

SUGARBEET ADVANCEMENT

Partnership
of:



*Sugar Beet Growers
Michigan Sugar Company
Monitor Sugar Company
Michigan State University
Agribusiness*

ACKNOWLEDGEMENTS

ON-FARM RESEARCH AND DEMONSTRATION

The Sugarbeet Advancement Committee is pleased to provide the sixth On-Farm Sugar Beet Research and Demonstration Report. This type of On Farm Research has proven to be very beneficial in assisting producers in making sound agronomic decisions. Weather conditions were quite variable between production areas this year. Some locations received torrential early season rainfall which induced a variety of root problems that lasted the full season. Other chronic problems that significantly impacted yield include nematodes, wind damage, Rhizoctonia Crown Rot, Aphanomyces and late season Cercospora leaf spot. A prolonged drought through September also negatively effected yield. Sugarbeet Advancement trials encountered some of the largest yield differences between locations we have ever seen. In spite of all the negatives, the industry still harvested an average of approximately 18-tons per acre and 18% sugar. Improved stand establishment, better variety selection and earlier planting along with better disease control provided a solid foundation for good yields in spite of what Mother Nature threw at us. Sugarbeet Advancement research continues to help provide needed research for better management of beets.

In each trial, producers should pay close attention to comments that indicate what was impacting that site. The 2002 results again indicate the importance of selecting varieties with disease resistance that match your farm. Quadris can help control Rhizoctonia Crown Rot. Nitrogen is not the limiting factor for high yield of beets. Oil seed radish can help reduce the impact of Sugarbeet Cyst Nematode. This was the first year of testing the BEETCAST Spray Model which shows the impact leaf spot can have on yield and quality if sprays are not properly timed.

The effort involved in harvesting 18 research trials and digging 1000 sugar samples could not happen without the help of the industry. The farmers and cooperators are the key to supplying good sites to conduct research. The seed industry has been exceptional in providing seed supplies and labor for our research. A special thanks goes to Randy Hemb from Seed Systems, Inc. for going the extra mile when labor was needed. Other contributors include Doug Ruppel from Hilleshog, Andy Bernia from Crystal Seed, Harold Rouget from Seedex and Rob Gerstenberger from Beta Seed.

Many of the agriculturists from both Monitor Sugar Company and Michigan Sugar Company, Inc. assisted in finding site locations and field monitoring. Harvest could not have been completed without the use of the two beet carts with scales provided by Mark Laethem of Laethem Equipment in Fairgrove. When you include the contributors of the MSU Researchers, Michigan Sugar Agronomists Jim Stewart and Teresa Crook, Monitor Sugar Agronomist Lee Hubbell and Ralph Fogg in joint research efforts, we truly have a team approach in conducting needed research.

The Sugarbeet Advancement Committee has been instrumental in providing the framework for the success of the program. Industry input is always welcome as we develop our priorities for 2003. Feel free to contact any of the members that are listed in the front of the book.

Sincerely,

A handwritten signature in black ink that reads "Kevin J. Hecht". The signature is written in a cursive style.

Kevin J. Hecht
Sugarbeet Advancement Chair

A handwritten signature in black ink that reads "Steven S. Poindexter". The signature is written in a cursive style.

Steven S. Poindexter
Sugar Beet Extension Agent

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Crystal Beet Seed – Andy Bernia
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Seedex – Harold Rouget
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PREFACE

The Data in the 2002 Sugarbeet Advancement Research and Demonstration Book can be a valuable tool for making production decisions on your farm. Producers must understand the terminology to draw correct conclusions. Most of the research demonstration trials are replicated three or four times, either in a randomized format or complete randomized block. These trials have a statistical analysis run on them. Trials, which were not randomized and/or replicated, are considered as demonstrations with no statistical analysis run. The following comments should be helpful in your understanding of the results.

Quality analysis was provided by Hilleshog and may be somewhat lower than analysis from Michigan or Monitor Sugar Companies analysis because of different laboratory procedures. Relative differences between treatments should be the same.

TREATMENT NAME -- Identify different named treatments in the trial.

RWSA -- Recoverable White Sugar Per Acre. This number is calculated by multiplying recoverable white sugar per ton by actual yield per acre. All reported numbers are rounded to the nearest pound.

ACTUAL YIELD T/A -- Tonnage calculated on per acre basis. Reported number is rounded to one-hundredth decimal point. Gross tons (no tare off).

RWST -- Recoverable White Sugar Per Ton incorporating sugar and clear juice purity. Reported number is rounded to the nearest pound. This is based on a 120-day slice (not fresh basis).

% SUGAR -- Percentage Sugar Content of Beet; rounded to the one-tenth decimal point.

% CJP -- Percentage Clear Juice Purity; rounded to the one-tenth decimal point.

POPULATION -- In monitoring trials, approximately 10- 20- and 30-day plant counts were taken to monitor emergence of each treatment. Results are reported on beets per 100 foot of row.

HARVEST POPULATION -- Beet population was taken after beet defoliation. All crowns were counted, including small beets, which may not be picked up by harvesters.

AVERAGES -- Use averages to compare treatments which are better or worse than average of trial.

LSD 5% -- Least Significant Difference at the 95% confidence level in which one treatment compared to another is actually different. This calculation is used to take into account soil variation and other factors. NS indicates differences between treatments are *Not Significant*.

C.V. % -- Coefficient of variation is an indicator of how much variation is in the trial. If C.V.'s are 5% or less, it is considered an excellent trial; 10% or less is a good trial; 15% is fair, and etc. The less variation the more reliable the results are.

* **1X - 2X - 3X** -- Indicates how many times a practice was done.

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SUGARBEET ADVANCEMENT PROGRAMS FOR 2002-2003

DATE	TIME	ACTIVITY	LOCATION
1/11/02	9:00 A.M. – 3:00 P.M.	Sugar Beet Research Update for MSUE Agents & Field Men	Bavarian Inn Restaurant Frankenmuth
1/29/02	9:00 A.M. – 11:30 A.M.	Sugar Beet Weed Control Meeting	Williams Township Hall
1/29/02	1:30 P.M. – 3:30 P.M.	Sugar Beet Weed Control Meeting	MAC/CPS – Basement Breckenridge
1/30/02	9:00 A.M. – 11:30 A.M.	Sugar Beet Weed Control Meeting	Brentwood Restaurant - Caro
1/30/02	1:30 P.M. – 3:30 P.M.	Sugar Beet Weed Control Meeting	Bavarian Inn Restaurant Frankenmuth
1/31/02	9:30 A.M. – 11:30 A.M.	Sugar Beet Weed Control Meeting	Huron Expo Center Bad Axe
1/31/02	1:30 P.M. – 3:30 P.M.	Sugar Beet Weed Control Meeting	County Conference Room Sandusky
2/26/02	8:30 A.M. – 4:00 P.M.	Beet & Bean Symposium & Trade Show	Horizon Conference Center Saginaw
8/15/02	8:00 A.M. – NOON	Wind Control Meeting	Lindenhof – Bay City
8/19/02	9:30 A.M. – 11:30 A.M.	Variety Trial Tour	Schindler Farms – Linwood, D & D Schultz – Quadris Trial
8/19/02	1:00 P.M. – 3:30 P.M.	Variety Trial Tour	LAKKE Ewald Farms - Akron Rayl Farms - Quadris Trial
8/20/02	10:30 A.M. – 11:45 A.M.	Variety Trial Tour	Cedar Pond Farms – Ruth
8/21/02	10:30 A.M. – 11:45 A.M.	Variety Trial Tour	Ridgeview Farms – Merrill Fisher Farms – Quadris Trial Breckenridge
8/27/02	8:30 A.M. – 3:30 P.M.	Beet & Bean Farms Research Tour	Saginaw County
9/17/02	1:00 P.M. – 3:00 P.M.	BEETCAST Leaf Spot Tour	Sylvester Farms – Akron
12/9/02	NOON – 4:00 P.M.	Sugar Beet Seed Week	Akron VFW Hall – Akron
12/13/02	9:00 A.M. – 1:00 P.M.	Sugar Beet Seed Week	Country View Golf Course Dover Center - Ontario
12/16/02	8:30 A.M. – 11:30 A.M.	Sugar Beet Seed Week	Sportsman's VFW - Sebawaing
12/17/02	8:30 A.M. – 11:30 A.M.	Sugar Beet Seed Week	Frazier Township Hall - Linwood
12/17/02	2:00 P.M. – 5:30 P.M.	Sugar Beet Seed Week	Bavarian Inn Restaurant Frankenmuth
12/19/02	8:30 A.M. – 11:30 A.M.	Sugar Beet Seed Week	Liberty Lanes – Sandusky
12/19/02	2:00 P.M. – 5:30 P.M.	Sugar Beet Seed Week	Franklin Inn – Bad Axe
01/21 – 01/23 2003	9:00 A.M. – 4:00 P.M.	Sugar Beet Short Course	Franklin Inn – Bad Axe
02/04 – 02/06 2003	9:00 A.M. – 4:00 P.M.	Sugar Beet Short Course	Bavarian Inn Restaurant Frankenmuth
2/18/03	8:30 A.M. – 4:00 P.M.	Beet & Bean Symposium & Trade Show	Horizons Conference Center Saginaw

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ON-FARM RESEARCH AND DEMONSTRATION

Cooperator: Schindler Farms	Tillage: Fall – Chisel	Spring – Danish Tine Cultivator
Location: Bay County	Harvest Date: 10/25	Sugar Sampled: 10/23
Planting Date: 4/18/2002	Type of Harvester: Artsway	
Row Spacing: 22 Inches	# of Rows Harvested: 8	# Defoliated: 8
Previous Crop: Corn	Soil Type: Kawkawlin Clay Loam	
Fertilizer: 15gal 9-24-0 + 50 gal 28% N	O.M.: 2.3%	CEC: 12.3
Seed Space: 4 Inches	Herbicides: Microrated 4X	
Replicated: 3X	Fungicide: 7/18 Gem	8/5 Eminent
Row Length: 1400'		

TREATMENT NAME	RWSA	ACTUAL YIELD T/A	RWST	% SUGAR	CJP %	POPULATION 100 FT. ROW			
						10 Day	20 Day	30 Day	Harvest
RH 5	3777	15.17	249	17.0	93.9	0	87	165	120
PROMPT	3685	15.39	240	16.8	93.7	0	85	138	113
C 963	3447	14.27	242	16.9	93.8	0	27	130	85
E 17	3428	13.45	255	17.0	93.8	0	62	122	100
B 5451	3345	14.19	236	16.4	93.9	0	53	130	94
E 33	3134	13.06	240	17.1	93.2	0	89	187	150
C 1353	3040	12.68	240	16.3	93.9	0	100	141	86
C 913	2989	13.53	220	15.9	92.6	0	80	131	91
B 5736	2907	13.09	222	16.6	91.9	0	52	126	93
SPARTAN	2837	11.51	247	17.0	93.6	0	71	132	78
B 5172	2593	11.36	231	16.4	93.0	0	30	107	84
E 38	2589	10.86	240	16.6	93.7	0	91	158	94
AVERAGE	3148	13.21	238	16.7	93.4	0	69	139	99
L S D (5%)	469	1.61	19	.8	1.1	-	19	39	36
C.V. (%)	9	7	5	3	1	-	16	17	22

Comments: Trial planted under good soil conditions (dry). Rainfall occurred shortly after planting. Emergence was fair but slow. Beets failed to grow well after heavy rainfall. Leaf spot control was fair. Heavy Rhizoctonia Crown Rot pressure in the plot. Root Aphid, and Sugar Beet Cyst Nematode identified in the plot. Late season drought effected growth and yield. Harvest population averaged 25,000 plants/acre. All seed was PAT Pellets (Seed Systems) except B 5172. B 5172 seed lot was below minimum standard germination because of limited seed supply. Trial Reliability: **Fair**

Cooperating Agriculturalist: Bill Hartley – Monitor Sugar Co.

