American Crystal Sugar Company

November 2019

Dear ACSC Sugarbeet Grower:

The 2019 official coded variety performance trials and disease nurseries were planted at 19 sites by American Crystal Sugar Company (ACSC) including 13 yield trial sites. Four additional disease nurseries were planted by third party cooperators. Thanks are extended to the dedicated Technical Services staff involved in the official trial plot care, harvest, and data analysis.

Results

Results from the Official Variety Trials sites were good to excellent. Stands in the trials were generally very good this year. Seven sites were used for variety approval calculations. One site was abandoned due to erratic emergence (St.Thomas) and two locations were slated to be used for Aphanomyces Specialty (Climax and Perley). However, there was not enough disease pressure to warrant Aphanomyces Specialty evaluation. Rhizoctonia was not prevalent in 2019 compared to 2018 in yield trials. Seed treatments and two applications of Quadris were used to control Rhizoctonia. Based upon susceptible plot observations, root aphids were present in low levels at eleven (11) sites. Preliminary root aphid evaluations are presented in table 6. Revenue calculations in 2019 are based on a hypothetical $44.38 payment (5-year rolling average) at 17.5% sugar and 1.5% SLM not considering hauling or production costs.

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

2019 harvest conditions were challenging and unprecedented. Soil moisture levels remained above average throughout the months of September, October, and into November, combined with snow and freezing conditions…creating difficult harvest conditions in all five Factory Districts for all involved. Taking the adverse weather conditions into consideration, our OVT Harvest Staff were quite fortunate to have completed harvest at seven (7) OVT locations, those sites included Argyle, Bathgate, Casselton, Climax, Glyndon, Scandia and Grand Forks (Conventional Trial Only). OVT site locations remaining too wet for harvest, and therefore abandoned were Grand Forks, Halstad, Hillsboro, Perley, and Northcote.

The 2019 data has been combined with the previous years' data, and results are enclosed. Bolter data is presented in plants per acre based upon 60,000 seeds per acre. Results for the yield trials from individual sites are available on the internet.

Seven conventional varieties are approved for sale in 2020 based upon one and two years of data. Two conventional varieties were previously approved and have additional data in the 2012 Sugarbeet Research and Extension Report and 2012 Official Variety Trial Report.

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

Attached are the following pages of information:

1. List of varieties approved for sale to ACSC growers
2. Multi-year performance of RR varieties from all sites
3. Performance of RR varieties under Aphanomyces conditions
4. Performance of conventional varieties from three sites
5. Disease ratings for all nurseries (varieties tested in 2019)
6. Root Aphid rating/evaluation
7. Trial sites, disease observations and agronomic information from all trial locations
8. Seed treatments applied to seed used in the official coded variety trials

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

Roundup Powermax with Event and full rates of fungicides were applied using a pickup sprayer driven down the alleys. Hand weeding was used where necessary. The micro rate program was used on conventional trials. All yield trials were treated with Quadris in a band during the 2 leaf (9 oz) and 6-10 leaf stage (14 oz) for Rhizoctonia control. Azteroid was applied at plant at Casselton. Treatments used for Cercospora control in 2019 included Inspire XT/Penncozeb, Agri Tin/Incognito, Proline/Penncozeb, and Headline/Agri Tin. Ground spraying was conducted by ACSC technical staff.

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

All plot rows were measured for total length after approximately 3.5 feet at each end were removed at the end of August, with skips greater than 60 inches being measured for adjustment purposes. New in 2019, 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 (approx 25 lbs) for sugar and impurity analysis was obtained from each plot. Quality analysis was performed at the ACSC Technical Services quality lab in Moorhead.

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

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

New in 2019, Root Aphid evaluations are included from Shakopee's greenhouse and Ft. Collins, CO field location.

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

Sincerely,

Deborah L Moomjian
Beet Seed Analyst

William S. Niehaus
Official Trial Manager

Attachments

Table 1.
Varieties Meeting ACSC Approval Criteria for the 2020 Sugarbeet Crop ++

Roundup Ready ®	Full Market	Aph Spec	Rhc Spec	High Rzm
BETA8337	Yes	Yes		Hi Rzm
BETA8500	Yes	Yes		Hi Rzm
BETA8524	Yes	Yes		Hi Rzm
BETA8606	Yes			Hi Rzm
BETA8629	Yes	Yes		Hi Rzm
BETA8735	Yes	Yes		Hi Rzm
BETA8749	Yes	Yes	New	Hi Rzm
BETA8767	Yes	New		Hi Rzm
BETA8784	Yes	New		Hi Rzm
BETA8815	New			Hi Rzm
BETA8882	New			Hi Rzm
Crystal 093RR	Yes	Yes		Hi Rzm
Crystal 247RR	Yes			Hi Rzm
Crystal 355RR	Yes		Yes	Hi Rzm
Crystal 572RR	Yes			Hi Rzm
Crystal 574RR	Yes	Yes		Hi Rzm
Crystal 578RR	Yes	Yes		Hi Rzm
Crystal 684RR	Yes	Yes		Hi Rzm
Crystal 793RR	Yes	Yes		Hi Rzm
Crystal 796RR	Yes	Yes		Hi Rzm
Crystal 803RR	New	New		Hi Rzm
Crystal 804RR	New	New		Hi Rzm
Crystal 808RR	New	New		Hi Rzm
Hilleshög HM4302RR	Yes		Yes	Rzm
Hilleshög HM4448RR +	Yes			Rzm
Hilleshög HM9528RR	Yes			Hi Rzm
Hilleshög HIL9708	Yes		New	Hi Rzm
Hilleshög HIL9920	Yes			Hi Rzm
Maribo MA109	Yes		Yes	Hi Rzm
Maribo MA504	Yes			Hi Rzm
Maribo MA717	Yes	New		Hi Rzm
Seedex Bronco RR (1863)	Yes			Hi Rzm
Seedex Canyon RR(844TT)	Yes	Yes		Hi Rzm
Seedex Marathon (856)	Yes			Hi Rzm
Seedex RR1887	New			Hi Rzm
Seedex RR1888	New	New		Hi Rzm
SESVdh RR265	Yes			Hi Rzm
SESVdh RR268	Yes	Yes		Hi Rzm
SESVdh RR333	Yes	Yes		Hi Rzm
SESVdh RR351	Yes			Hi Rzm
SESVdh RR371	Yes			Hi Rzm
SESVdh RR375	Yes			Hi Rzm
SESVdh RR285	New	New		Hi Rzm
SESVdh RR289	New			Hi Rzm

