

Michigan Sugar Company

Sugarbeet Variety Approval System for 2008

Revised 1/11/07

Objective:

The purpose of the Official Variety Trials (OVT) testing program is to identify and evaluate improved sugarbeet varieties for Michigan Sugar Company growers. The variety approval process is based primarily on a mathematical system which measures the yield, quality, storability and Cercospora leafspot levels of new varieties. Minimum levels for RWSA, RWST, RWST-Storage and Cercospora leafspot tolerance must be met before a variety will be fully approved. Additional testing is conducted to measure other varietal traits such as emergence and tolerance to pests and diseases. No variety may be sold or given away unless approved by Michigan Sugar Company.

The yield, quality, storability and Cercospora tolerance of new varieties are measured against approved “check varieties. The current check varieties for yield, quality, storability and Cercospora are: **HM 2771Rz, Crystal R442, Beta 5833R, and HM 7172Rz.**

The Performance Standards used to approve a variety will include:

RWSA: 99.4% or more of the check varieties.

RWST: 99.7% or more of the check varieties.

RWST-Storage: 92.7% or more of the check varieties.

Cercospora Leafspot: 113.7% or less of the check varieties.

These performance standards are based on an average of the most recent 3 years of data.

Limited Approval (5%):

After 2 consecutive years of successful testing (performance standards passed) a variety will be advanced to Limited Approval (5%). This is intended to be a test marketing period and the variety can be planted on up to 5% of the Co-op’s acreage. Commercially processed seed must be used. If the OVT performance standards are maintained during this test marketing period the variety will become fully approved.

Limited Approval (10%):

If the performance standards are maintained after 3 consecutive years of successful testing, but the variety was not test marketed or if commercial seed is not available after 2 years of successful testing, the variety will be advanced to Limited Approval (10%). Varieties in this category can be planted on up to 10% of the Co-op’s acreage. If the performance standards are maintained during this test marketing period and commercial plantings were successful the variety will become fully approved.

Full Approval:

After 3 consecutive years of testing a variety will be advanced from Limited Approval to Full Approval assuming the 3 year OVT data averages pass all requirements and the variety has been test marketed and commercial seed is available. Fully approved varieties do not have limits on the amount of seed that can be sold or planted. A fully approved variety must maintain a leafspot level of 118.7% or less or it will be disapproved. If a variety's 3 year leafspot level exceeds the limit of 118.7% it will be disapproved and put on a 2 year plant out. A disapproved variety can be reinstated if the latest 3 year average meets the leafspot level.

If a fully approved variety is not submitted for testing, it will be disapproved and put on a 2 year plant out.

Specialty Approval:

Varieties may be approved as "Specialty Varieties" if they do not meet the performance standards but have other desirable characteristics such as insect or disease tolerance. To be considered for a specialty approval the variety must be designated by the seed company as having the specialty trait and must be successfully tested by the Company in an approved nursery. Commercial seed must also be available. If approved by the Seed Committee, the variety can be sold for 2 years after approval and the seed committee will determine the quantity of seed that can be sold each year.

Seed Committee:

The Michigan Sugar Company Seed Committee is comprised of the following members: 4 employees from the Agricultural Department, 3 members from the Board of Directors and 6 Grower members two from each growing districts. The chairman will be elected from the 6 Grower members. Each member on the Seed Committee has 1 vote.

Variety Approval and Policy Changes are Subject to Board of Director Approval

Michigan Sugar Company 2008 Variety Approval

Fully Approved Varieties for 2009

<u>Variety</u>	<u>RWST</u> <u>Need 98.7%</u>	<u>RWSA</u> <u>Need 96.4%</u>	<u>LEAFSPOT</u> <u>Need 113.7 or Less</u>
Beta 5833R	Yes 99.6	Yes 102.9	Yes 113.5
Beta 5930R	Yes 102.6	Yes 104.1	Yes 92.4
SX 1233*	Yes 101.4	Yes 101.0	Yes 111.1
Crystal 509*	Yes 98.9	Yes 100.9	Yes 100.8

*New Approvals for 2009

Limited Approval for 2009 (10%)

<u>Variety</u>	<u>RWST</u> <u>Need 98.7%</u>	<u>RWSA</u> <u>Need 96.4%</u>	<u>LEAFSPOT</u> <u>Need 113.7 or Less</u>
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3rd Year Varieties Not Meeting Limited Approval