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VARIETY TRIAL

ON-FARM RESEARCH AND DEMONSTRATION

Cooperator: **Ridgeview Farms**
Location: Merrill – Gratiot County
Planting Date: 4/17/2002
Row Spacing: 30 Inches
Previous Crop: Dry Beans
Fertilizer: 20gal 4-10-10 + Mn & B
225# 45-0-0
300# 0-0-60
Seed Space: 4 Inches

Tillage: Fall – Plow Spring – Field Cultivate
Harvest Date: 10/27 Sugar Sampled – 10/26
Type of Harvester: Artsway
of Rows Harvested: 6 # Defoliated: 6
Soil Type: Parkhill Loam
O.M: 2.2% CEC: 12.8
Herbicide: Pre – ¾ pt. Nortron Post – Microrates 4 X
Fungicide: 8/10 Gem 8/28 Eminent
Replicated: 3 X Row Length: 800'

TREATMENT NAME	RWSA	ACTUAL YIELD T/A	RWST	% SUGAR	CJP %	POPULATION 100 FT. ROW			
						10 Day	20 Day	30 Day	Harvest
RH 5	7498	30.62	245	17.2	93.0	23	164	164	161
B 5451	6879	26.39	261	17.8	93.6	15	163	165	121
PROMPT	6798	27.53	247	17.5	92.4	19	198	198	180
C 963	6653	26.12	254	17.7	93.4	3	170	189	129
E 33	6415	24.46	263	18.6	93.7	32	212	207	179
E 38	6409	25.24	254	17.5	93.8	19	191	192	158
C 1353	6288	25.35	248	17.4	93.2	53	211	212	178
C 913	6257	25.90	243	17.4	93.0	19	165	170	152
SPARTAN	6113	24.56	250	17.7	93.8	18	157	162	142
B 5172	6043	24.73	246	17.1	93.3	4	125	134	121
B 5736	5912	23.67	250	17.9	92.6	15	127	131	117
E 17	5646	22.88	250	17.7	93.0	6	186	184	150
AVERAGE	6409	25.62	251	17.6	93.2	19	172	176	149
L S D (5%)	932	4.60	27	1.1	1.2	10	49	42	35
C.V. (%)	9	11	6	4	1	32	17	14	14

Comments: Trial planted under good field conditions with excellent emergence. Leaf spot control was excellent. Rhizoctonia Crown Rot pressure was heavy. Field benefited from early planting, late season rainfall, and excellent leaf spot control. Plot harvest population averaged 28,000 plants/acre. All seed was PAT Pellets (Seed Systems) except B 5172. B 5172 was below germ standard quality because of limited seed supply. Trial Results Reliability: **Good**

Cooperating Agriculturalist: Dave Bailey – Michigan Sugar Company

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VARIETY TRIAL

ON-FARM RESEARCH AND DEMONSTRATION

Cooperator: **Cedar Pond Farms**
Location: Ruth
Planting Date: 4/17/2002
Row Spacing: 30 Inches
Previous Crop: Wheat
Fertilizer: 150# 17-35-8 + Mn
: 70# N + 200# 0-0-62
Seed Space: 4 Inches
Replicated: 3X

Tillage: Fall – Plow Spring – Field Cultivate
Harvest Date: 10/19 Sugar Sampled: 10/16
Type of Harvester: Artsway
of Rows Harvested: 4 # Defoliated: 4
Soil Type: Sandy Loam
O.M: 2.0% CEC: 11.0
Herbicides: Microrates 6X
Fungicide: 8/1 Gem 8/20 Eminent
Row Length: 2500'

TREATMENT NAME	RWSA	ACTUAL YIELD T/A	RWST	% SUGAR	CJP %	POPULATION 100 FT. ROW			
						10 Day	20 Day	30 Day	Harvest
C 963	7513	24.27	310	20.8	94.7	1	110	151	157
B 5451	6995	23.49	298	20.4	94.5	1	113	126	135
E 38	6789	23.14	293	20.3	94.2	3	153	152	152
E 33	6702	21.86	306	20.3	94.5	2	130	108	134
E 17	6696	23.06	291	20.2	94.5	1	116	127	141
B 5736	6695	23.16	289	20.2	93.6	4	94	106	109
C 913	6620	23.97	277	19.6	94.0	2	110	106	105
SPARTAN	6505	21.65	300	20.6	94.2	2	129	149	144
C 1353	6499	22.62	288	20.0	94.1	3	159	173	160
PROMPT	6490	22.68	286	20.3	94.1	0	118	140	151
RH 5	6426	23.37	276	19.7	94.4	6	100	96	126
B 5172	6199	21.76	284	19.5	94.5	0	77	109	100
AVERAGE	6677	22.92	292	20.2	94.3	2	117	129	134
L S D (5%)	745	1.88	31	.9	.7	3	35	45	41
C.V. (%)	7	5	6	3	1	93	18	21	18

Comments: Trial planted under good soil conditions. Very low Rhizoctonia Crown Rot pressure and excellent leaf spot control. Some early season wind injury. Below average rainfall all season. Harvest population averaged 23,000 plants/acre. All seed was PAT Pellets (Seed Systems) except B 5172. B 5172 was below minimum germination standards because of limited seed supply. Quadris at 1/2 rate, 5 ounces, applied in-furrow at planting. Trial Reliability: **Excellent**

Cooperating Agriculturalist: Bob Corrigan – Michigan Sugar Co.

SUGARBEET ADVANCEMENT

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of:



Sugar Beet Growers
Michigan Sugar Company
Monitor Sugar Company
Michigan State University
Agribusiness

VARIETY TRIAL

ON-FARM RESEARCH AND DEMONSTRATION

Cooperator: **Gerstenberger Farms, Inc.**
Location: Sanilac County
Planting Date: 4/24/2002
Row Spacing: 28 Inches
Previous Crop: Soybeans
Fertilizer: 200# 15-29-9; 120# N; VRT Potash
Seed Space: 3.5 Inches
Replicated: 3X Row length: 1120'

Tillage: Fall – Chisel; Spring – Field cultivate 2X
Harvest Date: 10/19 Sugar sampled: 10/14
Type of Harvester: Artsway
of Rows Harvested: 6 # Defoliated: 6
Soil Type: Parkhill Clay Loam
O.M.: 4% CEC: 12.7
Herbicides: Pre – Pyramin Post - Microrates 4X
Fungicide: 7/25 Super Tin

TREATMENT NAME	RWSA	ACTUAL YIELD T/A	RWST	% SUGAR	CJP %	POPULATION 100 FT. ROW			
						10 Day	20 Day	30 Day	Harvest
B 5451	5864	21.86	268	18.4	93.9	32	143	202	180
RH 5	5808	21.88	265	18.2	93.5	63	134	194	189
PROMPT	5625	21.74	256	18.0	92.9	64	193	241	245
E 33	5550	20.08	276	19.0	93.6	47	190	249	239
C 963	5507	21.08	261	18.2	93.5	32	147	236	207
E 17	5466	20.34	269	18.7	93.4	44	149	221	200
B 5172	5461	20.60	265	18.1	93.5	34	123	186	178
C 913	5442	21.78	250	17.6	93.0	63	143	214	197
SPARTAN	5227	19.60	267	18.6	93.3	57	164	219	180
C 1353	5083	20.16	251	17.5	93.3	66	184	236	211
E 38	5052	19.61	258	18.1	92.9	71	174	248	217
B 5736	4982	19.60	254	18.6	92.5	42	129	187	166
AVERAGE	5422	20.70	262	18.3	93.3	51	156	220	201
L S D (5%)	n.s. (1028)	n.s. (3.51)	17	.9	.9	22	34	32	43
C.V. (%)	11	10	4	3	.55	26	13	9	13

Comments: Trial was planted under good field conditions. Emergence was excellent. Leaf spot control was poor. Moderate level of Rhizoctonia Crown Rot. Field was damaged by 3 1/2 inch rain in June. Low areas most affected. Some weed control problems due to lack of canopy. Harvest population average of 35,000 plants/acre. All seed was Pat Pellets (Seed Systems) except 5172. B 5172 seed lot below minimum germ standard because of limited seed supply. Trial Reliability: **FAIR**

Cooperating Agriculturalists: Tim Muz - Michigan Sugar Co.
Paul Wheeler - Monitor Sugar Co.

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of:



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Michigan Sugar Company
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Michigan State University
Agribusiness

VARIETY TRIAL

ON-FARM RESEARCH AND DEMONSTRATION

Cooperator: **LAKKE-Ewald Farms**
Location: Tuscola County
Planting Date: 4/16/2002
Row Spacing: 22 Inches
Previous Crop: Dry Beans
Fertilizer: No Starter 155# N
Seed space: 4 Inches
Replicated: 3X Row length: 1115'

Tillage: Fall – Plow Spring – Field Cultivate
Harvest Date: 10/16 Sugar Sampled: 10/15
Type of Harvester: Artsway
of Rows Harvested: 8 # Defoliated: 8
Soil Type: Tappan-Londo Loam
O. M.: 2.8% CEC : 16.5
Herbicides: Microrates 4X
Fungicide: 8/2 Eminent 8/21 Super Tin

TREATMENT NAME	RWSA	ACTUAL YIELD T/A	RWST	% SUGAR	CJP %	POPULATION 100 FT. ROW			
						10 Day	20 Day	30 Day	Harvest
B 5736	4868	17.56	277	19.4	93.0	14	195	215	169
B 5451	4665	16.97	275	19.6	93.7	13	181	203	135
E 33	4640	16.20	286	19.7	94.1	9	213	234	207
B 5172	4548	16.63	273	19.0	93.7	5	148	177	131
E 17	4279	15.39	278	19.4	93.5	14	179	229	190
RH 5	4202	15.90	265	19.0	93.4	28	197	206	162
E 38	4097	15.79	259	19.0	92.6	25	216	236	181
C 913	4053	15.66	259	18.5	93.6	12	172	218	158
C 963	4042	15.13	267	18.9	93.4	9	177	218	116
PROMPT	4006	15.73	254	18.7	92.8	38	196	197	173
SPARTAN	3842	14.60	262	19.0	93.7	23	198	215	163
C 1353	3749	14.72	254	18.6	93.4	16	195	204	128
AVERAGE	4249	15.86	267	19.1	93.4	17	189	213	159
L S D (5%)	684	2.09	22	.8	1.0	14	39	23	35
C.V. (%)	10	8	5	3	.66	47	12	6	13

Comments: Trial planted under good field conditions. Excellent emergence. Leaf spot control was poor and moderate to heavy Rhizoctonia Crown Rot. Aphanomyces, Root Aphid, and Sugar Beet Cyst Nematode detected in the plot. Excessive rainfall caused standing water in the field. Late season drought also reduced yields. Harvest population average of 37,000 plants/acre. All seed PAT pellets (Seed Systems) except B 5172. B 5172 below germ standards because of limited seed supply. Trial Results Reliability: **FAIR**

Cooperating Agriculturalists: Craig Reiman - Michigan Sugar Co.
Steve Bohn - Monitor Sugar Co.

SUGARBEET ADVANCEMENT

Partnership
of:



ONTARIO VARIETY TRIAL

Sugar Beet Growers
Michigan Sugar Company
Monitor Sugar Company
Michigan State University
Agribusiness

ON-FARM RESEARCH AND DEMONSTRATION

Cooperator: **Alana & Brian Fox**
Location: Dover Township - Ontario
Planting Date: 4/25/2002
Row Spacing: 30 Inches
Previous Crop: Soybeans
Replicated: 3X
Soil Type: Clay Loam

Tillage: Fall – Plow & Harrowgator Spring – Field Cultivate 2X
Harvest Date: 10/23
Type of Harvester: Artsway
of Rows Harvested: 6 # Defoliated: 6
Herbicides: Pre-emergence – Roundup Microrates – 4X
Row Length: 1870'
Seed Space: 3 7/8 Inches

TREATMENT NAME	RWSA	ACTUAL YIELD T/A	RWST	% SUGAR	CJP %	POPULATION 100 FT. ROW			
						15 Day	20 Day	30 Day	Harvest
B 5451	7205	24.7	292.4	19.75	94.8	170	233	233	183
E 33	6923	22.2	311.8	20.92	94.9	225	261	262	225
E 17	6883	23.3	295.6	20.03	94.6	265	281	279	247
C 648	6881	22.9	299.9	20.24	94.7	236	268	253	201
B 5736	6532	22.2	294.1	20.07	94.3	199	249	243	191
PROMPT	6152	21.7	283.8	19.85	93.6	212	267	251	222
C 1353	5671	21.0	269.6	18.57	94.0	238	270	264	216
AVERAGE	6607	22.6	292.5	19.9	94.4	221	261	255	212
L S D (5%)	815	n/s	9.3	.5	.6	25.6	n/s	22.7	21.1
C.V. (%)	6.9	7.9	1.8	1.4	.4	6.5	6.3	5	5.6

Comments: Trial Reliability was Excellent. The average harvest population was 37,000 plants / acre. Lab analysis was performed at the Michigan Agricultural Research Laboratory. Tons / acre are net or clean. (Tare was 2.037%)

Cooperating Agriculturalists: Wayne Martin – Michigan Sugar Company,
Teresa Crook – Michigan Sugar Company Agronomist
Janice LeBoeuf - OMARF

SUGARBEET ADVANCEMENT

Partnership
of:



Sugar Beet Growers
Michigan Sugar Company
Monitor Sugar Company
Michigan State University
Agribusiness

AVERAGE OF FIVE VARIETY TRIALS

ON-FARM RESEARCH AND DEMONSTRATION

Cooperator: **FIVE LOCATIONS AVERAGED**
Location: Bay, Gratiot, Huron, Sanilac & Tuscola
Planting Date: 2002
Row Spacing: Variable
Previous Crop: Variable
Replicated: 5 Locations 3 Replications

“*” DENOTES NO SIGNIFICANT DIFFERENCES FROM THE TOP VARIETY

TREATMENT NAME	RWSA	ACTUAL YIELD T/A	RWST	% SUGAR	CJP %	POPULATION 100 FT. ROW				% Stand Loss
						10 Day	20 Day	30 Day	Harvest	
B 5451	5550*	20.58*	268*	18.5	93.9	12	131	165	133	19
RH 5	5542*	21.39*	260	18.2	93.6	24*	136	165	152	8
C 963	5432*	20.17*	267*	18.5	93.8	9	126	185	139	24
PROMPT	5321*	20.61*	257	18.3	93.2	27*	158	183	172*	6
E 33	5288*	19.13	274*	18.9	93.8	18*	167*	197*	182*	5
E 17	5103	19.02	269*	18.6	93.6	13	138	177	156	12
B 5736	5073	19.42	258	18.5	92.7	15	119	153	131	14
C 913	5072	20.17*	250	17.8	93.2	19*	134	168	141	16
E 38	4987	18.93	261	18.3	93.4	24*	165*	197*	160*	19
B 5172	4969	19.02	260	18.0	93.6	9	101	143	123	14
C 1353	4932	19.11	256	18.0	93.6	28*	170*	193*	153*	21
SPARTAN	4905	18.38	265	18.6	93.7	20*	144	175	141	19
AVERAGE	5181	19.66	262	18.4	93.5	18	141	175	149	15
L S D (5%)	416	1.32	9	.3	.4	11	16	21	22	
C.V. (%)	6	5	3	1	1	47	9	9	12	