Conventional	Full Market	High Rzm
Crystal R761	Yes	Hi Rzm
Crystal 620	Yes	Hi Rzm
Crystal 840	Yes	Hi Rzm
Crystal 950	New	Hi Rzm
Hilleshög HM3035Rz	Yes	Rzm
Seedex 8869 Cnv	Yes	Hi Rzm
SESVanderhave 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 Rzm.
New = newly approved

+ Previously approved varieties not meeting current approval standards. According to Approval Policy, may be sold in 2020

Created 11/25/2019

++Roundup Ready sugarbeets are subject to the ACSC RRSB Bolter Destruction Policy

Table 2. Performance Data of RR Varieties During 2017, 2018, 2019 Growing Seasons (All Locations Combined) +++

Variety	Yrs Com	Rev/Ton ++ 19	Rev/Ton ++ 2 Yr	Rev/Ton ++ 2Y%	Rev/Acre ++ 19	Rev/Acre ++ 2 Yr	Rev/Acre ++ 2Y%	Rec/Ton 19	Rec/Ton 2 Yr	Rec/Acre 19	Rec/Acre 2 Yr	Sugar 19	Sugar 2 Yr	Yield 19	Yield 2 Yr	Molasses 19	Molasses 2 Yr	Emerg 19	Emerg 2 Yr	Bolter / Ac 19	Bolter / Ac 2 Yr	CR + 19	CR + 2 Yr	Aph Root+ 19	Aph Root+ 2 Yr	Rhizoc.+ 19	Rhizoc.+ 2 Yr	Fusarium+ 19	Fusarium+ 2 Yr	Rzm+
Previous Approved # locations		7	17		7	17		7	17	7	17	7	17	7	17	7	17	7	17	7	17	3	6	1	3	3	6	2	4	
BTS 8337	5	46.23	51.58	104	1442	1531	102	327	342	10204	10207	17.34	18.08	31.3	30.1	1.00	0.99	69	75	0	0	4.40	4.52	3.4	3.6	3.6	3.8	3.6	3.9	Hi
BTS 8500	3	41.85	47.52	95	1418	1569	105	311	327	10588	10915	16.64	17.41	34.2	33.7	1.09	1.04	65	77	0	0	4.00	4.20	4.3	4.4	4.3	4.3	2.3	2.4	Hi
BTS 8524	3	39.93	45.11	91	1408	1533	102	304	319	10742	10913	16.28	17.00	35.4	34.4	1.08	1.07	70	75	0	0	4.52	4.51	4.5	4.3	4.0	4.1	3.1	3.5	Hi
BTS 8606	2	43.24	49.09	99	1404	1544	103	316	333	10275	10543	16.82	17.63	32.6	31.9	1.02	0.99	63	73	0	0	4.69	4.74	5.1	4.8	4.6	4.4	2.7	3.2	Hi
BTS 8629	2	41.33	47.19	95	1445	1599	107	309	326	10814	11126	16.52	17.33	35.0	34.3	1.07	1.02	65	69	0	0	4.66	4.59	5.3	4.6	3.9	4.0	3.7	4.1	Hi
BTS 8735	1	42.11	49.11	99	1413	1551	103	312	333	10500	10635	16.58	17.61	33.8	32.3	0.99	0.96	63	74	0	0	4.15	4.18	4.5	4.3	4.0	4.0	3.3	3.7	Hi
BTS 8749	1	43.77	49.04	98	1393	1495	100	318	333	10122	10206	16.99	17.69	31.9	30.9	1.10	1.06	57	71	3	2	3.95	4.02	3.0	2.9	3.6	3.7	3.0	3.4	Hi
BTS 8767	1	43.65	48.57	97	1447	1556	104	317	331	10546	10678	16.90	17.56	33.3	32.5	1.03	1.00	68	78	0	0	4.26	4.29	4.3	4.3	4.1	4.1	2.4	2.9	Hi
BTS 8784	1	46.43	51.83	104	1409	1538	103	327	343	9923	10203	17.35	18.09	30.3	29.9	0.98	0.96	54	69	0	0	3.84	3.78	4.4	4.3	4.3	4.4	2.8	3.3	Hi
Crystal 093RR	8	45.71	51.22	103	1470	1568	105	325	340	10460	10495	17.26	18.04	32.3	31.0	1.02	1.02	72	79	0	0	5.09	4.98	5.2	4.8	4.1	4.4	3.1	3.7	Hi
Crystal 247RR	6	42.12	47.90	96	1330	1500	100	312	329	9838	10332	16.57	17.39	31.5	31.6	0.98	0.97	67	76	0	0	4.50	4.52	4.8	4.9	4.3	4.4	2.5	2.9	Hi
Crystal 355RR	4	45.84	50.44	101	1321	1423	95	325	338	9413	9592	17.31	17.94	29.0	28.6	1.05	1.05	72	80	0	0	4.68	4.60	5.0	4.7	3.7	3.7	2.5	3.1	Hi
Crystal 572RR	3	47.63	51.97	104	1476	1597	106	332	343	10286	10584	17.55	18.13	31.0	31.0	0.97	0.97	69	76	0	0	4.68	4.56	5.0	4.7	4.1	4.3	2.4	3.0	Hi
Crystal 574RR	3	42.50	47.67	96	1436	1585	106	313	328	10623	10977	16.72	17.43	34.0	33.7	1.06	1.04	72	77	0	0	4.28	4.35	4.0	4.2	4.5	4.4	2.0	2.5	Hi
Crystal 578RR	2	42.81	48.40	97	1417	1531	102	314	330	10420	10529	16.75	17.53	33.2	32.1	1.03	1.01	72	79	0	0	4.64	4.69	4.9	4.5	4.2	4.3	2.5	2.9	Hi
Crystal 684RR	1	41.68	47.25	95	1429	1593	106	310	326	10675	11077	16.58	17.36	34.5	34.2	1.07	1.05	64	76	0	0	4.12	4.27	4.3	4.1	4.0	4.2	2.1	2.5	Hi
Crystal 793RR	1	45.92	51.40	103	1555	1680	112	326	341	11046	11209	17.21	17.98	34.0	33.0	0.93	0.92	64	74	0	0	4.04	4.15	3.7	3.5	4.2	4.1	2.7	3.2	Hi
Crystal 796RR	NC	42.94	48.32	97	1530	1637	109	315	330	11210	11258	16.77	17.50	35.6	34.3	1.01	0.99	78	83	0	0	4.74	4.74	4.0	3.8	3.9	3.9	2.5	2.9	Hi
Hilleshög HM4302RR	6	41.96	47.59	96	1271	1422	95	311	328	9439	9840	16.57	17.36	30.3	30.2	1.00	0.98	56	69	0	0	3.93	4.09	5.2	4.9	4.0	3.8	4.3	4.6	Rzm