<u>Variety</u>	<u>RWST</u> <u>Need 98.7%</u>	<u>RWSA</u> <u>Need 96.4%</u>	<u>LEAFSPOT</u> <u>Need 113.7 or Less</u>
Beta 1643N	Yes 101.5	Yes 114.0	No 138.7
HM 27RR	No 97.6	Yes 106.4	Yes 109.6
HM 28RR	No 97.5	Yes 109.1	Yes 109.8
HM 29RR	No 97.6	Yes 106.8	Yes 112.4

Limited Approval for 2009 (5% Acreage)*

*5% Limit waived for 2009

<u>Variety</u>	<u>RWST</u> <u>Need 98.7%</u>	<u>RWSA</u> <u>Need 96.4%</u>	<u>LEAFSPOT</u> <u>Need 113.7 or Less</u>
HM 9050RR	Yes 102.0	Yes 107.2	Yes 95.7
HM 9042RR	Yes 101.7	Yes 106.0	Yes 95.5
HM 9051RR	Yes 101.8	Yes 103.9	Yes 96.5
HM 9055RR	Yes 100.4	Yes 107.8	Yes 109.6
SX 1260RR	Yes 98.8	Yes 110.5	Yes 111.6
HM 9039RR	Yes 99.4	Yes 109.3	Yes 110.4

2nd Year Varieties Not Meeting Limited Approval

<u>Variety</u>	<u>RWST</u> <u>Need 98.7%</u>	<u>RWSA</u> <u>Need 96.4%</u>	<u>LEAFSPOT</u> <u>Need 113.7 or Less</u>
BTS 17RR32	Yes 101.9	Yes 117.6	No 131.6
Crystal RR827	Yes 104.1	Yes 117.7	No 144.8
HM 9032RR	No 96.9	Yes 113.0	No 117.7
BTS 17RR62	Yes 103.6	Yes 111.3	No 136.0

Michigan Sugar Company

2008 Variety Approval

Special Approval for 2009

<u>Variety</u>	<u>RWST</u>		<u>RWSA</u>		<u>LEAFSPOT</u>	
	<u>Need 98.7%</u>		<u>Need 96.4%</u>		<u>Need 113.7 or Less</u>	
Beta 1643N	Yes	101.5	Yes	114.0	No	138.7
HM 27RR	No	97.6	Yes	106.4	Yes	109.6
HM 28RR	No	97.5	Yes	109.1	Yes	109.8
HM 29RR	No	97.6	Yes	106.8	Yes	112.4
BTS 17RR32	Yes	101.9	Yes	117.6	No	131.6
BTS 17RR62	Yes	103.6	Yes	111.3	No	136.0
Crystal RR827	Yes	104.1	Yes	117.7	No	144.8
<u>Variety</u>	<u>Need 99.7%</u>		<u>Need 97.4%</u>		<u>Need 113.7 or Less</u>	
Crystal RR824	Yes	104.4	Yes	117.8	No	146.9

First Year Varieties

<u>Variety</u>	<u>RWST</u>		<u>RWSA</u>		<u>LEAFSPOT</u>	
	<u>Need 99.7%</u>		<u>Need 99.4%</u>		<u>Need 113.7 or Less</u>	
HM 9110RR	Yes	101.0	Yes	110.4	Yes	108.8
Crystal RR840	Yes	101.8	Yes	108.6	Yes	88.1
HM 9133RR	Yes	100.8	Yes	108.3	Yes	101.9
HM 9116RR	Yes	101.2	Yes	108.2	Yes	104.7
HM 9131RR	Yes	101.9	Yes	108.1	Yes	97.2
SX 1281RR	Yes	102.0	Yes	106.5	Yes	102.2
BTS 18RR26	Yes	103.4	Yes	106.4	Yes	79.3
Crystal RR824	Yes	104.4	Yes	117.8	No	146.9
Crystal RR808	Yes	107.1	Yes	117.3	No	127.3
BTS 18RR66	No	94.1	Yes	113.4	No	137.3
HM 9080RR	Yes	99.9	Yes	111.3	No	114.6
Crystal RR877	No	93.8	Yes	111.1	No	127.9
BTS 18RR16	No	99.3	Yes	110.5	Yes	83.1
BTS 18RR46	No	98.7	Yes	110.4	No	130.9
BTS 18RR06	Yes	102.7	Yes	110.3	No	119.4
BTS 18RR36	Yes	102.2	Yes	109.2	No	151.9
SX 1282 RR	No	98.5	Yes	108.6	No	118.0
Beta 5670R	No	98.9	Yes	107.5	No	124.1
HM 9151RR	No	96.5	Yes	107.4	Yes	111.1
Crystal R689	No	95.6	Yes	107.3	No	131.9
Crystal RR848	Yes	102.3	Yes	106.6	No	139.8
Crystal RR898	Yes	102.7	Yes	105.0	No	129.9
HM 9084RR	No	96.6	Yes	104.7	No	118.0
HM 9130RR	No	96.9	Yes	101.8	No	134.4
HM 2788NT	No	87.7	No	94.7	Yes	97.0