Comments: Five locations – each variety replicated three times per location. Two sugar samples taken from each strip. A total of six sugar samples were taken per variety at each location. All trials were planted and managed by growers with grower’s equipment. Varieties perform differently under different environmental conditions, such as disease, insects, moisture, and plant population. Always refer to the individual trials and comments at each location. Trial Results Reliability: **Fair to Excellent**

Cooperating Agriculturalist: Michigan and Monitor Sugar Companies

SUGARBEET ADVANCEMENT

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Michigan Sugar Company
Monitor Sugar Company
Michigan State University
Agribusiness

RANKINGS OF VARIETY TRIAL AVERAGES FROM 5 SITES

ON-FARM RESEARCH AND DEMONSTRATION

Cooperator: **Five Location Averages**

Location: Bay, Gratiot, Huron, Sanilac & Tuscola

Planting Date: 2002

Row Spacing: Variable

Previous Crop: Variable

Replicated: 5 Locations 3 Replications

TREATMENT NAME	RWSA RANK	T/A RANK	RWST RANK	% SUGAR RANK	CJP %	POPULATION RANK PER 100 FT. ROW				% STAND LOSS RANK
						10 Day	20 Day	30 Day	Harvest	
B 5451	1*	3*	3*	5	1*	10	9	9	10	8*
RH 5	2*	1*	7	9	5*	3*	7	10	6	3
C 963	3*	4*	4*	6	3*	11	10	4	9	12
PROMPT	4*	2*	10	8	11	2*	4*	5	2*	2
E 33	5*	7	1*	1	2*	7*	2*	2*	1*	1
E 17	6	9	2*	2	6*	9	6	6	4	4
B 5736	7	6	9	4	12	8	11	11	11	5^
C 913	8	5*	12	12	10	6*	8	8	8	7
E 38	9	11	6	7	9	4*	3*	1*	3*	9*
B 5172	10	10	8	10	7*	12	12	12	12	6^
C 1353	11	8	11	11	8*	1*	1*	3*	5	11
SPARTAN	12	12	5	3	4*	5*	5	7	7	10*

Comments: These rankings are by category and ranked 1 through 12. One is the highest ranking and 12 being lowest. All five variety trials are averaged and the relative differences between some rankings may be very small, or not significant. Use this information as a reference of how a variety may perform given several different environmental conditions. Refer to individual trials and comment sections for more information. When determining which varieties to plant, also consider Leaf Spot, Root Aphid, and Rhizoctonia tolerances and other factors pertinent to your farm. Variety specific information can be obtained from seed companies and/or Michigan and Monitor Sugar Companies.

Cooperating Agriculturalist: Michigan and Monitor Sugar Companies

“ * ” DENOTES NO SIGNIFICANT DIFFERENCE FROM THE TOP VARIETY

% STAND LOSS – COMPARES THE 30 DAY AND HARVEST STAND COUNTS.

1= LOWEST LOSS AND 12 = HIGHEST LOSS

“*” & “^” DENOTES IDENTICAL PERCENTAGES

SUGARBEET ADVANCEMENT

VARIETY TRIAL TWO YEAR AVERAGE

Partnership
of:



Sugar Beet Growers
Michigan Sugar Company
Monitor Sugar Company
Michigan State University
Agribusiness

ON-FARM RESEARCH AND DEMONSTRATION

Planting Date: 2002 and 2003

TREATMENT NAME	RWSA	ACTUAL YIELD T/A	RWST	% SUGAR
B 5451	5876	21.48	272	18.6
C 913	5771	21.08	273	18.6
RH 5	5761	22.24	260	18.0
PROMPT	5442	21.01	259	18.1
B 5736	5364	20.14	265	18.6
E 17	5326	19.67	272	18.5
E 33	5301	19.55	271	18.6
C 913	5274	20.77	254	17.7

SUGARBEET ADVANCEMENT

VARIETY TRIAL THREE YEAR AVERAGE

Partnership
of:



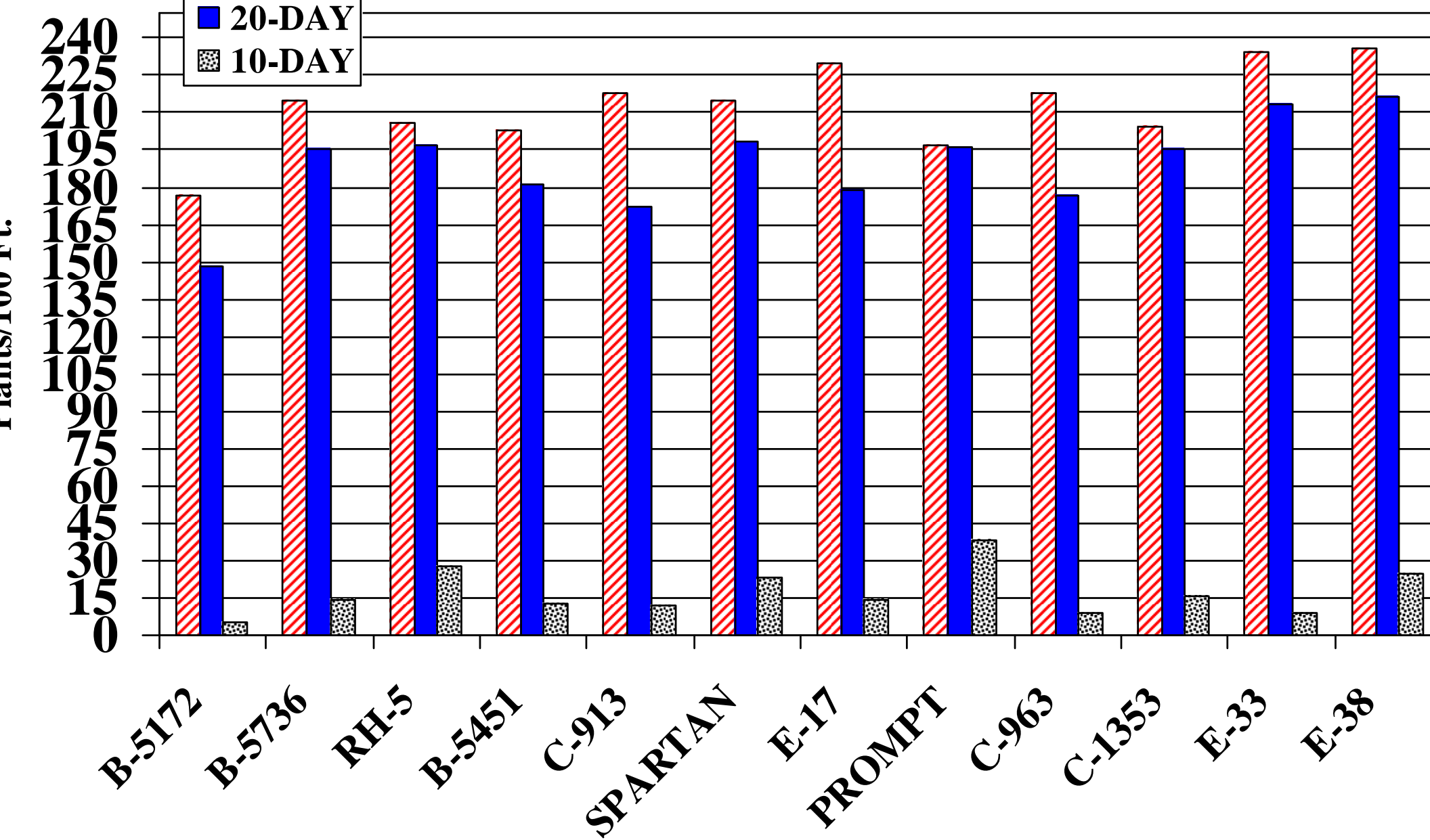
Sugar Beet Growers
Michigan Sugar Company
Monitor Sugar Company
Michigan State University
Agribusiness

ON-FARM RESEARCH AND DEMONSTRATION

Planting Date: 2001, 2002 and 2003

TREATMENT NAME	RWSA	ACTUAL YIELD T/A	RWST	% SUGAR
B 5451	6004	23.01	262	18.0
RH 5	5655	22.78	250	17.4
PROMPT	5597	22.58	249	17.5
B 5736	5436	21.62	254	17.9
E-33	5243	20.40	258	17.9

Variety Trial
10- 20- and 30-Day Emergence
Lakke-Ewald Farms, Inc. – Tuscola County

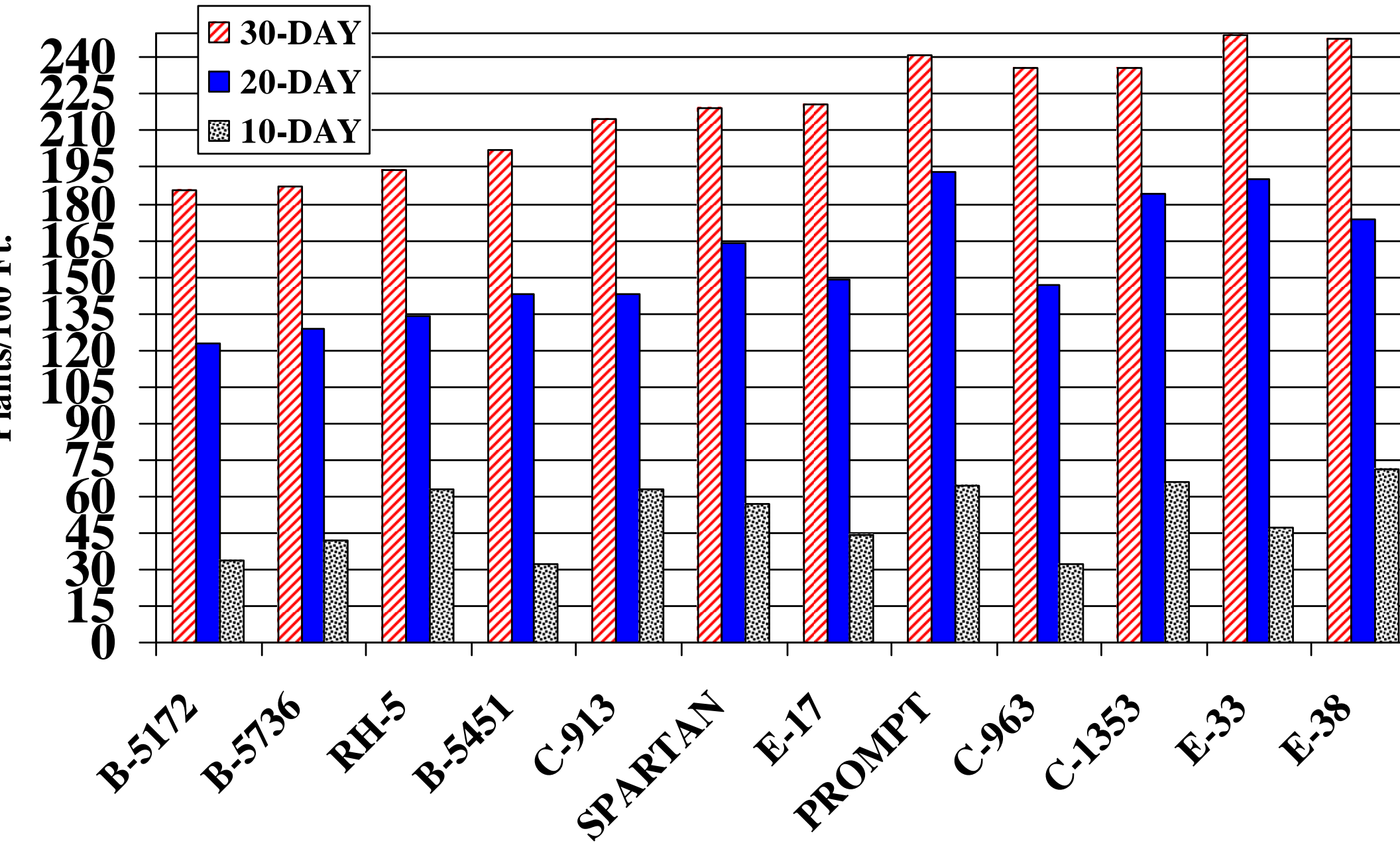


Planted 4/16/02 – Seed Spacing 4 Inches – 22 Inch Rows

Sugarbeet Advancement - 2002

All treatments PAT Pellet except B-5172

Variety Trial
10- 20- and 30-Day Emergence
Gerstenberger Farms, Inc. – Sanilac County/Sandusky

