleshög HIL2389	4.47	4.81	4.17	4.50	4.34	4.54	--	4.75	--	2
	514	Hilleshög HIL2440	3.78	4.26	3.53	3.99	3.76	--	--	--	--	1
	538	Hilleshög HIL2441	3.97	4.59	3.71	4.29	4.00	--	--	--	--	1
	507	Hilleshög HIL2442	4.92	5.09	4.59	4.76	4.68	--	--	--	--	1
	518	Hilleshög HIL2443	3.17	3.49	2.96	3.27	3.11	--	--	--	--	1
	504	Hilleshög HIL9708	3.75	4.44	3.50	4.15	3.83	4.29	4.08	4.76	3.64	8
	519	Hilleshög HIL9920	6.00	6.11	5.60	5.72	5.66	5.56	5.80	5.45	6.28	6
	535	Hilleshög HM9528RR	4.55	5.71	4.25	5.34	4.80	4.85	4.80	4.91	4.68	9
	536	Maribo MA717	5.40	5.03	5.04	4.71	4.87	4.99	4.87	5.11	4.62	6
	531	Maribo MA902	4.54	4.67	4.24	4.37	4.30	4.40	4.27	4.50	4.01	4
	523	Maribo MA932	3.99	5.04	3.73	4.72	4.22	4.13	--	4.05	--	2
	550	Maribo MA942	4.95	5.77	4.62	5.40	5.01	--	--	--	--	1
	556	Maribo MA943	4.59	4.36	4.29	4.08	4.18	--	--	--	--	1
	502	Maribo MA944	5.26	5.39	4.91	5.04	4.98	--	--	--	--	1

2022 Fusarium Ratings for Official Trial Entries

ACSC (North Moorhead, MN) - ACSC (Sabin, MN)

Chk @	Code	Description	Unadjusted N Mhd 4Dates+	Unadjusted Sab 4Dates+	Adjusted N Mhd 4Dates+	Adjusted Sab 4Dates+	2022	2 Yr	3 Yr	2021	2020	Years
	554	SV 203	5.89	5.99	5.50	5.60	5.55	5.77	5.60	5.99	5.26	3
	522	SV 215	5.29	5.05	4.94	4.73	4.83	4.81	--	4.79	--	2
	513	SV 265	6.11	6.90	5.71	6.46	6.08	5.87	5.81	5.65	5.70	7
	532	SV 285	5.73	5.98	5.35	5.60	5.47	5.87	5.71	6.26	5.40	5
	546	SV 321	4.19	4.82	3.91	4.51	4.21	--	--	--	--	1
	549	SV 322	4.37	4.46	4.08	4.17	4.13	--	--	--	--	1
	534	SV 324	4.41	5.32	4.12	4.98	4.55	--	--	--	--	1
	529	SX 1815	5.61	5.78	5.24	5.41	5.32	5.07	--	4.82	--	2
	525	SX 1816	3.91	4.39	3.65	4.11	3.88	4.13	--	4.37	--	2
	562	SX 1818	4.61	5.10	4.31	4.77	4.54	4.90	--	5.26	--	2
	561	SX 1829	3.81	4.10	3.56	3.84	3.70	--	--	--	--	1
	506	SX 1898	5.86	5.65	5.47	5.29	5.38	5.53	5.49	5.67	5.41	4
1	1201	FS CK #8 HILL4000RR	7.04	6.43	6.57	6.02	6.30	6.10	6.22	5.90	6.48	15
1	1202	FS CK #34 SES265	6.00	5.96	5.60	5.58	5.59	5.80	5.77	6.02	5.70	7
1	1203	FS CK #12 HILL4012RR	7.14	6.50	6.67	6.08	6.38	6.30	6.35	6.23	6.45	17
1	1204	FS CK #13 HILL4043RR	6.20	6.13	5.79	5.74	5.76	5.67	5.50	5.58	5.16	16
1	1205	FS CK #18 CRYS768RR	4.55	5.00	4.25	4.68	4.46	4.17	4.18	3.87	4.21	14
1	1206	FS CK #33 SES375	5.59	6.02	5.22	5.63	5.43	5.74	5.58	6.05	5.25	6
1	1207	FS CK #29 CRYS875RR	5.30	4.95	4.95	4.63	4.79	4.63	4.70	4.48	4.84	15
1	1208	FS CK #30 BTS8337	4.03	4.37	3.76	4.09	3.93	3.73	3.69	3.53	3.60	10
1	1209	FS CK #31 SXMarathon	5.43	5.29	5.07	4.95	5.01	5.37	5.34	5.72	5.30	8
1	1210	FS CK #32 CRYS574	2.31	2.84	2.16	2.66	2.41	2.54	2.52	2.67	2.48	8
	1211	FS CK SUS RR #11	5.83	5.67	5.44	5.31	5.38	5.41	5.42	5.45	5.45	10
	1212	FS CK MOD RR SUS #2	5.77	5.61	5.39	5.25	5.32	5.58	5.31	5.83	4.77	10
	1213	Crystal 684 (Filler)	2.21	2.81	2.06	2.63	2.35	2.55	2.47	2.76	2.32	7
10		Check Mean	5.36	5.35	5.00	5.01	5.00					
		Trial Mean	4.05	4.45	3.78	4.16	3.97					
		Coeff. of Var. (%)	10.9	9.2								
		Mean LSD (0.05)	0.54	0.56								
		Mean LSD (0.01)	0.71	0.74								
		Sig Mrk	**	**								
		Adj Factor			0.9339	0.9357						