Hilleshög HM4448RR	6	43.13	48.60	98	1455	1588	106	316	331	10659	10896	16.75	17.52	33.8	33.1	0.98	0.97	69	77	3	2	5.48	5.37	4.9	4.7	4.0	4.2	4.8	5.0	Rzm
Hilleshög HM9528RR	4	43.73	48.58	97	1455	1544	103	318	331	10587	10595	16.85	17.51	33.4	32.2	0.96	0.95	66	72	0	1	4.93	4.86	4.6	4.4	4.1	4.1	4.2	4.6	Hi
Hilleshög HIL9708	2	43.37	48.74	98	1433	1559	104	316	332	10459	10654	16.80	17.55	33.1	32.3	0.98	0.97	72	79	0	0	4.96	4.83	4.6	4.4	3.9	3.8	3.9	4.3	Rzm
Hilleshög HIL9920	1	45.83	51.14	103	1430	1563	104	325	340	10172	10458	17.23	17.96	31.3	30.9	0.97	0.96	70	78	0	0	4.95	4.87	5.1	4.6	4.7	4.7	5.4	5.5	Hi
Maribo MA109	4	46.11	51.17	103	1321	1422	95	326	340	9339	9501	17.28	17.98	28.6	28.1	0.97	0.97	52	64	0	0	4.07	4.20	5.3	4.8	3.7	3.7	4.0	4.5	Hi
Maribo MA504	3	40.79	46.89	94	1420	1584	106	307	325	10694	11050	16.35	17.25	34.8	34.2	1.00	1.00	69	77	0	0	5.34	5.16	6.2	5.7	4.7	4.5	4.6	4.7	Hi
Maribo MA717	1	44.33	50.27	101	1476	1571	105	320	337	10682	10627	16.98	17.83	33.5	31.8	0.99	0.98	70	78	0	0	5.11	4.95	4.4	4.3	4.2	4.2	4.8	4.8	Hi
SX Bronco RR	2	44.88	49.79	100	1415	1531	102	322	335	10119	10354	17.11	17.76	31.4	31.0	1.02	0.99	58	68	0	0	4.77	4.71	5.4	4.7	4.7	4.7	5.4	5.5	Hi
SX Canyon RR	4	44.10	48.97	98	1434	1554	104	319	333	10396	10614	16.94	17.60	32.7	32.1	0.99	0.97	67	74	0	1	4.58	4.69	5.0	4.7	3.9	4.1	4.7	4.8	Hi
SX Marathon RR	3	43.87	49.04	98	1380	1549	103	318	333	10028	10546	16.90	17.60	31.6	31.8	0.99	0.97	55	69	0	0	4.79	5.03	5.1	4.9	4.4	4.3	5.7	5.6	Hi
SV RR265	2	44.31	48.76	98	1422	1543	103	320	332	10280	10552	16.94	17.53	32.2	32.0	0.96	0.95	63	73	0	0	4.28	4.38	5.5	4.8	4.3	4.3	5.6	5.5	Hi
SV RR268	2	44.33	49.71	100	1408	1544	103	320	335	10166	10467	16.96	17.72	31.9	31.5	0.97	0.97	63	72	0	0	4.82	4.76	5.1	4.6	4.2	4.2	4.9	5.0	Hi
SV RR333	4	45.19	50.26	101	1408	1525	102	323	337	10086	10285	17.10	17.80	31.3	30.7	0.96	0.96	70	72	0	0	4.49	4.64	4.7	4.4	4.1	4.2	4.7	4.9	Hi
SV RR351	3	44.56	49.40	99	1401	1531	102	321	334	10132	10424	17.02	17.66	31.8	31.4	0.99	0.96	65	72	0	0	4.90	4.76	5.7	5.1	4.1	4.1	5.1	5.2	Hi
SV RR371	1	44.55	49.20	99	1377	1500	100	321	333	9920	10214	16.98	17.61	31.0	30.8	0.95	0.95	55	69	0	0	4.34	4.52	5.0	4.8	4.0	4.1	5.2	5.3	Hi
Newly Approved																														
BTS 8815	NC	45.96	50.63	102	1458	1564	104	326	338	10338	10510	17.27	17.89	31.8	31.2	0.98	0.97	67	75	0	0	4.61	4.63	5.2	4.6	4.0	4.0	2.7	3.2	Hi
BTS 8882	NC	43.24	48.45	97	1445	1577	105	316	331	10550	10823	16.88	17.58	33.3	32.9	1.07	1.04	58	67	0	0	4.18	4.35	5.2	5.1	4.3	4.3	2.9	3.1	Hi
Crystal 803RR	NC	47.10	51.34	103	1493	1610	107	329	341	10472	10736	17.45	18.00	31.8	31.6	0.96	0.95	76	83	0	0	3.88	3.95	4.5	4.2	4.5	4.6	2.7	3.4	Hi
Crystal 804RR	NC	44.15	48.64	98	1472	1602	107	319	331	10684	10988	16.99	17.59	33.6	33.4	1.03	1.02	62	72	0	0	4.46	4.44	4.3	3.9	3.7	3.9	2.3	2.7	Hi
Crystal 808RR	NC	43.05	48.71	98	1456	1614	108	315	332	10711	11059	16.83	17.61	34.1	33.6	1.05	1.03	73	80	0	0	4.78	4.82	3.6	3.6	4.1	4.0	2.4	2.8	Hi
SX 1887	NC	46.26	50.42	101	1421	1540	103	327	338	10046	10352	17.31	17.84	30.8	30.8	0.97	0.96	62	70	0	0	4.89	4.89	4.7	4.6	4.2	4.2	4.7	5.0	Hi
SX 1888	NC	45.30	50.04	100	1475	1587	106	323	336	10543	10719	17.13	17.77	32.6	32.0	0.96	0.95	61	70	0	0	4.89	4.90	4.6	4.3	4.2	4.4	5.5	5.5	Hi
SV 285	NC	45.58	49.76	100	1422	1528	102	324	335	10125	10344	17.19	17.72	31.2	31.0	0.97	0.96	59	71	0	0	4.84	4.68	4.5	4.2	4.4	4.4	4.8	5.1	Hi
SV 289	NC	45.57	50.45	101	1376	1533	102	324	338	9838	10313	17.18	17.84	30.5	30.7	0.96	0.95	54	68	0	0	4.59	4.62	5.3	4.9	4.1	4.2	5.8	5.6	Hi
SV RR375	NC	45.40	49.79	100	1431	1540	103	324	335	10195	10410	17.13	17.72	31.5	31.1	0.95	0.95	63	74	0	0	4.11	4.54	5.0	4.4	4.0	4.1	5.0	5.2	Hi
Benchmark var. mean		45.00	49.83		1394	1500		322	336	10011	10166	17.16	17.81	31.2	30.5	1.05	1.03	65	74											