MICHIGAN SUGAR COMPANY

Approval of Seed Varieties for the 2009 Crop

The Seed Committee and Board of Michigan Sugar Company approved quantities of seed for commercial planting of the following varieties for the 2009 crop:

Fully Approved Varieties

(Unlimited Quantities)

	<u>Until 2010</u>		<u>Until 2009</u>
Beta 5833R	Beta 5411R*	Crystal 271*	HM 2761RZ**
Beta 5930R	Beta 5451*	Crystal 963*	HM 2763RZ**
SX 1233	Crystal R442*	Crystal 355*	HM 2767**
Crystal R509	HM 7172 Rz*		SX Prompt**
			Beta 5310**
			HM 2771RZ**

Specialty Approved Varieties

(Limited Quantities)

	<u>Units</u>	<u>Specialty</u>
Beta 1643N*	Unlimited	Nematode
HM 27RR	Unlimited	Roundup
HM 28RR	Unlimited	Roundup
HM 29RR	Unlimited	Roundup
BTS 17RR32*	15,000	High Sugar
BTS 17RR62*	15,000	High Sugar
Crystal RR827*	15,000	High Sugar
Crystal RR824*	8,000	High Sugar

*Last year to plant is 2010

**Last year to plant is 2009

*There will be an addendum to be signed by growers relating to Cercospora & Rhizoctonia control.

Limited Approved Varieties

(Quantities limited to 10% of acres)

Limited Approved Varieties

HM 9050RR	HM 9055RR
HM 9042RR	SX 1260RR
HM 9051RR	HM 9039RR

Committee Members Approval:

The meeting was held in Bay City, Michigan on November 25, 2008.

Paul Pfenninger - VP Agriculture

Lee Hubbell - Research Agronomist

Clay Crumbaugh, Chairman - West District

Tom Wadsworth - Board of Directors

Lee Butts - Central District

Scott Shaw - East District

Mark Lumley - East District

Jim Stewart - Director of Research

Corey Guza - Agronomist

Richard Sylvester - Board of Directors

Tom Gettel - Board of Directors

Doug Vader - Central District

Steve Hoard - West District



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Michigan Sugar Company RWSA Summary 2008

Variety	2008		2007		2006		2 Yr	3 Yr
	Lbs	%ck	Lbs	%ck	Lbs	%ck	Avg	Avg
<i>4 Var Check</i>	7554.0	100.0	6446.1	100.0	7674.9	100.0	100.0	100.0
<i>Beta 5833R</i>	7749	102.6	6559	101.8	8020	104.5	102.2	102.9
<i>HM 2771Rz</i>	7258	96.1	6343	98.4	7437	96.9	97.2	97.1
<i>HM 7172Rz</i>	7453	98.7	6169	95.7	7343	95.7	97.2	96.7
Crystal R509	8003	106.0	6263	97.2	7652	99.7	101.6	100.9
Beta 5930R	7727	102.3	6895	107.0	7917	103.2	104.6	104.1
SX 1233	7837	103.8	6499	100.8	7552	98.4	102.3	101.0
Beta 1643N*	8735	115.6	7089	110.0	8931	116.4	112.8	114.0
HM 27RR*	8204	108.6	6774	105.1	8103	105.6	106.9	106.4
HM 28RR*	8191	108.4	7086	109.9	8364	109.0	109.2	109.1
HM 29RR*	8241	109.1	6728	104.4	8209	107.0	106.7	106.8
<i>Crystal R442</i>	7755	102.7	6713	104.1	7900	102.9	103.4	103.2

