

SMBSC OBSERVATIONS FOR 2019 VARIETIES

These four pages are a summary of field observations over the past few seasons, as well as Official Trial data, SMBSC Strip Trial data, and seed company information on the varieties approved for 2019. This summary was compiled to provide another tool to help your variety selection for the 2019 crop.

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2019 FULL APPROVAL VARIETIES

Beta 9475: Beta 9475 was a Fully Approved Variety and Cercospora Specialty Variety for 2018 planted on approximately 43,000 acres. Beta 9475 performed well in the SMBSC Official Trials in 2018, though revenue per ton is below average. 9475 is a strong sugar per acre variety with average sugar per ton. Cercospora leafspot tolerance is the best of the Fully Approved Varieties, and it is also approved as a Cercospora Specialty Variety for 2019. Rhizoctonia root rot tolerance is average with 9475; consider a foliar Rhizoctonia fungicide application at 4-8 leaf. The three year Aphanomyces ratings average. Betaseed reports that 9475 has root aphid tolerance.

Crystal M380: Crystal M380 was a Fully Approved Variety planted on 4,200 acres in 2018. M380 performed at average on sugar per ton and below average on sugar per acre. M380 has one of the best scores for Aphanomyces root rot resistance, and is designated as an Aphanomyces Specialty variety. Cercospora tolerance is below average with M380; an aggressive CLS spray program is important with M380. Rhizoctonia root rot ratings are near average for M380. The application of a post-emerge fungicide treatment for Rhizoctonia suppression should be considered with M380. ACH Seeds reports that M380 has tolerance to root aphid and Fusarium root rot.

Crystal M579: Crystal M579 was a Fully Approved Variety in 2018 and planted on 14,000 acres. In three years of testing in the Official Trials M579 had the highest recoverable sugar per ton of any variety tested. M579 performed very strongly in the SMBSC Agriculturalist Strip Trials in 2018, topping the trials on revenue per acre. M579 was above average for recoverable sugar per acre. Cercospora leaf spot and Aphanomyces root rot ratings are near average for both these diseases. M579 Rhizoctonia ratings are weaker than average. Careful placement of M579 and pest management can bring out high return characteristics. A post-emerge fungicide application for Rhizoctonia suppression would be a good program with M579. ACH Seeds reports that M579 has tolerance to root aphids.

2019 TEST MARKET VARIETIES

Test Market Varieties usually possess two or more years of trial data and either have not been field-tested or require further observation. Varieties that have a Test Market designation may be planted on up to 10% of the Cooperative acreage. Test Market Status allows shareholders to get a look at new varieties on a limited acre basis as none of these varieties have been planted commercially in the SMBSC growing area.

Beta 9780: Beta 9780 has been tested in the SMBSC Official Trials for two years. In both years, 9780 has shown to have very good yield characteristics combined with very good Cercospora leafspot ratings, for which it has been given Cercospora Specialty status. For two year data, 9780 has slightly above average sugar per ton and above average sugar per acre. Cercospora leafspot ratings are better than average, matching Cercospora rating scores for our best Cercospora Specialty varieties. Rhizoctonia scores are weaker than average for Beta 9780 and you should consider a foliar Rhizoctonia fungicide application at 4-8 leaf. Aphanomyces ratings are average for 9780. For 2019, do not plant 9780 on fields with a history of high levels of Aphanomyces. Careful placement and management of this variety should be practiced until we have a deeper understanding of how 9780 performs in the field setting.

Hilleshog 2219: Hilleshog 2219 was a first year tested variety in the SMBSC Official Trials and 2018 Agriculturalist Strip Trials, *we have only one year of data* for 2219. One year data in the Official Trials shows 2219 having average sugar per ton and below average sugar per acre. Performance of 2219 in the Agriculturalist Strip Trials was variable, but 2219 showed it has good yield potential. 2219 has better than average Cercospora and Rhizoctonia tolerance. Aphanomyces tolerance is weaker than average; careful placement of 2219 onto fields with low levels of Aphanomyces will be required for success.

Hilleshog 2220: Hilleshog 2220 was a first year tested variety in the SMBSC Official Trials, *we have only one year of data* for 2220. One year data in the Official Trials shows 2220 having average sugar per ton and below average sugar per acre. 2220 has a better than average Cercospora score, nearing some of the best scores of the Cercospora Specialty Varieties. Rhizoctonia scores are near average of the Fully Approved Varieties for 2220. Aphanomyces tolerance is poor; take caution with placement of 2220 so that it is not placed in fields with a history of Aphanomyces.

2019 Specialty Approved Varieties:

These varieties do not make the requirements for Full Approval; however, Aphanomyces, Rhizoctonia, or Cercospora nursery testing and field observations indicate these varieties possess better than average tolerance to these diseases.