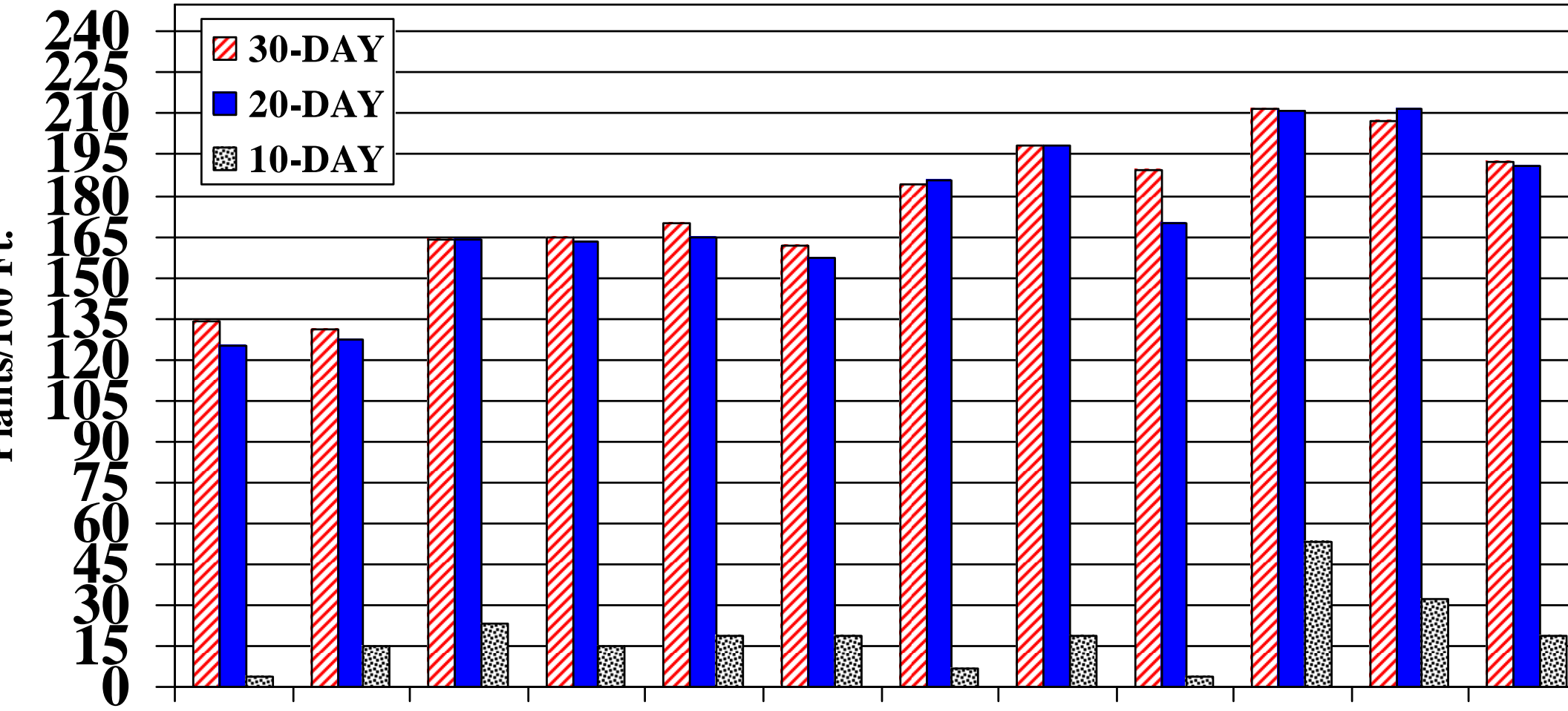


Planted 4/24/02 – Seed Spacing 4 Inches – 30 Inch Rows

Sugarbeet Advancement - 2002

All treatments PAT Pellet except B-5172

Variety Trial
10- 20- and 30-Day Emergence
Ridgeview Farms, Inc. – Gratiot County



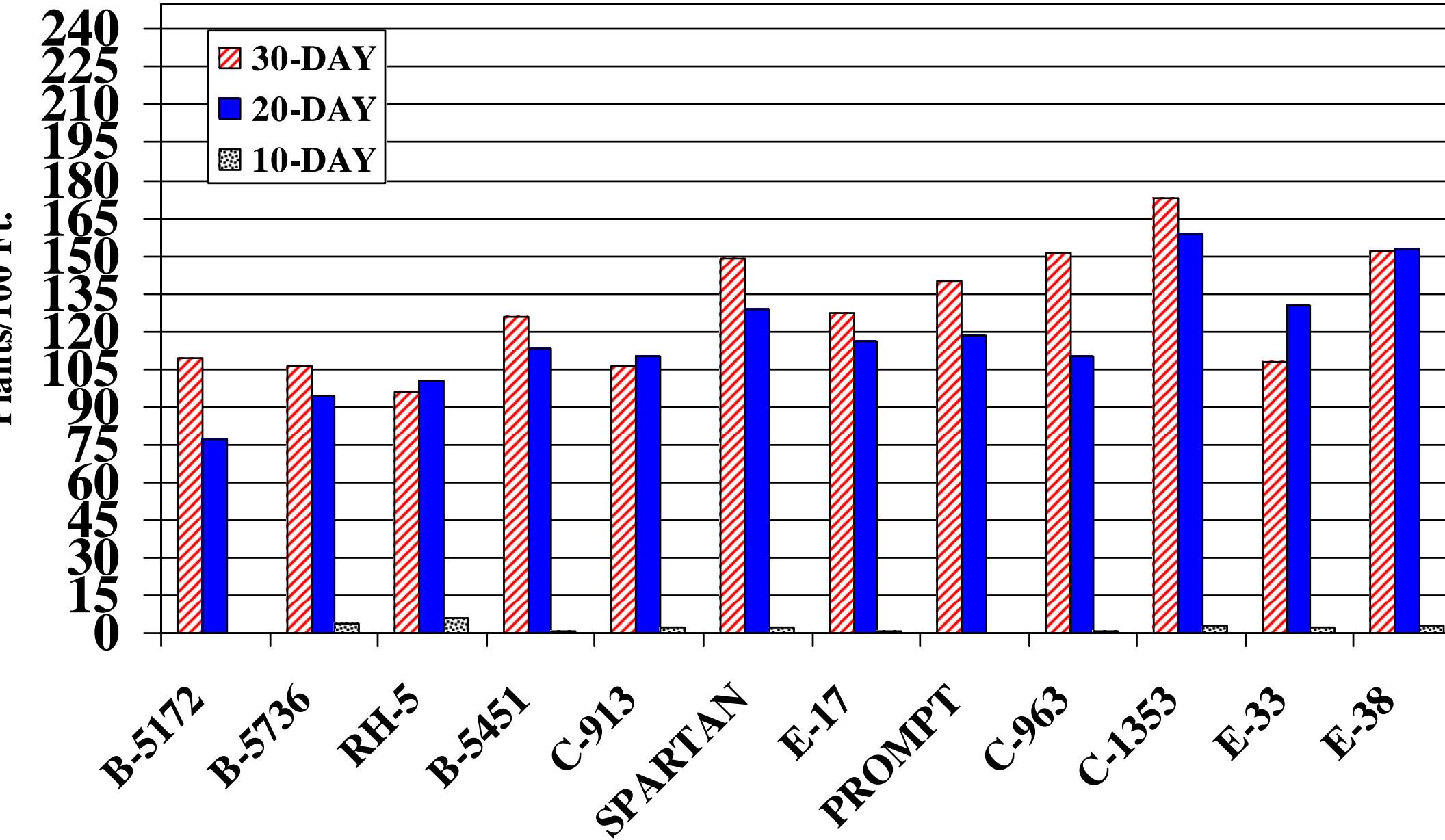
B-5172 **B-5736** **RH-5** **B-5451** **C-913** **SPARTAN** **E-17** **PROMPT** **C-963** **C-1353** **E-33** **E-38**

Planted 4/17/02 – Seed Spacing 4 Inches – 30 Inch Rows

Sugarbeet Advancement - 2002

All treatments PAT Pellet except B-5172

Variety Trial
10- 20- and 30-Day Emergence
Cedar Pond Farms, Inc. – Huron County/Ruth

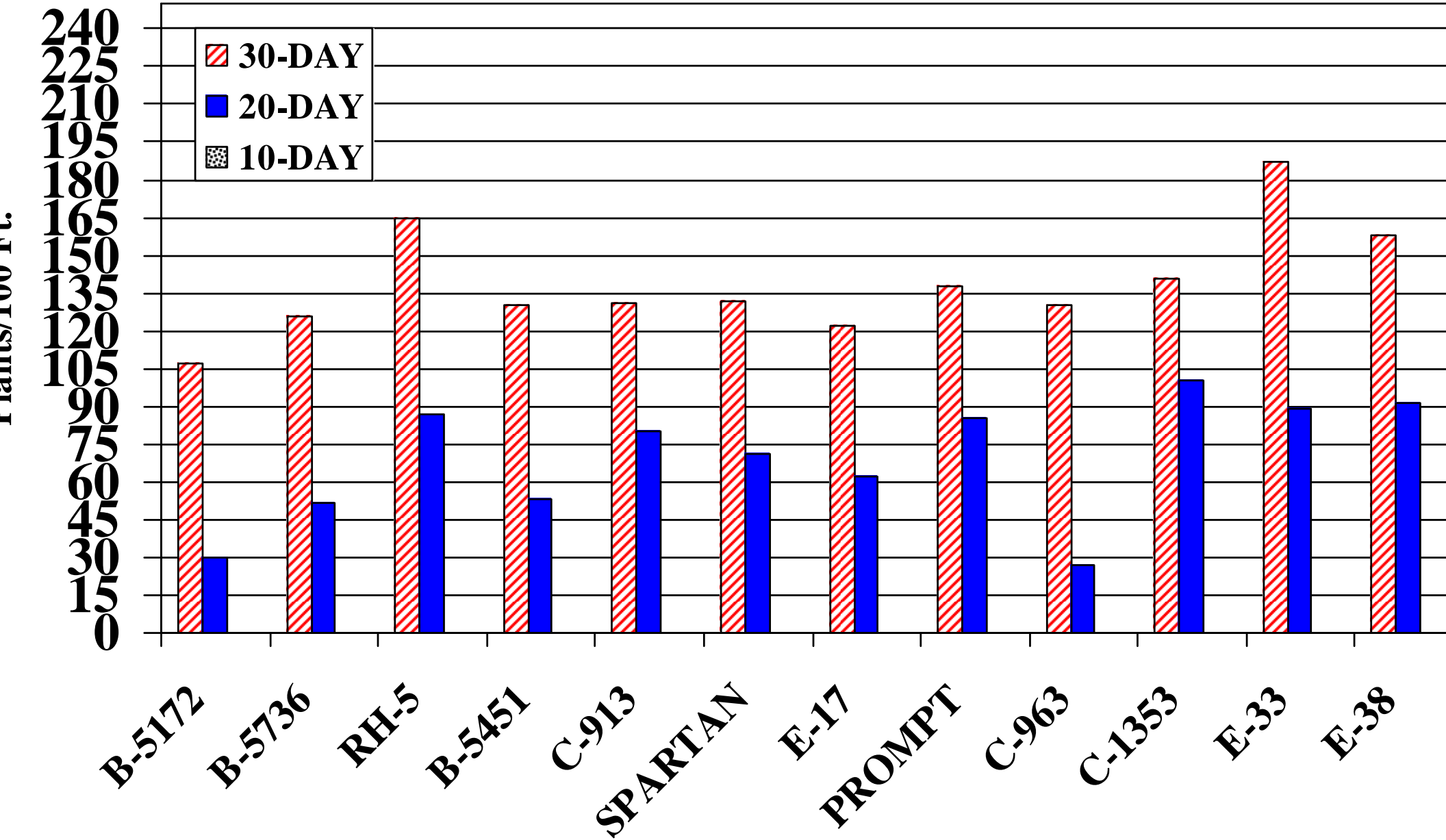


Planted 4/17/02 – Seed Spacing 4 Inches – 30 Inch Rows

Sugarbeet Advancement - 2002

All treatments PAT Pellet except B-5172

Variety Trial
10- 20- and 30-Day Emergence
Schindler Farms, LLC – Bay County



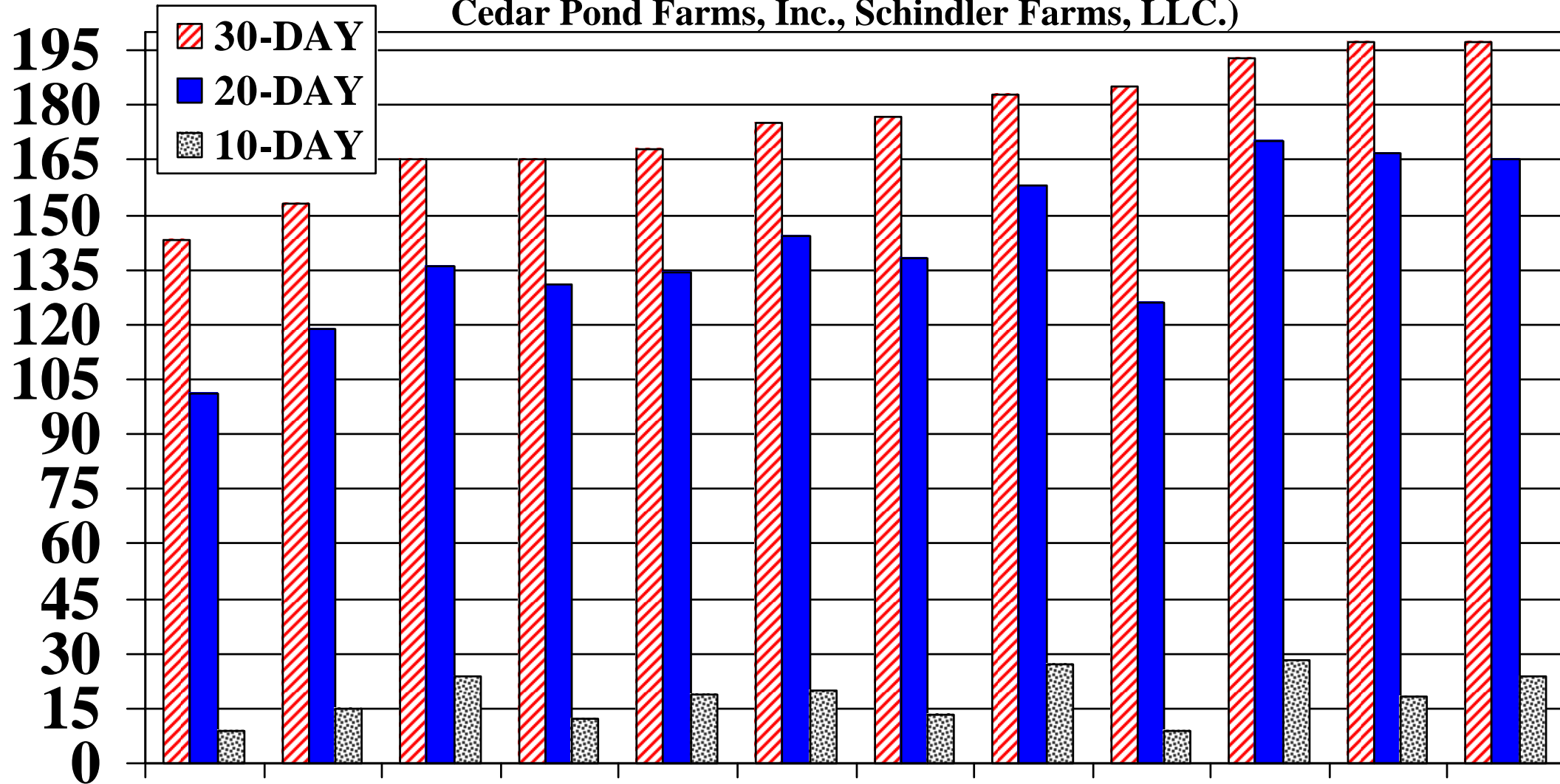
Planted 4/18/02 – Seed Spacing 4 Inches – 22 Inch Rows

Sugarbeet Advancement - 2002

All treatments PAT Pellet except B-5

Variety Trial Averages 10-20-30 - Day Emergence

(Lakke-Ewald Farms, Inc., Gerstenberger Farms, Inc., Ridgeview Farms, Inc.,
Cedar Pond Farms, Inc., Schindler Farms, LLC.)