Others Tested - 2008 & 2007

	2008		2007		2 Yr
	Lbs	%ck	Lbs	%ck	Avg
BTS 17RR32	8787	116.3	7666	118.9	117.6
HM 9032RR	8226	108.9	7549	117.1	113.0
Crystal RR827	9225	122.1	7309	113.4	117.7
SX 1260RR	8207	108.7	7241	112.3	110.5
HM 9039RR	8150	107.9	7137	110.7	109.3
HM 9055RR	8073	106.9	7014	108.8	107.8
HM 9050RR	8021	106.2	6974	108.2	107.2
HM 9042RR	7913	104.8	6907	107.2	106.0
BTS 17RR62	8977	118.8	6683	103.7	111.3
HM 9051RR	8036	106.4	6534	101.4	103.9

First Year Varieties- 2008

	2008			2008	
	Lbs	%ck		Lbs	%ck
Crystal RR824	8901	117.8	HM 9116RR	8175	108.2
Crystal RR808	8864	117.3	HM 9131RR	8167	108.1
BTS 18RR66	8569	113.4	Beta 5670R	8122	107.5
HM 9080RR	8406	111.3	HM 9151RR	8110	107.4
Crystal RR877	8389	111.1	Crystal R689	8104	107.3
BTS 18RR16	8345	110.5	Crystal RR848	8054	106.6
BTS 18RR46	8342	110.4	SX 1281RR	8045	106.5
HM 9110RR	8342	110.4	BTS 18RR26	8037	106.4
BTS 18RR06	8334	110.3	Crystal RR898	7930	105.0
BTS 18RR36	8249	109.2	HM 9084RR	7909	104.7
Crystal RR840	8204	108.6	HM 9130RR	7689	101.8
SX 1282 RR	8201	108.6	HM 2788NT	7155	94.7
HM 9133RR	8177	108.3			

* In 2006 these varieties were tested in a separate trial from the Official Variety Trial and were factored to be comparable.

Michigan Sugar Company RWST Summary 2008

Variety	2008		2007		2006		2 Yr	3 Yr
	Lbs	%ck	Lbs	%ck	Lbs	%ck	Avg	Avg
<i>4 Var Check</i>	248.32	100.0	246.75	100.0	252.72	100.0	100.0	100.0
<i>Beta 5833R</i>	247.3	99.6	245.9	99.7	251.8	99.6	99.6	99.6
<i>HM 2771Rz</i>	254.2	102.4	252.7	102.4	257.0	101.7	102.4	102.2
<i>HM 7172Rz</i>	244.1	98.3	243.4	98.7	245.6	97.2	98.5	98.1
Crystal R509	250.7	100.9	240.1	97.3	248.6	98.4	99.1	98.9
Beta 5930R	255.0	102.7	254.8	103.3	257.3	101.8	103.0	102.6
SX 1233	254.8	102.6	246.4	99.9	257.4	101.9	101.2	101.4
Beta 1643N*	250.0	100.7	250.9	101.7	258.2	102.2	101.2	101.5
HM 27RR*	250.3	100.8	236.8	96.0	242.8	96.1	98.4	97.6
HM 28RR*	243.4	98.0	240.0	97.3	245.8	97.3	97.6	97.5
HM 29RR*	246.6	99.3	240.3	97.4	243.2	96.2	98.3	97.6
<i>Crystal R442</i>	247.7	99.7	244.9	99.2	256.5	101.5	99.5	100.2

Others Tested - 2008 & 2007

	2008		2007		2 Yr
	Lbs	%ck	Lbs	%ck	Avg
BTS 17RR32	256.9	103.4	247.5	100.3	101.9
HM 9032RR	240.3	96.8	239.4	97.0	96.9
Crystal RR827	262.1	105.6	253.2	102.6	104.1
SX 1260RR	245.3	98.8	243.8	98.8	98.8
HM 9039RR	249.3	100.4	243.0	98.5	99.4
HM 9055RR	250.3	100.8	246.7	100.0	100.4
HM 9050RR	254.5	102.5	250.2	101.4	102.0
HM 9042RR	251.8	101.4	251.6	102.0	101.7
BTS 17RR62	261.0	105.1	251.7	102.0	103.6
HM 9051RR	257.8	103.8	246.2	99.8	101.8