Beta 92RR30 (Aphanomyces Specialty Variety): Beta 92RR30 was a Fully Approved Variety planted on approximately 10,500 acres in 2018 that fell from the Fully Approved List for the 2019 crop. 92RR30 had near average performance on sugar per ton and revenue per ton with below average performance on sugar per acre and revenue per acre in the SMBSC Official Trials. Tolerance to Cercospora leafspot is average. 92RR30 has the best tolerance of the Approved Varieties to Aphanomyces root rot in the 2016 - 2018 nursery results and is designated Aphanomyces Specialty variety. Rhizoctonia ratings are average of the approved varieties; consider a foliar Rhizoctonia fungicide application at 4-8 leaf when planting 92RR30. Betaseed reports 92RR30 has strong root aphid tolerance and low to moderate Fusarium root rot tolerance.

Beta 9606 (Rhizoctonia Specialty Variety): Beta 9606 was a Test Market Variety planted on 2,700 acres in 2018 and included in the 2018 Agriculturalist Strip Trials. Beta 9606 has a strong disease package. Aphanomyces root rot and Cercospora leafspot scores are near average for 9606. Rhizoctonia root rot scores are better than average for 9606. In three years of disease nursery testing, 9606 matches Rhizoctonia root rot scores with the current best performing Rhizoctonia Specialty Variety. Betaseed reports that 9606 has good root aphid tolerance. In the 2016-2018 Official Trials, 9606 had below average sugar and yield, and this was reflected in the 2018 Agriculturalist Strip Trials in Revenue per Acre.

Crystal RR018 (Rhizoctonia Specialty Variety): Crystal RR018 was a Rhizoctonia Specialty Variety in 2018 planted on approximately 29,000 acres. In the Official Trials, RR018 has lower than average sugar per ton and sugar per acre. RR018 has weaker than average ratings for Aphanomyces and average ratings for Cercospora leafspot. The Rhizoctonia root rot ratings are stronger than average and it was granted Rhizoctonia Specialty Approval for 2019. ACH reports that RR018 has some resistance to root aphid and is rated as good on Fusarium root rot.

Crystal M623 (Rhizoctonia Specialty Variety): In the 2016-2018 Official Trials, M623 had near average sugar per ton and lower than average sugar per acre. In three years of disease nursery testing, M623 has the best Rhizoctonia root rot scores of all varieties available for sale in 2019. In addition to being strong on Rhizoctonia root rot, M623 has shown to have a good all-around disease package. Disease nursery ratings place M623 at average scores for both Aphanomyces root rot and Cercospora leafspot. ACH reports M623 has good tolerance to root aphid.

Maribo MA109RR (Rhizoctonia Specialty Variety): Maribo MA109RR has been a Rhizoctonia Specialty Variety for the past several years and was planted on 2,000 acres in 2018. The Rhizoctonia root rot rating of MA109RR has been among the best of any variety in the SMBSC Official Trials in each of the past three years. MA109RR has average sugar per ton and below average sugar per acre of the Approved Varieties. Cercospora leaf spot ratings are average. It has weaker than average ratings on Aphanomyces root rot. MA109RR has a smaller canopy than most varieties which is readily apparent when planted side by side to other varieties. In 2017 and 2018, a couple of fields planted to 109 showed symptoms of Rhizomania. For 2019, it is advised to not plant 109 on fields with high Rhizomania potential.

Beta 9505 (Cercospora Specialty Variety): Beta 9505 was a Cercospora Specialty Variety in 2018 planted on 2,800 acres. 9505 is one of the best varieties for Cercospora leaf spot ratings in the 2016-2018 CLS nurseries. 9505 has below average recoverable sugar per ton and per acre. Aphanomyces root rot ratings are also better than average for 9505. Rhizoctonia ratings are better than average of the Fully Approved Varieties. In 2017 and 2018, a couple of fields planted to 9505 showed symptoms of Rhizomania. For 2019, it is advised to not plant 9505 on fields with high Rhizomania potential.

Crystal M509 (Cercospora Specialty Variety): Crystal M509 was not available for sale in 2018, but is a Cercospora Specialty Variety for 2019. It matches the best Cercospora leafspot score available for 2019 and brings a very strong tonnage characteristic. M509 is well above average in sugar per acre but below average in sugar per ton. This translates to being near average in revenue per acre. M509 also has average Rhizoctonia root rot scores and average Aphanomyces scores. A post-emerge fungicide application for Rhizoctonia suppression would be a good program with M509. ACH Seeds reports that M509 has good Fusarium tolerance.

Hilleshog 9739 (Cercospora Specialty Variety): Hilleshog 9739 was a Rhizoctonia Specialty Variety for 2018 and was planted on approximately 500 acres. 9739 has both strong Cercospora leaf spot tolerance as well as above average tolerance to Rhizoctonia root rot. 9739 is a good defensive variety for these diseases. 2016-2018 Official Trial yield results for 9739 have been below average for recoverable sugar per ton and recoverable sugar per acre. Aphanomyces ratings are weaker than average for 9739.