B-5172

B-5736

RH-5

B-5451

C-913

SPARTAN

E-17

PROMPT

C-963

C-1353

E-33

E-38

Sugarbeet Advancement – 2002

All treatments PAT Pellet except B-5172

B-5172 seed lot below minimum germ stand

Treatment

2002
MONITOR SUGAR COMPANY

OFFICIAL VARIETY TRIAL⁽²⁾
AVERAGE OF 3 YEARS
Sorted by RWSA

VARIETY	RWSA	%		% ⁽¹⁾ EMERG	LEAF- ⁽⁴⁾ SPOT	RESISTANCE			
		SUGAR	TON/A			LEAFSPOT	RHIZOCTONIA	APHIDS	APHANOMYCES
Crystal 963	6354	17.20	26.11	48.6	3.2	Poor	Fair	Excellent	Excellent
Beta 5374	6317	17.28	25.90	50.9	3.2	Poor			
(K974) Beta 5172	6295	17.42	25.48	48.6	3.2	Poor			
Beta 5451	6248	17.12	25.87	51.1	2.4	Excellent	Fair	Excellent	Excellent
Beta 5400	6013	17.38	24.44	52.2	3.1	Poor		Fair	Good
Beta 5736	5984	17.43	24.55	48.7	2.2	Excellent	Good	Excellent	
HM E38	5952	17.35	24.17	53.7	3.3	Poor		Good	Good
Crystal 648	5945	17.49	24.08	51.2	2.6	Good			Good
HM E17	5867	17.40	23.79	54.6	3.2	Poor		Good	Excellent
HM RH5 ⁽³⁾	5843	17.17	24.13	51.1	2.9	Fair	Good	Poor	
SX Prompt	5737	17.05	24.16	53.2	3.1	Poor	Fair	Excellent	Excellent
Crystal 555	5704	17.44	23.30	54.5	2.3	Excellent			Excellent
Crystal 913 ⁽³⁾	5702	16.82	24.64	42.3	3.1	Poor	Excellent	Excellent	
HM E33 ⁽³⁾	5681	17.56	22.78	54.1	2.9	Fair	Fair	Poor	
SX Spartan	5577	17.37	22.75	51.1	3.0	Fair		Good	
HM E4 ⁽³⁾	5402	16.49	23.72	55.2	2.6	Good		Excellent	
Crystal 1353 ⁽³⁾	5073	16.38	22.44	52.1	2.1	Excellent	Excellent	Excellent	
GM	5864	17.20	24.25	51.4	2.8				

Rows: 2 Row Length: 30' Row Width: 30"

(1) Percentage of plants before thinning compared to seeds planted at Monitor's four locations.

(2) This test is planted thick with a 1.3 inch seed spacing and thinned to give all varieties an equal stand.

This is necessary because when varieties are first tested the seed quality does not compare to a commercially prepared variety.

(3) Special Approval varieties, do not meet all standards for approval.

(4) Lower number indicates more resistance

Michigan Sugar Company

Sugarbeet Varieties Approved for the 2003 Planting
Data From Official Variety Trials in 2000, 2001 and 2002

Variety	Approval**	RWSA	Ton/A	RWST	%Suc Emerg	Cerc LS	Rt Aphid	Rhi zoc	Aph ano	Rhizo mania
C 963*	RA/Rh	6764	26.6	254	17.7	124	E	F	E	
HM 2761Rz*	Limited	6692	26.9	249	17.4	117	E	?	G	G
B 5451	RA/Aph	6690	26.5	253	17.6	89	E	F	E	
B 5310 (BK1086)*	Limited	6684	26.4	253	17.7	75	E	?	E	
HM 2763Rz*	Rm	6582	26.3	250	17.4	117	?	?	?	G
B 5400	Full	6475	25.1	258	17.9	126	F	P	F	
C 648	Full	6390	24.7	259	18.1	104	P	P	G	
B 5736	Full	6384	25.0	254	17.9	85	E	E	P	
HM E17	Full	6347	24.6	258	18.0	128	G	P	G	
SX Prompt	Full	6303	25.0	253	17.7	119	E	F	E	
C 319	Full	6198	24.2	256	18.0	101	P	P	P-F	
HM E33	Rh	6133	23.4	261	18.2	115	P	F-G	P-F	
HM RH5	Rh	6301	24.7	255	17.8	119	E	P	P	
HM E4	RA	5862	24.3	242	17.1	103	E	E	P-F	
C 1353	Rh/RA	5541	22.9	242	17.1	84	E	E	F-G	
Averages:		6356	25.1	253	17.7	107	G+	F-	F	FG
HM 2421Rz	Rz									Rhizomania variety that has not been in our trials, expect high yields and high leafspot.
HM 7172Rz	Rz									Rhizomania variety that has not been in our trials, expect high yields, should be good on Rhizoctonia and Root Aphid. Leafspot is expected to be around 120.

*Several new varieties do not have 3 years data.

** (Full, Limited or Specialty: Rh = Rhizoctonia, RA = Root Aphid, Aph = Aphanomyces, Rm = Rhizomania)

2002
MONITOR SUGAR COMPANY

SPACE PLANT*

AVERAGE OF TWO YEARS 01-02
Sorted by RWSA

VARIETY	RWSA	% SUGAR	RWST	TON/A	% PURITY	BEETS/ 100' AT HARVEST	% ⁽¹⁾ EMERG	LEAF- SPOT
HM E-17	5308	17.17	237.3	22.54	92.94	118.6	57.9	2.6
HM E-33	5184	17.58	239.7	21.87	92.93	118.5	58.0	2.9
SX Prompt	5158	16.72	224.7	23.17	92.08	128.0	59.5	2.9
Crystal 555	5087	17.29	237.5	21.59	92.61	117.1	53.7	2.7
HM E-38	4997	16.76	227.5	22.16	92.37	114.8	54.1	2.1
HM RH5	4957	16.60	224.4	22.25	92.29	107.8	51.6	3.0
SX Spartan	4722	16.93	229.8	20.75	92.62	103.0	56.9	2.1
Beta 5736	4464	16.93	222.6	20.13	91.78	84.6	46.5	2.8
Crystal 1353	4315	15.87	207.2	21.16	91.51	98.1	50.4	1.9
GM	4643	16.66	231.8	20.01	92.45	129.5	68.8	3.3

Rows: 4 Row Length: 30' Row Width: 30" Replications: 6

(1) Percentage of plants compared to seeds planted.

* Seeds spaced 4.75 inches.

SUGARBEET ADVANCEMENT

NITROGEN TRIAL

Partnership
of:



Sugar Beet Growers
Michigan Sugar Company
Monitor Sugar Company
Michigan State University
Agribusiness

ON-FARM RESEARCH AND DEMONSTRATION

Cooperator: **Joel Gremel**

Location: Huron County

Planting Date: 4/17/2002

Row Spacing: 28 Inches

Previous Crop: Dry Beans

Fertilizer: 819# 9-5-36 + 5S +3 Mn

Variety: B 5736

Replicated: 3X Row Length: 1000'

Tillage: Fall – Plow Spring – Field Cultivate

Harvest Date: 10/23 Sugar Sampled: 10/22

Type of Harvester: Artsway

of Rows Harvested: 6 # Defoliated: 6

Soil Type: Loam

Herbicides: Pre – Pyramin Post – Betamix+Stinger+Upbeet

Seed Space: 4 Inches

Fungicide: Eminent, Topsin & Manzate

TREATMENT NAME	RWSA	ACTUAL YIELD T/A	RWST	% SUGAR	CJP %	POPULATION 100 FT. ROW			
						10 Day	20 Day	30 Day	Harvest
100 # N	7658	28.04	273	19.1	93.2	-	-	-	-
50 # N	7571	27.57	275	19.6	93.2	-	-	-	-
150 # N	7485	28.05	267	18.9	92.4	-	-	-	-
200 # N	7356	27.68	266	18.6	92.7	-	-	-	-
AVERAGE	7518	27.84	270	19.1	92.9	-	-	213	-
L S D (5%)	n.s. (722)	n.s. (1.12)	n.s. (26)	.6	n.s. (1.4)	-	-	-	-
C.V. (%)	5	2	5	2	1	-	-	-	-

Comments: Trial was conducted to look at the effects on yield and quality of sugar beets as nitrogen rates are increased. This was an ideal sugar beet research trial. The plot had very low levels of Rhizoctonia Crown Rot, Cercospora Leaf Spot or other soil problems. Harvest plant population was approximately 35,000 plants/acre. Prior to planting 50# of nitrogen was applied per acre. Side-dress application added 50, 100, and 150 pounds per acre to the plots. No significant differences in RWSA occurred for any of the treatments. No manure applications in recent history. Trial Results Reliability: **Excellent**

Cooperating Agriculturalist: Jeff Elston – Michigan Sugar Company

SUGARBEET ADVANCEMENT

Partnership
of:



Sugar Beet Growers
Michigan Sugar Company
Monitor Sugar Company
Michigan State University
Agribusiness

NITROGEN TRIAL

ON-FARM RESEARCH AND DEMONSTRATION

Cooperator: **Yoder Farms**
 Location: Pigeon Huron County
 Planting Date: 4/16/2002
 Row Spacing: 20 Inches
 Previous Crop: Dry Beans
 Fertilizer: 200# K-Mag + 100# 0-0-60
 15 Gal 28% N + 1.5qt MnHerbicides: Pre – Roneet
 Replicated: 3X Row Length: 1140'
 Variety: Prompt

Tillage: Fall – Chisel Spring – Field Cultivate
 Harvest Date: 11/1 Sugar Sampled: 10/31
 Type of Harvester: Artsway
 # of Rows Harvested: 8 # Defoliated: 8
 Soil Type: Kilmanah Loam
 O.M.: 3.6 CEC: 16.6
 Post – Betamix, Stinger, Upbeet
 Fungicide: 7/24 Eminent 8/26 Topsin & Penncozeb

TREATMENT NAME	RWSA	ACTUAL YIELD T/A	RWST	% SUGAR	CJP %	POPULATION 100 FT. ROW			
						10 Day	20 Day	30 Day	Harvest
90 # N	7926	27.85	285	19.9	93.4	-	-	-	-
45 # N	7880	26.19	301	20.2	94.5	-	-	-	-
135 # N	7701	27.35	282	19.6	93.2	-	-	-	-
180 # N	7353	27.42	269	18.8	92.6	-	-	-	-
AVERAGE	7715	27.20	284	19.6	93.4	-	-	154	-
L S D (5%)	430	.60	15	.6	.7	-	-	-	-
C.V. (%)	3	1	3	2	1	-	-	-	-

Comments: Trial was conducted to look at the effects on yield and quality of sugar beets as nitrogen rates are increased. This was an ideal sugar beet research trial. The plot had very low levels of Rhizoctonia Crown Rot, and Cercospora Leaf Spot. Sugar Beet Cyst Nematode present in the field. Harvest plant population was 38,450 plants per acre. Prior to planting 45# of nitrogen was applied per acre. Side-dress application added 45, 90, and 135 pounds per acre to the plots. Last manure application was the fall of 1999.