3 Yr is mean of 3 years data, 3 Y% is 3-Yr mean as % of benchmark varieties. 2 Yr is mean of 2 years data, 2 Y% is 2-Yr mean as % of benchmark varieties. Emergence is % of planted seeds producing a 4 leaf beet. Created 11/25/2019

++2019 Revenue estimate based on a $44.38 beet payment (5-yr ave) at 17.5% crop with a 1.5% loss to molasses, 2018 Revenue estimate based on a $46.40 beet payment and 2017 Revenue estimate based on a $48.49 beet payment. Revenue does not consider hauling or production costs.

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

-- indicates data not available.

+++ Sites include Felton, Georgetown, Hillsboro, Climax, Grand Forks, Stephen, Scandia, St. Thomas, Hendrum, Bathgate in 2017.

+++ Sites include Casselton, Bathgate, Scandia, East Grand Forks, St. Thomas, Ada, Glyndon, Hillsboro, Grand Forks, Stephen in 2018

+++ Sites include Casselton, Glyndon, Scandia, Bathgate, Kennedy, Climax, Argyle in 2019

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

Intentionally Left Blank

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

	Yrs	Rev/Ton ++					Rev/Acre ++					Rec/Ton		Rec/Acre		Sugar		Yield		Molasses		Emerg		Bolter / Ac		CR +		Aph Root+		Rhizoc.+		Fusarium+		Rzm+
Variety @	Com	19	2 Yr	2Y%	3Yr#	3Y%	19	2 Yr	2Y%	3Yr#	3Yr%	19	2 Yr	19	2 Yr	19	2 Yr	19	2 Yr	19	2 Yr	19	2 Yr	19	2 Yr	19	2 Yr	19	2 Yr	19	2 Yr	19	2 Yr	
Previous Approved # locations		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 2017 - 2019 (Varieties tested in 2019)