SV RR862 (Cercospora Specialty Variety): SV RR862 is a new variety in 2019 that has performed well in the SMBSC Official Trials. In the 2016-2018 Official Trials, RR862 had average revenue per acre and below average revenue per ton. Cercospora leafspot scores for RR862 place it in the Cercospora Specialty Approval category. In addition to stronger performance on Cercospora leafspot, RR862 has better than average Rhizoctonia root rot scores. RR862 is weaker than average on Aphanomyces root rot, so careful placement of the variety will be important in potential Aphanomyces infected fields. A post-emerge fungicide application for Rhizoctonia suppression would be a good program with RR862.

SV RR863 (Cercospora Specialty Variety): SV RR863 was a Cercospora Specialty Variety in 2018 planted on 2,700 acres. In the 2016-2018 Official Trials, RR863 had average revenue per acre and below average revenue per ton. RR863 performed very strongly in the 2018 SMBSC Agriculturalist Strip Trials with above average revenue per acre. Cercospora leafspot scores for RR863 are matched with the best available which place it in the Cercospora Specialty Approval category. In addition to stronger performance on Cercospora leafspot, RR863 has better than average Rhizoctonia root rot scores. RR863 is weaker than average on Aphanomyces root rot, so careful placement of the variety will be important in potential Aphanomyces infected fields.

2019 Conventional Test Market Varieties:

SMBSC has been conducting Conventional Trials for three years, 2016-2018. SMBSC has approved three conventional varieties for sale in 2019 as a Test Market Varieties. In 2018 the conventional varieties were planted in the disease nurseries and in 2017 a selection of the conventional entries were also placed in the disease nurseries, but were not included in the disease nurseries for 2016.

Hillehog 3035RZ: Hillehog 3035RZ was a conventional variety planted in SMBSC prior to the introduction of RoundUp Ready technology in sugarbeets. 3035RZ has been entered into the SMBSC Disease Nurseries for only two years. In two years of testing, 3035RZ has shown strong resistance to Rhizoctonia root rot. It has shown near average ratings for Cercospora leafspot and weaker than average ratings in Aphanomyces in two years of testing. 3035RZ has lower than average recoverable sugar per ton and per acre. Rhizoctonia scores are not available for the conventional varieties in 2018.

SV 48793: SV 48793 has been tested for two years at SMBSC, but with only *one year* of Disease Nursery Data. 48793 has below average sugar per ton and above average sugar per acre when compared to the 2019 Fully Approved Varieties. In the one year of testing in disease nurseries, 48793 scored weaker than average in Cercospora leafspot; very careful use of this variety will be needed and a stringent CLS fungicide regime needs to be followed for success with 48793. 48793 has the weakest Cercospora rating available for 2019. 48793 has better than average Aphanomyces scores in one year of testing. Rhizoctonia scores are not available for the conventional varieties in 2018.

SV 48894: SV 48894 is a first year variety and was tested in 2018 at SMBSC, *we have only one year of data* for 48894. SV 48894 has below average sugar per ton and sugar per acre when compared to the 2019 Fully Approved Varieties. In the one year of testing in disease nurseries, 48894 scored better than average in Cercospora leafspot and better than average in Aphanomyces root rot. Rhizoctonia scores are not available for the conventional varieties in 2018. As such, a post-emerge fungicide application for Rhizoctonia suppression would be advisable as we do not have data relating 48894's tolerance of Rhizoctonia.

2019 Seed Selection Matrix

<u>Variety</u>	<u>% Revenue per Ton</u>	<u>% Revenue per Acre</u>	<u>Rhizoctonia Cercospora</u>	<u>Aphanomyces Root Rot</u>	<u>Rhizomania Root Rot</u>	<u>Root Aphid</u>	<u>Fusarium</u>
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2018 Fully Approved Varieties

Beta 9475	97.0	100.3	4.0	4.4	4.3			
Crystal M380	98.7	95.2	4.9	4.7	3.2			
Crystal M579	106.7	108.1	4.3	4.6	4.2			

2018 Test Market Varieties

Beta 9780	104.4	110.6	3.8	4.7	4.4			
Hilleshog 2219								
Hilleshog 2220								

2018 Cercospora, Rhizoctonia, and Aphanomyces Specialty Varieties

Beta 92RR30	98.0	89.2	4.4	4.5	3.2			
Beta 9505	85.4	84.3	4.0	3.9	3.7			
Beta 9606	96.3	93.8	4.3	3.6	4.0			
Crystal RR018	93.3	90.3	4.5	3.6	4.6			
Crystal M509	86.7	99.6	3.8	4.3	4.2			
Crystal M623	97.4	95.3	4.2	3.5	4.3			
Hilleshog 9739	85.0	78.9	4.1	4.1	5.2			
Maribo MA109RR	96.3	88.5	4.3	3.5	5.1			
SV RR862	94.7	100.4	4.1	4.2	4.5			
SV RR863	94.4	100.0	3.7	4.0	4.6			

2018 Conventional Test Market Varieties

Hilleshog 3035RZ	86.4	82.2	4.3	(-)	4.7			
SV 48793	89.4	93.9		(-)				
SV 48894				(-)				

Green = Better than average

Yellow = Near Average

Red = Weaker than average

All data is from **TWO YEARS** of testing: 2017 and 2018. Varieties with omitted data do not have more than one year of testi