Trial Results Reliability: **Excellent**

Cooperating Agriculturalist: Roger Elston – Michigan Sugar Company

SUGARBEET ADVANCEMENT

Partnership
of:



COMBINED NITROGEN TRIALS

Sugar Beet Growers
Michigan Sugar Company
Monitor Sugar Company
Michigan State University
Agribusiness

ON-FARM RESEARCH AND DEMONSTRATION

Cooperator: **YODER & GREMEL**

Planting Date: 2002

Location: HURON COUNTY

TREATMENT NAME	RWSA	ACTUAL YIELD T/A	RWST	% SUGAR	CJP %	POPULATION 100 FT. ROW			
						10 Day	20 Day	30 Day	Harvest
90-100# N	7792	27.95	279	19.5	93.3	-	-	-	-
45-50# N	7725	26.88	288	19.9	93.8	-	-	-	-
135 - 150# N	7593	27.70	275	19.3	92.8	-	-	-	-
180 - 200# N	7355	27.55	267	18.7	92.7	-	-	-	-
AVERAGE	7616	27.52	277	19.3	93.1	-	-	-	-
L S D (5%)	340	.62	13	.4	.8	-	-	-	-
C.V. (%)	4	2	4	2	1	-	-	-	-

Comments / Discussion: Reliability of the combined trials was Excellent. The trials were conducted in high yielding environments. No prior year manure applications on either plot. Data indicates 45 -50 pounds per acre nitrogen rates can reduce tonnage but will significantly improve beet quality. Optimum rate of 90-100 # of nitrogen gave the highest RWSA and tonnage. Nitrogen rates above 90-100# per acre reduce quality of the beets and do not significantly improve tonnage.

THE BOTTOM LINE:

EVERY 45-50# OF NITROGEN OVER THE OPTIMUM RATE OF 90-100# REDUCED RWSA BY 219# (\$28) AND INCREASED NITROGEN COST BY (\$10) FOR A DECREASE NET REVENUE OF (\$38) PER ACRE.

Nitrogen Trial in Sugarbeets - 2002 - LAKKE Ewald Farm, Inc.

Cooperator: **LAKKE Ewald Farm, Inc.**

Fertilizer: Anhydrous 131 lbs N/A (fall applied)

Location: Tuscola County (NE Herford and Limerick Rds.)

28% N 66 lbs./acre (spring applied-pre-plant).

Planted: April 16, 2002 Variety: HM E17 PAT Pellets

sidedress 28%

Seed Spacing: 57,500 plants/A

Harvested: October 16, 2002

Row width: 22 inches Length: 1105 feet

Harvester: 8-row Artsway; 3.6 MPH

Previous Crop: Navy Beans

Herbicides: Microrate 4 X

Replicated: 8 reps

Fungicide: Eminent; Supertin; Dithane

Treatment	RWSA	CLEAN Tons/ Acre	RWST	% Sugar	% CJP	HARVESTED B/100	Plants/ Acre	WT/ Beet
28% N (Spring)	3627	13.3	272.3	18.3	95.2	155	36800	0.8
Anhydrous (Fall)	3086	11.1	278.5	18.7	95.1	141	33408	0.7
Average	3356	12.2	275.4	18.5	95.2	148	35104	0.7
LSD (0.05)	188	1.0	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
			13.3	0.8	0.5	25	6009	0.2
CV (%)	4.7	6.9	4.1	3.4	0.5	14.4	14.5	18.6

Comments: Trial was conducted to determine the impact of anhydrous (fall applied) compared to 28%N (spring applied).

Weights were determined with a calibrated scaled cart. Quality samples were dropped from the harvester.

Rhizoctonia pressure was moderate; wind damage was evident at harvest.

Trial reliability:**FAIR**.

Cooperating Agriculturalist: Craig Reiman, Michigan Sugar Company;

Lab Analysis Performed At: MARL (Michigan Agricultural Research Laboratory).

Note: Tons/Acre are net or clean (tare 4.872% off)

SUGARBEET ADVANCEMENT

QUADRIS/RHIZOCTONIA TRIAL



<u>TREATMENT</u>	<u>DISEASED PLANTS PER 2300 FEET</u>
RH-5 IN FURROW	43 a
RH-5 CHECK	253 ab
E-17 IN FURROW & 6 TO 8 LEAF	329 ab
E-17 IN FURROW	445 b
E-17 6 TO 8 LEAF	823 c
E-17 CHECK	1176 d

- * Data based on four replications/each rep 4-575 foot rows.
- * In Furrow T-Band – 10 oz. 7 GPA
- * 6-8 Leaf Band sprayed / 10.5 oz. per acre
- * Heavy Rhizoctonia Pressure
- * Trial in cooperation with Syngenta/Hilleshog – Doug Ruppel

D & D Schultz Farms
Planted 4/16/02
Bay County

SUGARBEET ADVANCEMENT

QUADRIS/RHIZOCTONIA TRIAL



<u>TREATMENT</u>	<u>DISEASED PLANTS PER 2400 FEET</u>
IN FURROW ROW CLOSURE	1 c
IN FURROW & 6 TO 8 LEAF	3 c
IN FURROW	3 c
6 TO 8 LEAF	14 b
ROW CLOSURE	16 b
CHECK	35 a

- * Data based on three replications
- * In Furrow dribble – 10 oz./acre
- * 6-8 Leaf – 10.5 oz./acre – 7 inch band
- * Row closure – 9.2 oz./acre - Broadcast
- * Low Rhizoctonia Pressure
- * Trial conducted in cooperation with Michigan Sugar – Jim Stewart

Rayl Farms, Inc.
Planted 4/15/02
Variety E-17
Tuscola County

Sugarbeet Advancement - 2002

SUGARBEET ADVANCEMENT

QUADRIS/RHIZOCTONIA TRIAL



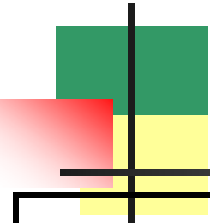
<u>TREATMENT</u>	<u>DISEASED PLANTS PER 2400 FEET</u>
PROMPT 6 TO 8 LEAF	32 b
PROMPT 6 TO 8 LEAF & ROW CLOSURE	35 b
PROMPT IN FURROW	47 b
PROMPT ROW CLOSURE	114 a
PROMPT CHECK	121 a
C-1353 IN FURROW	39 b
C-1353 CHECK	165 a

- * Data based on three replications
- * Each replication 4-600 foot rows
- * In Furrow dribble – 10 oz./acre
- * 6 to 8 Leaf – 10 inch band – 8.6 oz./acre
- * Row closure broadcast 9.2 oz./acre
- * Moderate Rhizoctonia Pressure
- * Trial in cooperation with Monitor Sugar – Lee Hubbell

D & J Helmreich Farms, Inc.
Planted 4/18/02
Bay County

SUGARBEET ADVANCEMENT

QUADRIS/RHIZOCTONIA TRIAL



<u>TREATMENT</u>	<u>DISEASED PLANTS PER 1800 FEET</u>
RH-5 CHECK	50 a
E-17 ROW CLOSURE & 6 TO 8 LEAF	206 a
E-17 ROW CLOSURE	176 a
E-17 6 TO 8 LEAF	202 a
E-17 CHECK	113 a

- * Data based on three replications
- * Each rep 3-600 foot rows
- * Row Closure Broadcast – 9.2 oz. per acre
- * 6 to 8 Leaf Band sprayed – 10.5 oz./acre – 10 Inch Band
- * Low to Moderate Rhizoctonia Pressure
- * Trial in cooperation with Monitor Sugar – Lee Hubbel

E and D Meylan Farms

Planted 4/26/02

Bay County

Sugarbeet Advancement - 2002

SUGARBEET ADVANCEMENT

QUADRIS/RHIZOCTONIA TRIAL



<u>TREATMENT</u>	<u>DISEASED PLANTS PER 2120 FEET</u>
RH-5 IN FURROW	5 c
RH-5 CHECK	10 bc
E-17 CHECK	13 bc
E-17 IN FURROW	17 bc
E-17 IN FURROW & 6 TO 8 LEAF	26 ab
E-17 6 TO 8 LEAF	37 a

- * Data based on four replications
- * Each rep 4-530 foot rows
- * In Furrow T-Band – 10 oz. – 7 GPA
- * 6 to 8 Leaf Band sprayed – 10.5 oz./acre
- * Low Rhizoctonia Pressure
- * Trial in cooperation with Syngenta/Hilleshog – Doug Ruppal

Zimmer Farms, Inc.

Planted 4/16/02

Tuscola County

Sugarbeet Advancement - 2002

SUGARBEET ADVANCEMENT

Partnership
of:



Sugar Beet Growers
Michigan Sugar Company
Monitor Sugar Company
Michigan State University
Agribusiness

QUADRIS TIMING TRIAL

ON-FARM RESEARCH AND DEMONSTRATION

Cooperator: **Rayl Farms**

Location: Akron

Planting Date: 4/15/2002

Row Spacing: 30 Inches

Previous Crop: Dry Beans

Fertilizer: No Starter 200# 0-0-60

155# N

Variety: E 17 4 Inch Space

Replicated: 3X Row Length: 616'

Tillage: Fall – Plow Spring – Danish Tine Cultivator

Harvest Date: 10/17 Sugar Sampled: 10/9

Type of Harvester: Artsway

of Rows Harvested: 6 # Defoliated: 6

Soil Type: Sandy Loam

O.M. 2.1% CEC: 13.3

Herbicides: Microrates 4X

Fungicide: 8/9 Topsin & EBBC

TREATMENT NAME	RWSA	ACTUAL YIELD T/A	RWST	% SUGAR	CJP %	POPULATION 100 FT. ROW			
						10 Day	20 Day	30 Day	Harvest
In-Furrow & Row Closure	5331	20.60	259	18.4	91.9	-	-	-	-
6 – 8 Leaf	5298	20.43	260	18.8	91.9	-	-	-	-
In - Furrow	5190	20.43	254	18.6	91.5	16	192	-	-
In – Furrow & 6 – 8 Leaf	4883	19.40	252	18.0	91.1	-	-	-	-
Row Closure	4577	18.19	251	18.6	91.6	-	-	-	-
Check	4179	16.69	250	18.2	91.7	17	205	-	-
						-	-	-	-
AVERAGE	4910	19.29	254	18.4	91.6	-	-	-	-
L S D (5%)	n.s. (1120)	n.s. (4.02)	n.s. (24)	n.s. (1.3)	n.s. (1.2)	n.s.	n.s.	-	-
C.V. (%)	13	11	5	4	1	-	-	-	-

Comments: Trial was conducted to look at the effects of Quadris, in-furrow and foliar applied, to control Rhizoctonia Crown Rot. The trial was planted under good soil conditions and emergence was excellent. Rows were configured east – west. East end of the field where emergence stand counts were made was destroyed by wind. Trial was saved by moving to west end of the field where wind damage was minimal, but trial was reduced to approximately 600 feet of row. Heavy rainfall occurred with standing water on the plot. Ruted tramlines from micro-rate spraying effected some treatments. Leaf spot control was fair. Rhizoctonia Crown Rot pressure was low. Quadris in furrow was applied with water at 10 oz/acre. Application at the 6-8 leaf stage was banded at 10.5 oz/acre. Row closure Quadris application was at 9.2 oz/acre broadcast. Trial Results Reliability: **Poor**

Cooperating Agriculturalist: Jeff Karst – Michigan Sugar Company

SUGARBEET ADVANCEMENT

Partnership
of:



Sugar Beet Growers
Michigan Sugar Company
Monitor Sugar Company
Michigan State University
Agribusiness

QUADRIS TIMING TRIAL

ON-FARM RESEARCH AND DEMONSTRATION

Cooperator: **G & E Meylan Farms** Tillage: Fall – Chisel Spring – Field Cultivate
 Location: Pinconning Harvest Date: 10/24 Sugar Sampled: 10/16
 Planting Date: 4/26/02 Type of Harvester: Artsway
 Row Spacing: 30 Inches # of Rows Harvested: 6 # Defoliated: 6
 Previous Crop: Dry Beans Soil Type: Clay Loam
 Fertilizer: 20gal.13-25-0+13%S & 2qt Mn O.M.: 2.0% CEC: 14.8
 27gal 28% N Herbicides: Pre - Etho – 10” Band + 1 pt. Lorsban;
 Variety: E 17 & RH 5 Post – Full Rate – Betamix, Upbeet, & Stinger
 Seed Space: 4 Inches Fungicide: 8/14 Eminent
 Replicated: 3X Row Length: 1000’

TREATMENT NAME	RWSA	ACTUAL YIELD T/A	RWST	% SUGAR	CJP %	POPULATION 100 FT. ROW			
						10 Day	20 Day	30 Day	Harvest
E 17 Row Closure	7035	27.77	253	17.8	92.4	-	-	-	-
RH 5	6848	29.13	235	16.8	92.8	-	79	-	121
6-8 Leaf & Row Closure E 17	6629	27.18	243	17.7	91.9	-	-	-	-
6-8 Leaf E 17	6576	27.02	244	17.9	92.3	-	-	-	-
E 17 Check	5866	25.23	232	17.1	92.0	-	72	-	108
AVERAGE	6591	27.27	241	17.5	92.3	-	-	-	-
L S D (5%)	1063	1.64	n.s. (4.1)	n.s. (1.3)	n.s. (2.2)	-	-	-	-
C V (%)	9	3	9	4	1	-	-	-	-

Comments: Trial was conducted to compare effects of Quadris treatments on a Rhizoctonia Crown Rot susceptible variety, E 17, and a resistant variety, RH 5. Rhizoctonia Crown Rot pressure was moderately low. Quadris applied at 10.5 oz/acre banded 6-8 leaf stage, row closure application 9.5 oz/acre broadcast. A very high yielding trial with good soil moisture during most of the growing season. Resistant variety, RH 5, and Quadris treatments on the susceptible variety, E 17, yielded significantly better tonnage than the check. Leaf spot control was excellent. Trial Reliability: **Excellent**

Cooperating Agriculturalist: Tom Schlatter – Monitor Sugar Co.