First Year Varieties- 2008

	2008			2008	
	Lbs	%ck		Lbs	%ck
Crystal RR824	259.3	104.4	HM 9116RR	251.4	101.2
Crystal RR808	265.8	107.1	HM 9131RR	253.1	101.9
BTS 18RR66	233.8	94.1	Beta 5670R	245.5	98.9
HM 9080RR	248.0	99.9	HM 9151RR	239.8	96.5
Crystal RR877	232.8	93.8	Crystal R689	237.3	95.6
BTS 18RR16	246.6	99.3	Crystal RR848	254.0	102.3
BTS 18RR46	245.0	98.7	SX 1281RR	253.4	102.0
HM 9110RR	250.7	101.0	BTS 18RR26	256.7	103.4
BTS 18RR06	255.2	102.7	Crystal RR898	255.0	102.7
BTS 18RR36	253.7	102.2	HM 9084RR	239.9	96.6
Crystal RR840	252.8	101.8	HM 9130RR	240.7	96.9
SX 1282 RR	244.5	98.5	HM 2788NT	217.8	87.7
HM 9133RR	250.2	100.8			

* In 2006 these varieties were tested in a separate trial from the Official Variety Trial and were factored to be comparable.

Michigan Sugar Company Cercospora Leaf Spot Summary 2008

Variety	2008		2007		2006		2 Yr	3 Yr
	<u>0-9</u>	<u>%ck</u>	<u>0-9</u>	<u>%ck</u>	<u>0-9</u>	<u>%ck</u>	<u>Avg</u>	<u>Avg</u>
<i>4 Var Check</i>	2.876	100.0	2.819	100.0	3.338	100.0	100.0	100.0
<i>Beta 5833R</i>	3.28	114.0	3.10	109.9	3.89	116.6	112.0	113.5
<i>HM 2771Rz</i>	2.94	102.0	2.79	99.1	3.23	96.8	100.6	99.3
<i>HM 7172Rz</i>	2.85	98.9	2.91	103.1	3.30	98.9	101.0	100.3
Crystal R509	2.74	95.3	2.81	99.8	3.58	107.3	97.5	100.8
Beta 5930R	2.55	88.7	2.75	97.5	3.04	91.1	93.1	92.4
SX 1233	3.30	114.7	3.08	109.1	3.65	109.4	111.9	111.1
Beta 1643N	3.39	117.9	3.97	140.9	5.25	157.3	129.4	138.7
HM 27RR	3.21	111.4	3.08	109.4	3.60	107.9	110.4	109.6
HM 28RR	2.94	102.0	3.28	116.3	3.71	111.2	109.2	109.8
HM 29RR	3.09	107.4	3.28	116.3	3.79	113.6	111.9	112.4
<i>Crystal 442R</i>	2.45	85.0	2.48	87.9	2.93	87.8	86.5	86.9

Others Tested - 2008 & 2007

	2008		2007		2 Yr
	<u>0-9</u>	<u>%ck</u>	<u>0-9</u>	<u>%ck</u>	<u>Avg</u>
BTS 17RR32	3.76	130.6	3.74	132.6	131.6
HM 9032RR	3.28	114.0	3.42	121.4	117.7
Crystal RR827	3.98	138.2	4.27	151.4	144.8
SX 1260RR	3.13	108.8	3.22	114.3	111.6
HM 9039RR	3.12	108.5	3.17	112.4	110.4
HM 9055RR	2.99	103.8	3.25	115.3	109.6
HM 9050RR	2.60	90.2	2.86	101.3	95.7
HM 9042RR	2.80	97.4	2.64	93.7	95.5
BTS 17RR62	4.01	139.2	3.74	132.7	136.0
HM 9051RR	2.64	91.8	2.85	101.2	96.5

First Year Varieties- 2008

	2008			2008	
	<u>0-9</u>	<u>%ck</u>		<u>0-9</u>	<u>%ck</u>
Crystal RR824	4.23	146.9	HM 9116RR	3.01	104.7
Crystal RR808	3.66	127.3	HM 9131RR	2.80	97.2
BTS 18RR66	3.95	137.3	Beta 5670R	3.57	124.1
HM 9080RR	3.30	114.6	HM 9151RR	3.20	111.1
Crystal RR877	3.68	127.9	Crystal R689	3.80	131.9
BTS 18RR16	2.39	83.1	Crystal RR848	4.02	139.8
BTS 18RR46	3.77	130.9	SX 1281RR	2.94	102.2
HM 9110RR	3.13	108.8	BTS 18RR26	2.28	79.3
BTS 18RR06	3.44	119.4	Crystal RR898	3.74	129.9
BTS 18RR36	4.37	151.9	HM 9084RR	3.40	118.0
Crystal RR840	2.54	88.1	HM 9130RR	3.87	134.4
SX 1282 RR	3.40	118.0	HM 2788NT	2.79	97.0
HM 9133RR	2.93	101.9			