@ Ratings adjusted to 2007 basis. (2005-2006 FS Nurseries). Ratings adjusted on the basis of checks.
+ Average rating based upon multiple rating dates. Lower numbers indicate better tolerance (1=Ex, 9=Poor).
Ratings in green font indicate good resistance.
Ratings in red font indicate a level of concern.

Table 27. Pesticides Applied to ACSC Official Trials

	Herbicide			Fungicide		
Location	**Herbicide & Rate**	**Spray Dates**	**Method**	**Fungicide Used**	**Spray Dates**	**Method**
Casselton	RU1, RU1	6/17, 7/13	Ground	CR1, CR2, CR3, CR4	7/21, 8/3, 8/17, 8/30	Ground
Averill	RU1, RU1	6/15, 7/13	Ground	CR1, CR2, CR3, CR4	7/21, 8/3, 8/17, 8/30	Ground
Ada	RU1, RU1	6/17, 7/13	Ground	See below*	5-spray program	Air
Grand Forks	RU1, RU1	6/17, 7/13	Ground	CR1, CR2, CR3, CR4	7/22, 8/4, 8/17, 8/31	Ground
Scandia	RU1, RU1	6/22, 7/13	Ground	CR1, CR2, CR3, CR4	7/22, 8/4, 8/17, 9/7	Ground
Alvarado	RU1, RU1	6/22, 7/18	Ground	CR1, CR2, CR3, CR4	7/29, 8/11, 8/23, 8/31	Ground
St Thomas	RU1, RU1	6/22, 7/18	Ground	CR1, CR2, CR3, CR4	7/28, 8/11, 8/23, 9/2	Ground
Hallock	RU1, RU1	6/22, 7/18	Ground	CR1, CR2, CR3, CR4	7/29, 8/11, 8/23, 8/31	Ground
Bathgate	RU1, RU1	6/22, 7/18	Ground	CR1, CR2, CR3, CR4	7/29, 8/11, 8/23, 8/31	Ground

Created 12/15/2022

Ground applications made by beet seed personnel from Crystal Technical Services Center.

RU1 = Roundup Powermax 3(26 oz./A), Event (1 gal./100 gal water).

Counter 20G applied at 8.9 lbs./A at all locations.

AZteroid in-furrow (5.7 fl oz/A) was used at all locations.

Quadris (14 fl oz/A) was applied to 4-8 leaf beets at all locations

CR1=Insire XT + Manzate Max

CR2=Agritin + Incognito

CR3=Proline+Manzate Max

CR4=Priaxor + Agritin

* Ada site Cercospora fungicides applied by air with grower's field:
Inspire XT + Penncozeb, Super Tin + Talaris, Proline + Penncozeb, Penncozeb, Headline + Super Tin