Trial conducted in cooperation with Lee Hubbell – Research Manager - Monitor Sugar Company

SUGARBEET ADVANCEMENT

Partnership
of:



Sugar Beet Growers
Michigan Sugar Company
Monitor Sugar Company
Michigan State University
Agribusiness

QUADRIS TIMING TRIAL

ON-FARM RESEARCH AND DEMONSTRATION

Cooperator: **D & J Helmreich Farms** Tillage: Fall – Chisel Spring – Field Cultivate
 Location: Bay City/Bay County Harvest Date: 11/1 Sugar Sampled: 10/23
 Planting Date: 4/18/02 Type of Harvester: Parma
 Row Spacing: 30 Inches # of Rows Harvested: 6 # Defoliated: 6
 Previous Crop: Corn Soil Type: Loam
 Fertilizer: 145# 9-41-0 + 54# N O.M.: 2.1% CEC: 12.8
 300# 0-0-62 Herbicides: Microrate 1X & Standard Post of:
 Variety: Prompt & C 1353 Progress + Stinger + Upbeet 1X
 Replicated: 3X Row Length: 1220' Fungicide: Mid-August - Eminent

TREATMENT NAME	RWSA	ACTUAL YIELD T/A	RWST	% SUGAR	CJP %	POPULATION 100 FT. ROW			
						10 Day	20 Day	30 Day	Harvest
PROMPT 6-8 LEAF	3984	15.19	262	17.8	93.6	25	137	156	126
PROMPT 6-8 LEAF & ROW CLOSURE	3978	14.89	267	18.1	93.6	28	127	149	130
PROMPT CHECK	3615	14.43	248	17.9	92.8	8	138	153	126
PROMPT ROW CLOSURE	3265	13.59	240	17.5	93.4	14	116	131	111
PROMPT IN-FURROW	3217	13.94	231	17.1	92.0	12	131	147	138
C 1353 IN-FURROW	2929	12.56	233	16.5	92.6	27	146	160	131
C 1353 CHECK	2396	10.10	238	16.5	92.8	42	156	165	123
AVERAGE	3341	13.53	246	17.4	92.8	22	136	152	126
L S D (5%)	624	1.66	20	.8	1.0	24	28	32	n.s.(29)
C.V. (%)	10	7	5	2	1	61	11	12	13

Comments: Trial was conducted to observe the effects of Quadris treatments for the control of Rhizoctonia Crown Rot. A resistant variety, C 1353, was being compared to a more susceptible variety, Prompt. Field had moderate levels of Rhizoctonia Crown Rot, Sugar Beet Cyst Nematode, and some Aphanomyces Tip Rot. in the C 1353. Field suffered from standing water after late spring rain.

Trial Results Reliability: **Good**

Cooperating Agriculturalist: Rick List – Monitor Sugar Co.

Trial conducted in cooperation with Lee Hubbell – Research Manager – Monitor Sugar Company

SUGARBEET ADVANCEMENT

Partnership
of:



Sugar Beet Growers
Michigan Sugar Company
Monitor Sugar Company
Michigan State University
Agribusiness

QUADRIS TIMING TRIAL

ON-FARM RESEARCH AND DEMONSTRATION

Cooperator: **Tom Zimmer & Sons**

Location: Unionville – Tuscola County

Planting Date: 4/16/2002

Row Spacing: 30 Inches

Previous Crop: Dry Beans

Fertilizer: 3gal CleanStart + 3#Kickoff

50gal 28% N & 1000# Gypsum

Variety: E 17 & RH 5

Replicated: 4X Row Length: 525'

Tillage: Fall – Plow Spring – Field Cultivate

Harvest Date: 10/29 Sugar Sampled: 10/28

Type of Harvester: Artsway

of Rows Harvested: 6 # Defoliated: 6

Soil Type: Loam

O.M.: 2.4% CEC: 15.0

Herbicides Microrates 5X

Seed Space: 3 1/2 Inches

Fungicide: Eminent Super Tin

TREATMENT NAME	RWSA	ACTUAL YIELD T/A	RWST	% SUGAR	CJP %	POPULATION 100 FT. ROW			
						10 Day	20 Day	30 Day	Harvest
E 17 CHECK	6845	23.34	294	19.8	94.6	119	297	302	243
RH 5 CHECK	6767	24.34	279	19.5	94.3	94	284	283	253
RH 5 IN - FURROW	6511	22.57	284	19.4	94.5	103	271	270	248
E 17 IN - FURROW	6464	22.89	286	19.7	94.4	71	275	285	252
E 17 IN - FURROW & 6-8 LEAF	6427	22.06	291	19.8	94.4	81	264	278	228
E 17 6 – 8 LEAF	6419	22.42	287	19.5	94.3	88	288	286	249
AVERAGE	6572	22.94	287	19.6	94.4	92	280	284	245
L S D (5%)	n.s. (664)	n.s. (2.42)	n.s. (13)	n.s. (.5)	n.s. (.7)	37	20	17	n.s. (27)
C.V. (%)	7	7	3	2	1	26	5	4	7

Comments: Trial planted under good field conditions with excellent emergence. Very high harvest populations. Trial was conducted to observe the effects of Quadris, in-furrow and foliar applications, on Rhizoctonia Crown Rot control on a susceptible variety, E 17, compared to planting a resistant variety, RH 5. Rhizoctonia Crown Rot disease infection in the field was low. Quadris in-furrow application was T-banded at 10 ounces/acre with 7 gal. of water. The foliar application, applied at 6-8 leaf stage, also used 10 ounces/acre in a band. No significant differences in yield occurred.

Trial Results Reliability: **Good**

Cooperating Agriculturalist: Craig Rieman – Michigan Sugar Co.

Special thanks to: Doug Ruppel - Syngenta Seeds / Hillebrand – for trial establishment and management.

SUGARBEET ADVANCEMENT

Partnership
of:



Sugar Beet Growers
Michigan Sugar Company
Monitor Sugar Company
Michigan State University
Agribusiness

QUADRIS TIMING TRIAL

ON-FARM RESEARCH AND DEMONSTRATION

Cooperator: **D & D Schultz**
Location: Linwood Bay County
Planting Date: 4/16/02
Row Spacing: 30 Inches
Previous Crop: Dry Beans
Fertilizer: 30gals 9-18-.2 & 40gals-28%
200 # 0-0-60
Variety: E 17 & RH 5
Replicated: 4X Row Length: 550'

Tillage: Fall – Chisel Spring – Field Cultivate
Harvest Date: 10/11 Sugar Sampled: 10/10
Type of Harvester: Artsway
of Rows Harvested: 6 # Defoliated: 6
Soil Type: Loam
O.M.: 2.5% CEC: 11.8
Herbicides: Pre-Etho; Post- ½ rate of Betamix, & Upbeet, 1X
Fungicide: Eminent Super Tin

TREATMENT NAME	RWSA	ACTUAL YIELD T/A	RWST	% SUGAR	% CJP	POPULATION 100 FT. ROW				Rhiz. Beets 1200 Ft.
						10 Day	20 Day	30 Day	Harv	
RH 5 In Furrow	5918	23.68	250	17.4	93.2	45	214	236	223	22
RH 5 CHECK	5377	22.07	244	17.2	92.9	28	262	260	203	132
E 17 In Furrow & 6-8 Leaf	5132	20.80	246	17.6	93.1	28	221	245	214	171
E 17 In Furrow	4838	19.78	243	17.6	92.9	45	251	274	200	231
E 17 6-8 Leaf	4388	17.34	252	17.8	93.2	48	267	254	188	428
E 17 Check	4084	15.13	269	18.0	93.7	45	262	277	95	612
AVERAGE	4956	19.80	251	17.6	93.2	40	246	257	187	266
L S D (5%)	902	2.08	27	.9	1.3	25	43	36	49	161
C V (%)	12	7	7	3	1	42	12	9	18	40

Comments: Trial conducted to look at the effects of Quadris applied in furrow and foliar application for Rhizoctonia Crown Rot control. A susceptible variety, E 17, and a Rhizoctonia resistant variety, RH 5, were compared. Heavy rainfall occurred after planting. Very high infection levels of Rhizoctonia Crown Rot in the field. Significant differences occurred between treatments. Best results were achieved utilizing RH 5. Quadris in furrow was applied in a T-band at 10 ounces/acre with 7 gallons of water. Foliar applications (6-8 leaf) were also 10 ounce/acre banded. Leaf Spot control was fair. Trial Reliability: **Excellent**

Cooperating Agriculturalist: Bill Hartley – Monitor Sugar Co

Special thanks to: Doug Ruppel - Syngenta Seeds / Hilleshog – for trial establishment and management.

SUGARBEET ADVANCEMENT

Partnership
of:



Sugar Beet Growers
Michigan Sugar Company
Monitor Sugar Company
Michigan State University
Agribusiness

Quadris Timing Trial

ON-FARM RESEARCH AND DEMONSTRATION

Cooperator: **Fisher Farm**

Location: Breckenridge-Gratiot County

Planting Date: 5/8/2002

Row Spacing: 30 Inches

Previous Crop: Dry Beans

Fertilizer: 168# 13-24-17 + Mn

23gal 28% N + 230#0-0-0-60

Variety: E 17 & RH 5

Replicated: 4X Row Length: 405'

Tillage: Fall – Chisel Spring – Field Cultivate

Harvest Date: 11/1 Sugar Sampled: 10/28

Type of Harvester: Artsway

of Rows Harvested: 6 # Defoliated: 6

Soil Type: Loam

O.M.: 2.3% CEC: 14.4

Herbicides: Pre – Pyramin + Nortron Post – Betamix + Stinger

Seed Space: 3 Inches

Fungicide: None

TREATMENT NAME	RWSA	ACTUAL YIELD T/A	RWST	% SUGAR	CJP %	POPULATION 100 FT. ROW			
						10 Day	20 Day	30 Day	Harvest
E 17 IN -FURROW	3871	15.76	244	17.3	92.7	68	88	86	76
E 17 CHECK	3734	15.65	237	17.2	92.5	70	99	89	74
E 17 IN – FURROW & 6-8 LEAF	3679	15.66	236	17.4	92.3	72	94	89	85
E 17 6 – 8 LEAF	3676	15.22	236	17.2	92.3	84	96	87	76
RH 5 IN -FURROW	3403	14.03	239	17.1	92.7	41	57	55	50
RH 5 CHECK	3270	13.88	232	16.7	92.1	50	63	59	54
AVERAGE	3605	15.03	237	17.1	92.4	64	83	77	69
L S D (5%)	n.s. (568)	1.28	n.s. (18)	n.s. (.5)	n.s. (.7)	24	30	26	20
C.V. (%)	10	6	5	2	1	25	24	22	19

Comments: Trial was conducted to measure the effect of Quadris, in-furrow and foliar applications, to control Rhizoctonia Crown Rot infections in a susceptible variety, E 17, and a resistant variety, RH 5 and determine yield differences. Heavy rainfall occurred shortly after planting causing extreme crusting and a thin stand. Rhizoctonia Crown Rot pressure was low. The effect of the low plant population was greater than that of the Quadris applications when comparing the varieties. Quadris, in-furrow, was T-banded at 10 ounces/acre with 7 gal. of water. The foliar application at the 6-8 leaf stage used 10 ounces/ acre also in a band.

Trial results reliability: **Poor**

Cooperating Agriculturalist: Dave Bailey – Michigan Sugar Company

Special thanks to: Doug Ruppel – Syngenta Seeds / Hillebrand – trial establishment and management

SUGARBEET ADVANCEMENT

Partnership
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QUADRIS IN-FURROW TRIAL

Sugar Beet Growers
Michigan Sugar Company
Monitor Sugar Company
Michigan State University
Agribusiness

ON-FARM RESEARCH AND DEMONSTRATION

Cooperator: West Marion Farm	Tillage: Fall – Chisel	Spring – Field Cultivate
Location: Deckerville – Sanilac County	Harvest Date: 10/30	Sugar Sampled: 10/14
Planting Date: 4/26/2002	Type of Harvester: Artsway	
Row Spacing: 28 Inches	# of Rows Harvested: 6	# Defoliated: 6
Previous Crop: Wheat	Soil Type: Guelph Loam	
Fertilizer: 150# VRT 0-0-60	O.M.: 3.2%	CEC: 11.4
3.5gal CleanStart + 4#Kickoff	Herbicides: Microrates 4X	
130# N (28%) & 31# P (10-34-0)	Seed Space: 4.6 Inches	
Variety: ½ Prompt & ½ B 5736	Fungicide: 8/20 Eminent	
Replicated: 6X		

TREATMENT NAME	RWSA	ACTUAL YIELD T/A	RWST	% SUGAR	CJP %	POPULATION 100 FT. ROW			
						10 Day	20 Day	30 Day	Harvest
NO QUADRIS	6069	26.06	234	17.3	92.1	0	136	182	146
QUADRIS IN-FURROW	6071	24.97	241	17.0	92.4	0	141	184	162
AVERAGE	6070	25.5	238	17.2	92.3	-	-	-	154
L S. D (5%)	n.s. (1982)	n.s. (10.11)	n.s. (57)	n.s. (2.5)	n.s. (1.8)	-	-	-	n.s. (26)
C.V. (%)	9	11	7	4	1	-	-	-	5

Comments: Trial was planted under good field conditions. Good emergence and early growth. Quadris in furrow was applied at 10.5 ounce/acre rate. Trial was conducted to test in-furrow application of Quadris on Rhizoctonia Crown Rot control. Excellent leaf spot control and low Rhizoctonia Crown rot pressure in the trial. No significant differences in yield or Rhizoctonia Crown Rot control.

Trial Results Reliability: **Fair**

Cooperating Agriculturalist: Paul Wheeler – Monitor Sugar Company

Quadris In-Furrow - 2002 - Bischer

Cooperator: **Bischer Farms**

Tillage: Fall DMI; Spring Field Cultivator 1X

Location: Huron County (Purdy and Minden Rds.)