Cercospora, Aphanomyces, Rhizoctonia & Fusarium

Code	Description	< 4.5 CR > 5.0					< 4.4 Aph > 5.0					< 3.82 Rhizoctonia > 5.0					< 3.0 Fusarium > 5.0					High Rzm
		19 Mean	18 Mean	17 Mean	2 Yr Mean	3 Yr Mean	19 Mean	18 Mean	17 Mean	2 Yr Mean	3 Yr Mean	19 Mean	18 Mean	17 Mean	2 Yr Mean	3 Yr Mean	19 Mean	19 Mean	17 Mean	2 Yr Mean	3 Yr Mean	
	Previously Approved																					
130	BTS 8337	4.40	4.64	4.36	4.52	4.47	3.45	3.74	3.78	3.59	3.65	3.62	4.07	4.30	3.84	3.99	3.57	4.18	3.83	3.87	3.86	Hi Rzm
577	BTS 8500	4.00	4.40	4.29	4.20	4.23	4.30	4.43	4.52	4.37	4.42	4.28	4.36	4.57	4.32	4.40	2.27	2.46	2.14	2.37	2.29	Hi Rzm
503	BTS 8524	4.52	4.50	4.38	4.51	4.47	4.51	4.08	4.49	4.29	4.36	4.00	4.23	4.41	4.12	4.21	3.14	3.93	3.24	3.54	3.44	Hi Rzm
576	BTS 8606	4.69	4.80	4.73	4.74	4.74	5.11	4.43	4.91	4.77	4.81	4.60	4.24	5.00	4.42	4.61	2.68	3.66	2.81	3.17	3.05	Hi Rzm
527	BTS 8629	4.66	4.52	4.29	4.59	4.49	5.32	3.89	4.68	4.61	4.63	3.89	4.02	4.21	3.96	4.04	3.71	4.40	4.20	4.05	4.10	Hi Rzm
521	BTS 8735	4.15	4.21	4.22	4.18	4.19	4.53	4.00	4.74	4.27	4.42	3.95	4.12	4.38	4.04	4.15	3.27	4.04	3.93	3.65	3.75	Hi Rzm
512	BTS 8749	3.95	4.10	4.05	4.02	4.03	2.97	2.79	3.53	2.88	3.10	3.58	3.88	3.95	3.73	3.81	3.04	3.79	3.28	3.41	3.37	Hi Rzm
568	BTS 8767	4.26	4.32	4.16	4.29	4.24	4.32	4.28	4.80	4.30	4.46	4.14	4.10	4.75	4.12	4.33	2.45	3.41	2.71	2.93	2.86	Hi Rzm
572	BTS 8784	3.84	3.73	3.65	3.78	3.74	4.38	4.22	4.59	4.30	4.40	4.29	4.60	4.64	4.44	4.51	2.80	3.76	2.63	3.28	3.07	Hi Rzm
530	Crystal 093RR	5.09	4.88	4.49	4.98	4.82	5.22	4.38	4.43	4.80	4.68	4.14	4.59	4.50	4.37	4.41	3.09	4.28	3.48	3.68	3.61	Hi Rzm
542	Crystal 247RR	4.50	4.54	4.55	4.52	4.53	4.84	5.02	5.35	4.93	5.07	4.32	4.56	4.49	4.44	4.45	2.48	3.34	3.00	2.91	2.94	Hi Rzm
562	Crystal 355RR	4.68	4.52	4.36	4.60	4.52	5.02	4.42	4.84	4.72	4.76	3.67	3.66	4.09	3.66	3.81	2.48	3.73	2.76	3.11	2.99	Hi Rzm
518	Crystal 572RR	4.68	4.45	4.27	4.56	4.47	4.98	4.47	4.69	4.72	4.71	4.14	4.54	4.47	4.34	4.38	2.39	3.70	2.64	3.04	2.91	Hi Rzm
575	Crystal 574RR	4.28	4.42	4.35	4.35	4.35	3.99	4.32	4.72	4.16	4.34	4.45	4.36	4.16	4.41	4.32	2.03	2.87	2.23	2.45	2.38	Hi Rzm
508	Crystal 578RR	4.64	4.74	4.91	4.69	4.76	4.88	4.21	4.56	4.54	4.55	4.21	4.30	4.40	4.25	4.30	2.48	3.36	2.41	2.92	2.75	Hi Rzm
545	Crystal 684RR	4.12	4.41	4.34	4.27	4.29	4.33	3.83	4.31	4.08	4.16	4.01	4.39	4.57	4.20	4.32	2.10	2.96	2.01	2.53	2.36	Hi Rzm
557	Crystal 793RR	4.04	4.26	3.93	4.15	4.08	3.72	3.32	3.02	3.52	3.35	4.18	4.11	4.26	4.15	4.18	2.71	3.59	2.95	3.15	3.09	Hi Rzm
574	Crystal 796RR	4.74	4.74	4.85	4.74	4.78	3.97	3.61	3.11	3.79	3.56	3.85	3.97	4.23	3.91	4.02	2.45	3.36	2.34	2.91	2.72	Hi Rzm
580	Hilleshög HM4302RR	3.93	4.26	3.93	4.09	4.04	5.20	4.65	6.66	4.93	5.50	3.97	3.71	3.60	3.84	3.76	4.25	5.02	5.09	4.64	4.79	Rzm
510	Hilleshög HM4448RR	5.48	5.26	5.28	5.37	5.34	4.86	4.53	6.29	4.70	5.23	4.04	4.38	4.63	4.21	4.35	4.80	5.23	5.35	5.02	5.13	Rzm
543	Hilleshög HM9528RR	4.93	4.79	4.99	4.86	4.90	4.56	4.22	5.63	4.39	4.80	4.10	4.04	4.21	4.07	4.12	4.16	4.95	4.25	4.56	4.45	Hi Rzm
533	Hilleshög HIL9708	4.96	4.71	4.61	4.83	4.76	4.61	4.25	5.94	4.43	4.93	3.87	3.71	4.21	3.79	3.93	3.89	4.61	4.61	4.25	4.37	Hi Rzm
525	Hilleshög HIL9920	4.95	4.79	4.89	4.87	4.88	5.05	4.09	4.94	4.57	4.70	4.68	4.65	4.48	4.67	4.60	5.42	5.51	5.92	5.47	5.62	Hi Rzm
541	Maribo MA109	4.07	4.33	4.14	4.20	4.18	5.28	4.38	5.06	4.83	4.91	3.73	3.69	3.63	3.71	3.69	4.04	4.95	4.23	4.49	4.41	Hi Rzm
504	Maribo MA504	5.34	4.98	5.50	5.16	5.27	6.17	5.30	6.20	5.73	5.89	4.69	4.25	4.37	4.47	4.43	4.61	4.80	4.52	4.70	4.64	Hi Rzm
567	Maribo MA717	5.11	4.78	4.85	4.95	4.91	4.42	4.15	5.31	4.29	4.63	4.15	4.35	4.28	4.25	4.26	4.81	4.86	4.95	4.84	4.88	Hi Rzm
569	SX Bronco RR	4.77	4.65	4.08	4.71	4.50	5.38	4.05	4.88	4.71	4.77	4.71	4.73	4.23	4.72	4.56	5.44	5.52	6.04	5.48	5.67	Hi Rzm
551	SX Canyon RR	4.58	4.79	4.92	4.69	4.76	4.99	4.34	4.33	4.67	4.55	3.89	4.36	4.51	4.12	4.25	4.71	4.93	5.12	4.82	4.92	Hi Rzm
528	SX Marathon RR	4.79	5.27	4.54	5.03	4.87	5.15	4.72	4.52	4.94	4.80	4.36	4.19	4.40	4.28	4.32	5.70	5.51	4.84	5.61	5.35	Hi Rzm
552	SV RR265	4.28	4.48	5.19	4.38	4.65	5.47	4.16	5.35	4.81	4.99	4.25	4.32	4.42	4.29	4.33	5.64	5.44	5.32	5.54	5.47	Hi Rzm
548	SV RR268	4.82	4.70	5.06	4.76	4.86	5.08	4.21	4.71	4.65	4.67	4.21	4.21	4.57	4.21	4.33	4.92	5.12	5.01	5.02	5.02	Hi Rzm
537	SV RR333	4.49	4.78	4.84	4.64	4.70	4.70	4.06	4.99	4.38	4.58	4.08	4.23	4.44	4.16	4.25	4.74	5.14	5.35	4.94	5.08	Hi Rzm
544	SV RR351	4.90	4.61	4.41	4.76	4.64	5.65	4.50	4.18	5.07	4.77	4.09	4.16	4.25	4.12	4.16	5.10	5.30	4.96	5.20	5.12	Hi Rzm
582	SV RR371	4.34	4.71	4.59	4.52	4.55	4.99	4.51	4.55	4.75	4.69	3.97	4.19	4.31	4.08	4.16	5.16	5.36	4.91	5.26	5.14	Hi Rzm
	Newly Approved																					
529	BTS 8815	4.61	4.65	--	4.63	--	5.24	3.97	--	4.60	--	4.03	3.88	--	3.95	--	2.69	3.64	--	3.16	--	Hi Rzm
535	BTS 8882	4.18	4.53	--	4.35	--	5.17	4.98	--	5.07	--	4.27	4.37	--	4.32	--	2.91	3.39	--	3.15	--	Hi Rzm
558	Crystal 803RR	3.88	4.01	--	3.95	--	4.45	3.86	--	4.16	--	4.54	4.67	--	4.60	--	2.70	4.11	--	3.40	--	Hi Rzm
517	Crystal 804RR	4.46	4.42	--	4.44	--	4.30	3.58	--	3.94	--	3.72	4.02	--	3.87	--	2.28	3.05	--	2.66	--	Hi Rzm
547	Crystal 808RR	4.78	4.86	--	4.82	--	3.57	3.60	--	3.58	--	4.09	3.83	--	3.96	--	2.39	3.12	--	2.75	--	Hi Rzm
559	SX 1887	4.89	4.89	--	4.89	--	4.67	4.49	--	4.58	--	4.18	4.16	--	4.17	--	4.68	5.35	--	5.01	--	Hi Rzm
546	SX 1888	4.89	4.92	--	4.90	--	4.65	4.03	--	4.34	--	4.19	4.57	--	4.38	--	5.51	5.47	--	5.49	--	Hi Rzm
561	SV 285	4.84	4.52	--	4.68	--	4.47	3.98	--	4.23	--	4.38	4.35	--	4.37	--	4.76	5.42	--	5.09	--	Hi Rzm
523	SV 289	4.59	4.65	--	4.62	--	5.30	4.42	--	4.86	--	4.06	4.37	--	4.22	--	5.78	5.45	--	5.61	--	Hi Rzm
555	SV RR375	4.11	4.96	5.08	4.54	4.72	5.03	3.83	4.54	4.43	4.47	4.05	4.13	4.25	4.09	4.14	4.97	5.51	5.44	5.24	5.31	Hi Rzm

Created 11/26/2019

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
Betaseed GH and Hilleshög Field Nursery from 2016 thru 2018 +

Variety	BTS (Infection Severity) (1=Excellent, 5=Poor) 2016	2017	2018	Hilleshög (% Infected) (<10%=Excellent, >20%Poor) 2016	2017	2018	BTS 1-5 Mean	Hilleshög % Infect Mean
BETA80RR52	1.6	2.3	1.4	9.7	10.3	12.9	1.8	11.0
BETA8337	1.4	1.2	1.0	9.1	3.8	8.5	1.2	7.1
BETA8500		1.1	1.3		4.1	6.6	1.2	5.4
BETA8524		1.2	1.0		2.0	4.1	1.1	3.1
BETA8606			1.0			1.5	1.0	1.5
BETA8629			1.1			0.6	1.1	0.6
CRYS093RR	1.3	1.0	1.0	22.3	6.4	5.1	1.1	11.3
CRYS247RR	1.1	1.1	1.0	2.8	2.2	10	1.1	5.0
CRYS355RR	2.1	1.4	1.0	4.6	4.9	3.1	1.5	4.2
CRYS467RR		1.9	1.7		10.4	35.5	1.8	23.0
CRYS572RR		1.0	1.0		2.4	2.7	1.0	2.6
CRYS573RR			1.0			6	1.0	6.0
CRYS574RR		1.0	1.0		3.0	8.7	1.0	5.9
CRYS578RR			1.0			9.8	1.0	9.8
HILL4302RR	3.0	2.6	1.6	37.4	22.4	54.2	2.4	38.0
HILL4448RR	2.8	2.9	2.2	70.2	20.3	33.8	2.6	41.4
HILL9528RR	3.2	3.0	3.3	73.2	13.7	83.2	3.2	56.7
HILL9708			1.4			42.2	1.4	42.2
MARI109	2.7	2.5	1.8	43.0	38.3	49.6	2.3	43.6
MARI305RR	2.8	2.8	1.7	72.0	15.1	26.6	2.4	37.9
MARI502		2.9	1.4		17.0	51.2	2.2	34.1
MARI504RR			1.2			62.4	1.2	62.4
SEEDAVALANCHERR		1.8	1.1		8.6	14.8	1.5	11.7
SEEDBRONCORR			1.6			51.9	1.6	51.9
SEEDCANYONRR	2.3	2.3	1.4	41.4	17.8	56.6	2.0	38.6
SEEDCRUZERR	2.2	3.4	1.9	16.4	30.4	52.5	2.5	33.1
SEEDMARATHONRR		2.7	1.4		17.9	37	2.1	27.5
SESRR265			2.5			70.2	2.5	70.2
SESRR266			1.7			46.3	1.7	46.3
SESRR268			1.7			26.2	1.7	26.2
SESRR333	3.2	3.2	1.8	36.3	23.7	20.8	2.7	26.9
SESRR351		3.2	1.7		15.0	43.9	2.5	29.5
ACRARES1 - CRYS246	1.4	1.5	1.7	7.5	7.9	15.1	1.5	10.2
ACRASUSC1 - SES36918	3.1	2.8	1.8	37.8	28.5	57.7	2.6	41.3
ACRASUSC2 - CRYS985	3.0		1.4	69.2		64.9	2.2	67.1
BTS Resistant Check	1.1	1.1	1.0				1.1	--
BTS Susceptible Check	3.5	3.0	2.6				3.0	--
HIL Segregating Check				21.5	10.4	3	--	19.0
HIL Susceptible Check				68.4	24.0	61.7	--	52.3
HIL Tolerant Check				3.8	3.9	9.9	--	3.6

Legend = Tolerant | Moderate | Susceptable

Beta rates plants on severity of infection 1-5 with 1=no aphids, 5=heavy infection.

Hilleshog rates varieties on % infected plants

+ Some varieties in 2019 OVT's were not included inb this evaluation. Refer to approval list for approval status.

Table 7. Planting & Harvest Dates, Previous Crop and Disease Levels for 2019 ACSC Official Trial Sites *

Location	District / Trial Type	Cooperator	Planting Date	Harvest Date	Preceding Crop	Soil Type	Diseases Present @						Comments
							Aph	Rhc	Rzm	Fus	Maggot	Rt Aphid	
Casselton	Mhd/Hlb	Todd Weber	5/14	9/26	Wheat	Medium/Light	M	L	N	N	N	L	Aph pressure is more on East side.
Glyndon	Mhd/Hlb	Menholt Farms	5/6	9/22	Wheat	Medium/Light	M-V	L-M	N	L	N	N	Aph pressure is moderate to severe.
Perley	Mhd/Hlb	Hoff Farms	6/7	NA+	Corn	Medium	M-V	N	N	N	N	N	Site is very wet
Halstad	Mhd/Hlb	Peter Steen	5/13	NA+	Wheat	Medium	N	N	M	N	N	L	Root Aphid in one corner
Hillsboro	Mhd/Hlb	M&R Steenson Farms	5/21	NA+	Wheat	Medium	N	L	N	N	N	L-M	Root Aphid in all four corners.
Climax	EGF/Crk	Evenson Farms	5/9	10/25	Wheat	Medium/Light	L	L	N	N	N	L	Moderate Aph in NW corner
Grand Forks	EGF/Crk	Drees Farming Association	5/10	9/28	Wheat	Medium/Light	N	L	N	N	L	L	Light Root Maggot on a few beets. RR OVT not harvested
Scandia	EGF/Crk	Dennis Deboer	5/13	9/19	Wheat	Medium	N	L	M	N	N	L	Rzm in three corners. Root aphid in three corners.
Argyle	EGF/Crk	Brent Riopelle	5/4	11/4	Wheat	Medium/Light	N	L	L	N	L	L-M	Rzm in two corners.
Kennedy	Dtn	S & O Beet Farm	5/17	11/3	Wheat	Medium	L-M	N	N	N	N	L-M	Root Aphid in three corners.
St. Thomas	Dtn	Kennelly Farms	5/5	NA+	Wheat	Medium/Light	N	N	N	N	N	L	Harvested proprietary trials only. Poor Stands
Northcote	Dtn	Jesse Strege	5/2	NA +	Wheat	Medium/Heavy	L-M	L-M	N	N	N	L-M	Root Aphid in all four corners. Moderate Aph with some Rhc as secondary infection.
Bathgate	Dtn	Shady Bend Farms	4/25	10/9	Wheat	Medium	N	N	N	N	L	L-M	Moderate Root Aphid in one corner.
Moorhead Fus-N	Fus Nurs	Nelson Farms	5/7	7/2	Soybeans	Medium/Heavy	NA	L	NA	V	NA	NA	
Moorhead Fus-S	Fus Nurs	Oberg Farms	5/15	7/18	Corn	Medium	NA	L	NA	V	NA	NA	
Mhd Rhc-E	Rhc Nurs	Jon Hickel	5/30	8/14	Corn	Heavy	NA	V	NA	L	NA	NA	
Mhd Rhc-W	Rhc Nurs	Jon Hickel	5/12	NA	Corn	Heavy	NA	V	NA	L-M	NA	NA	Excessive rain prevented evaluation.
NWROC Rhc	Rhc Nurs	Albert Sims	5/17	7/26	Soybeans	Medium	NA	M-V	NA	NA	NA	NA	
BSDF Rhc	Rhc Nurs	Mitch McGrath	5/7	8/21	NA	NA	NA	NA	NA	NA	NA	NA	
Shakopee MN	Aphanomyces	Patrick O'Boyle	5/14	8/28	NA	NA	V	NA	NA	NA	NA	NA	
Longmont CO	Root Aphids	Kara Guffey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Foxhome CR	Cercospora	NDSU/Kevin Etzler	5/14	8/30	Wheat	Medium	NA	NA	NA	NA	NA	NA	
BSDF CR	Cercospora	Mitch McGrath	5/6	8/28	NA	NA	NA	NA	NA	NA	NA	NA	
Randolph MN CR	Cercospora	Patrick O'Boyle	5/4	8/12	NA	NA	NA	NA	NA	NA	NA	NA	

Created 11-25-2019

* Fertilizer applied in accordance to cooperative recommendations.

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

+ Not harvested due to excessive moisture and freezing.

Table 8. Seed Treatments Used on Approved Varieties in Official Variety Trials in 2019

Description	Years in Trial	Years ** Comm.	Fungicide (Rhizoctonia)	Insecticide (Spring Tails & Maggots)	Tachigaren Rate (Aphanomyces)	Priming (Emergence)	Fungicide (Damping Off)
Previous Approved							
BTS 8337	7	5	Systiva	Poncho Beta	35	Ultipro	Allegiance Thiram
BTS 8500	5	3	Systiva	Poncho Beta	35	Ultipro	Allegiance Thiram
BTS 8524	5	3	Systiva	Poncho Beta	35	Ultipro	Allegiance Thiram
BTS 8606	4	2	Systiva	Poncho Beta	35	Ultipro	Allegiance Thiram
BTS 8629	4	2	Systiva	Poncho Beta	35	Ultipro	Allegiance Thiram
BTS 8735	3	1	Systiva	Poncho Beta	35	Ultipro	Allegiance Thiram
BTS 8749	3	1	Systiva	Poncho Beta	35	Ultipro	Allegiance Thiram
BTS 8767	3	1	Systiva	Poncho Beta	35	Ultipro	Allegiance Thiram
BTS 8784	3	1	Systiva	Poncho Beta	35	Ultipro	Allegiance Thiram
Crystal 093RR	10	8	Kabina	Poncho Beta	45	XBEET	Allegiance Thiram
Crystal 247RR	8	6	Kabina	Poncho Beta	45	XBEET	Allegiance Thiram
Crystal 355RR	7	4	Kabina	Poncho Beta	45	XBEET	Allegiance Thiram
Crystal 572RR	5	3	Kabina	Poncho Beta	45	XBEET	Allegiance Thiram
Crystal 574RR	5	3	Kabina	Poncho Beta	45	XBEET	Allegiance Thiram
Crystal 578RR	5	2	Kabina	Poncho Beta	45	XBEET	Allegiance Thiram
Crystal 684RR	4	1	Kabina	Poncho Beta	45	XBEET	Allegiance Thiram
Crystal 793RR	3	1	Kabina	Poncho Beta	45	XBEET	Allegiance Thiram
Crystal 796RR	3	NC	Kabina	Poncho Beta	45	XBEET	Allegiance Thiram
Hilleshög HM4302RR	9	6	Vibrance	Cruiser Maxx	45	XBEET	Apron XL Maxim
Hilleshög HM4448RR	7	6	Vibrance	Cruiser Maxx	45	XBEET	Apron XL Maxim
Hilleshög HM9528RR	6	4	Vibrance	Cruiser Maxx	45	XBEET	Apron XL Maxim
Hilleshög HIL9708	5	2	Vibrance	Cruiser Maxx	45	XBEET	Apron XL Maxim
Hilleshög HIL9920	3	1	Vibrance	Cruiser Maxx	45	XBEET	Apron XL Maxim
Maribo MA109	6	4	Vibrance	Cruiser Maxx	45	XBEET	Apron XL Maxim
Maribo MA504	5	3	Vibrance	Cruiser Maxx	45	XBEET	Apron XL Maxim
Maribo MA717	3	1	Vibrance	Cruiser Maxx	45	XBEET	Apron XL Maxim
SX Bronco RR	4	2	Metlock/Rizolex/Kabina	NipsIt	20	XBEET	Sebring Thiram
SX Canyon RR	6	4	Metlock/Rizolex/Kabina	NipsIt	20	XBEET	Sebring Thiram
SX Marathon RR	5	3	Metlock/Rizolex/Kabina	NipsIt	20	XBEET	Sebring Thiram
SV RR265	4	2	Metlock/Rizolex/Vibrance	NipsIt	45	XBEET	Sebring Thiram
SV RR268	4	2	Metlock/Rizolex/Vibrance	NipsIt	45	XBEET	Sebring Thiram
SV RR333	7	4	Metlock/Rizolex/Vibrance	NipsIt	45	XBEET	Sebring Thiram
SV RR351	5	3	Metlock/Rizolex/Vibrance	NipsIt	45	XBEET	Sebring Thiram
SV RR371	3	1	Metlock/Rizolex/Vibrance	NipsIt	45	XBEET	Sebring Thiram
Newly Approved							
BTS 8815	2	NC	Systiva	Poncho Beta	35	Ultipro	Allegiance Thiram
BTS 8882	2	NC	Systiva	Poncho Beta	35	Ultipro	Allegiance Thiram
Crystal 803RR	2	NC	Kabina	Poncho Beta	45	XBEET	Allegiance Thiram
Crystal 804RR	2	NC	Kabina	Poncho Beta	45	XBEET	Allegiance Thiram
Crystal 808RR	2	NC	Kabina	Poncho Beta	45	XBEET	Allegiance Thiram
SX 1887	2	NC	Metlock/Rizolex/Kabina	NipsIt	20	XBEET	Sebring Thiram
SX 1888	2	NC	Metlock/Rizolex/Kabina	NipsIt	20	XBEET	Sebring Thiram
SV 285	2	NC	Metlock/Rizolex/Vibrance	NipsIt	45	XBEET	Sebring Thiram
SV 289	2	NC	Metlock/Rizolex/Vibrance	NipsIt	45	XBEET	Sebring Thiram
SV RR375	3	NC	Metlock/Rizolex/Vibrance	NipsIt	45	XBEET	Sebring Thiram

NA indicates no treatment applied in this category.

Created 11/25/2019