Harvested: October 30, 2002

Planted: April 26, 2002 Variety: Beta 5736

Harvester: 6-row RRV; 5.0 MPH

Seed Spacing: 3 9/16 inches

Herbicides: micorate 5 X

Row width: 30 inches Length: 3108 feet (1.07 A)

Fungicide: Eminent

Previous Crop: Navy Beans

This field was cultivated one time.

Replicated: 3 Reps

Organic Matter 2.5%; CEC 11.2

								Beets/100		
TREATMENT	RWSA	CLEAN Tons/ Acre	RWST	% Sugar	% CJP	HARVESTED B/100	Harvested WT/Beet	5/22/2002 26-DAP	5/30/2002 34-DAP	6/6/2002 41-DAP
Untreated	7674	24.2	316.6	21.9	93.4	167	1.8	174	206	208
Quadris IF	7262	24.0	302.9	21.3	92.7	137	2.2	132	160	159
Average	7468	24.1	309.7	21.6	93.1	152	2.0	153	183	184
LSD (0.05)	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	15	14	10
	1153	1.4	30.5	1.3	1.5	143	1.6			
CV (%)	4.4	1.7	2.8	1.8	0.5	26.9	23.2	2.8	2.1	1.6

Treatment Code: Quadris (4.5 oz/acre) applied in-furrow in 7.5 GPA (water) without Keaton seed firmers.

Comments: Trial was conducted to determine the impact of Quadris in-furrow. Weights were determined with individual truck loads. Quality samples dropped randomly from harvester. Trial Reliability: **EXCELLENT**.

Cooperating Agriculturalist: Robert Corrigan, Michigan Sugar Company.

Lab Analysis Performed At: MARL (Michigan Agricultural Research Laboratory). Note tons/A are net or clean (tare 4.66% off).

Note: Tons/Acre are net or clean (tare 4.66% off).

Michigan Sugar Company

Rhizoctonia Root & Crown Rot Control In Sugarbeets with Quadris and Resistant Varieties - 2002 Replicated Strip Trial

Grower: Wadsworth
Location: Sandusky, MI

Researchers: Stewart, Poindexter,
Crook

Treatment	Variety	Rhiz / 1800 ft	CLS Rate	TPB Inj.	RWSA	TON/A	RWST	%Suc
Quadris 0.6 fl oz/1000ft								
Quadris 9.2 fl oz/A	B 5736	26	0.5	1.3	5719	21.4	267.2	18.7
Quadris 9.2 fl oz/A	B 5736	26	0.6	1.3	5269	19.4	270.6	19.0
Quadris 0.6 fl oz/1000ft	B 5736	34	0.9	1.3	5172	20.1	258.9	18.1
Untreated Check	B 5736	103	1.0	1.0	5303	19.8	267.7	18.7
Quadris 0.6 fl oz/1000ft								
Quadris 9.2 fl oz/A	HM E17	132	0.8	4.8	5330	20.5	261.4	18.4
Quadris 0.6 fl oz/1000ft	HM E17	216	1.6	4.5	5700	20.5	276.9	19.3
Quadris 9.2 fl oz/A	HM E17	270	0.8	4.5	5082	18.6	272.6	19.1
Untreated Check	HM E17	558	1.9	4.8	4989	18.7	267.5	18.8
LSD (P = .05)		85.6	0.46	0.85	NS	NS	NS	NS
CV		32.6	29.9	18.9	10.5	8.2	5.3	4.5
Average		170.4	1.01	2.91	5320.5	19.9	268	18.8

Plot Information

Planted: April 23, 2002

Harvested: October 15, 2002

Split Plot Design: 2 Varieties X 4 Treatments X 4 Reps

Plot Size: 6 Rows X 2000 ft.

Sugarbeet Stand: HM E17 = 179 beets/100 ft, Beta 5736 = 140 beets/100 ft.

8 Leaf Application (.6 fl oz/1000 row ft = 10.5 fl oz/A): Sprayed June 18 (7" band).

Row Close Application (9.2 fl oz/A): Sprayed July 10 broadcast at 20 gpa and 100 psi.

Counts and Ratings

Rhizoc/1800 ft = number of dead beets in a 6 row X 300 ft section of each plot.

CLS Rate = Cercospora leaf spot rating (0-9 scale) with 0 = no disease and 9 = defoliated.

TPB Inj. = Tarnished plant bug injury rating with 0 = no damage and 5 = heavy damage.

SUGARBEET ADVANCEMENT

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Michigan Sugar Company
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OIL SEED RADISH TRIAL

ON-FARM RESEARCH AND DEMONSTRATION

Cooperator: **Appold Farms**

Location: Bay County

Planting Date: 4/11/2002

Row Spacing: 30 Inches

Previous Crop: Oats

Fertilizer: 125# 0-0-60 + 125# N
350# 7-28-17 + 2% Mn

Variety: B 5977

Replicated: 6X

Tillage: Fall – Plow Spring – Danish Tine Cultivate 2X

Harvest Date: 10/21 Sugar Sampled: 10/9

Type of Harvester: Hesston

of Rows Harvested: 4 # Defoliated: 4

Soil Type: Silty Loam

Herbicides: Pre – Roneet Post – Microrates 4X

Seed Space: 4 1/2 Inches

Fungicide: None

TREATMENT NAME	RWSA	ACTUAL YIELD T/A	RWST	% SUGAR	CJP %	POPULATION 100 FT. ROW			
						10 Day	20 Day	30 Day	Harvest
RADISH	3238	12.90	251	17.5	93.6	-	112	-	-
NO RADISH	2200	9.17	239	17.2	93.0	-	106	-	-
AVERAGE	2719	11.03	245	17.4	93.3	-	109	-	-
L S D	488	1.8	n.s. (13)	n.s. (.5)	n.s. (.7)		n.s. (40)	-	-
C.V.	14	13	4	2	1	-	29	-	-

Comments: Trial was conducted to look at the effect of Oil Seed Radish on reducing the population of Sugar Beet Cyst Nematode and improving yield of Sugar Beets. Field has a history of heavy infestation level of Sugar Beet Cyst Nematode. Radish was established in strips after oat harvest. Where radish was established yield was improved by over three (3) tons /acre. Beets growing in the previous radish strips had improved canopy with less weed break-through. Significant yield improvement occurred with Oil Seed Radish as the previous crop. Trial Results Reliability: **Fair**

Cooperating Agriculturalist: Rick List – Monitor Sugar Company

Trial conducted in cooperation with Lee Hubbell - Research Manager - Monitor Sugar Company

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Michigan Sugar Company
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OIL SEED RADISH TRIAL

ON-FARM RESEARCH AND DEMONSTRATION

Cooperator: **Vader Farms**
Location: Tuscola County
Planting Date: 4/13/2002
Row Spacing: 30 Inches
Previous Crop: Wheat
Fertilizer: 300# 16-8-8 + Mn & S
10gal 28% N + 300# 20-10-30
Variety: B 5736
Replicated: 4X

Tillage: Fall – Plow Spring – Field Cultivate
Harvest Date: 10/31 Sugar Sampled: 10/22
Type of Harvester: Artsway
of Rows Harvested: 6 # Defoliated: 6
Soil Type: Wisner Loam
Herbicides: Microrated 4X
Seed Space: 4 5/8 Inches
Fungicide: Quadris in-furrow
Row Length: Variable

TREATMENT NAME	RWSA	ACTUAL YIELD T/A	RWST	% SUGAR	CJP %	POPULATION 100 FT. ROW			
						10 Day	20 Day	30 Day	Harvest
NO RADISH	3493	12.88	271	19.5	92.9	-	-	-	-
RADISH	3313	12.35	268	19.3	93.4	-	-	-	-
AVERAGE	3403	12.61	269	19.4	93.2	-	-	-	-
L S D (5%)	n.s. (854)	n.s. (2.10)	n.s. (24)	n.s. (1.2)	n.s. (.6)	-	-	-	-
C.V. (%)	11	7	4	3	1	-	-	-	-

Comments: Field has a history of high populations of Sugar Beet Cyst Nematode. Trial was conducted to look at effects of Oil Seed Radish in reducing Sugar Beet Cyst Nematode and impact on Sugar Beet yields. . Radish crop was established in strips after wheat harvest. Sugar Beet stand establishment was excellent as was early growth. Extreme drought (foliage burn down) seemed to negate any measurable effects the Radish crop had as a Nematode trap.

Cooperating Agriculturalist: Steve Bohn – Monitor Sugar Company

Narrow vs Wide Trial in Sugarbeets - 2002

Cooperator: **Vernon Daenzer; Bickel Farms; Daniel Weiss**

Tillage: Fall Plow, Field Cultivate; no spring tillage

Location: Saginaw County (NW King and Dehmel Rds.)

Harvested: September 27, 2002

Planted: April 14, 2002 Variety: SX Prompt PAT pellets

Harvester: 4-row 690 ArtsWay; 3.5 MPH Bickel Farm

Seed Spacing: 4.2 inches

Harvester: 6-row 4310 JD; 3.5 MPH Daniel Weiss Farm

Row width: 28 and 20 inches

Herbicides: 1/2 pt/A Roundup before emergence; microrate 3 X

Previous Crop: Corn

Fungicide: GEM; Eminent; and Supertin

Replicated: 4 reps

TREATMENT	RWSA	CLEAN Tons/A	RWST	% Sugar	% CJP	Harvested B/100	Plants/ Acre	WT/ Beet	Tons/Acre				
									Harvest Loss	Un- Harvest Loss	Harvest Loss Total	TOTAL Harvest- able	TOTAL Plot
20-inch rows with JD 4310	6571	23.9	267.3	18.66	93.4	134	34,935	1.4	0.7	1.4	2.1	24.6	26.0
28-inch rows with 690 Artsway	5919	23.3	252.0	17.69	93.3	135	25,274	1.9	0.2	0.4	0.6	23.5	23.9
Average	6245	23.6	259.7	18.17	93.4	134	30,104	1.7	0.5	0.9	1.4	24.1	25.0
LSD (0.05)	583	n.s.	11.7	0.96	n.s.	n.s.	n.s.	n.s.	n.s.	0.7	n.s.	n.s.	2.0
		1.4			0.5	55	12,415	0.6	0.9		1.5	1.8	
CV (%)	4.1	2.7	2.0	2.3	0.2	18.1	18.3	15.3	89.5	34.8	49.2	3.4	3.6

Comments: Trial was conducted to determine the impact of row spacing. Weights were determined with truck weights.

Quality samples were randomly dropped from each harvester. Root aphid pressure, Rhizoctonia and Cercospora pressure was very low.

The 20-inch rows had increased RWSA, RWST and % Sugar compared to the 28-inch row spacing.

Trial reliability **EXCELLENT**.

Cooperating Agriculturalist: Charlie Neuenfeld, Michigan Sugar Company

Lab Analysis Performed At: MARL (Michigan Agricultural Research Laboratory).

Note: Tons/Acre are net or clean (tare 2.512% off)

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Michigan Sugar Company
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PAT PELLETS TRIALS COMBINED 4 YEARS 9 LOCATIONS

ON-FARM RESEARCH AND DEMONSTRATION

Cooperator: 9 Locations

Location: Michigan

Planting Date: 1998, 1999, 2000, 2001

Row Spacing: 22, 28, 30 Inches

Previous Crop: Various

Variety: B 5736, C 319, C 555, E 17

Replicated: 3 or 4 times per location

Treatments: PAT pellets* and Standard Commercial Seed

Emergence: Based on center 2 rows, 50 feet long (100')

TREATMENT NAME	RWSA	ACTUAL YIELD T/A	RWST	% SUGAR	CJP %	POPULATION 100 FT. ROW			
						10 Day	20 Day	30 Day	Harvest
PAT PELLETS	6357	24.55	261	18.5	-	81	138	160	-
STANDARD SEED	6024	23.35	258	18.3	-	44	113	135	-
AVERAGE	6191	23.95	259	18.41	-	62	126	148	-
LSD (5%)	n.s.	.8	n.s.	n.s.	-	30	n.s.	24	

Comments: Trials were conducted to look at the effect of PAT pellets compared to standard seed treatments. PAT pellets and standard seed are from the same seed lots. PAT pellets in 6 of 9 locations improved early stand counts (10 day) by an average of 63 beets per 100 feet of row. At those six locations RWSA was significantly increased by an average of 590 # while tonnage was 1.44 tons per acre higher. In the three trials that PAT pellets had no improvement on emergence, yields were not significantly different when compared to standard seed treatments. The overall speed of emergence with PAT pellets had a greater effect under cool conditions than warm. The largest improvement of PAT pellets seems to occur with tonnage with a trend toward improved % sugar and RWSA over the several locations, environments, and varieties.

Cooperating agriculturist: MICHIGAN SUGAR COMPANY AND MONITOR SUGAR COMPANY

THE BOTTOM LINE: Based on 9 locations over 4 years we would expect to benefit from PAT pellets over standard seed 2 out of 3 times for an average improvement in tonnage of 1.2 tons per acre. Additional benefits would include better seed spacing and faster stand establishment. Typically, the return per acre averages three times the \$10-12 investment cost for PAT pellets.

* PAT = PRIMING ADVANCED TREATMENT A SEED SYSTEMS PRODUCT

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PAT vs NON PAT PELLET EMERGENCE TRIAL

*Sugar Beet Growers
Michigan Sugar Company
Monitor Sugar Company
Michigan State University
Agribusiness*

ON-FARM RESEARCH AND DEMONSTRATION

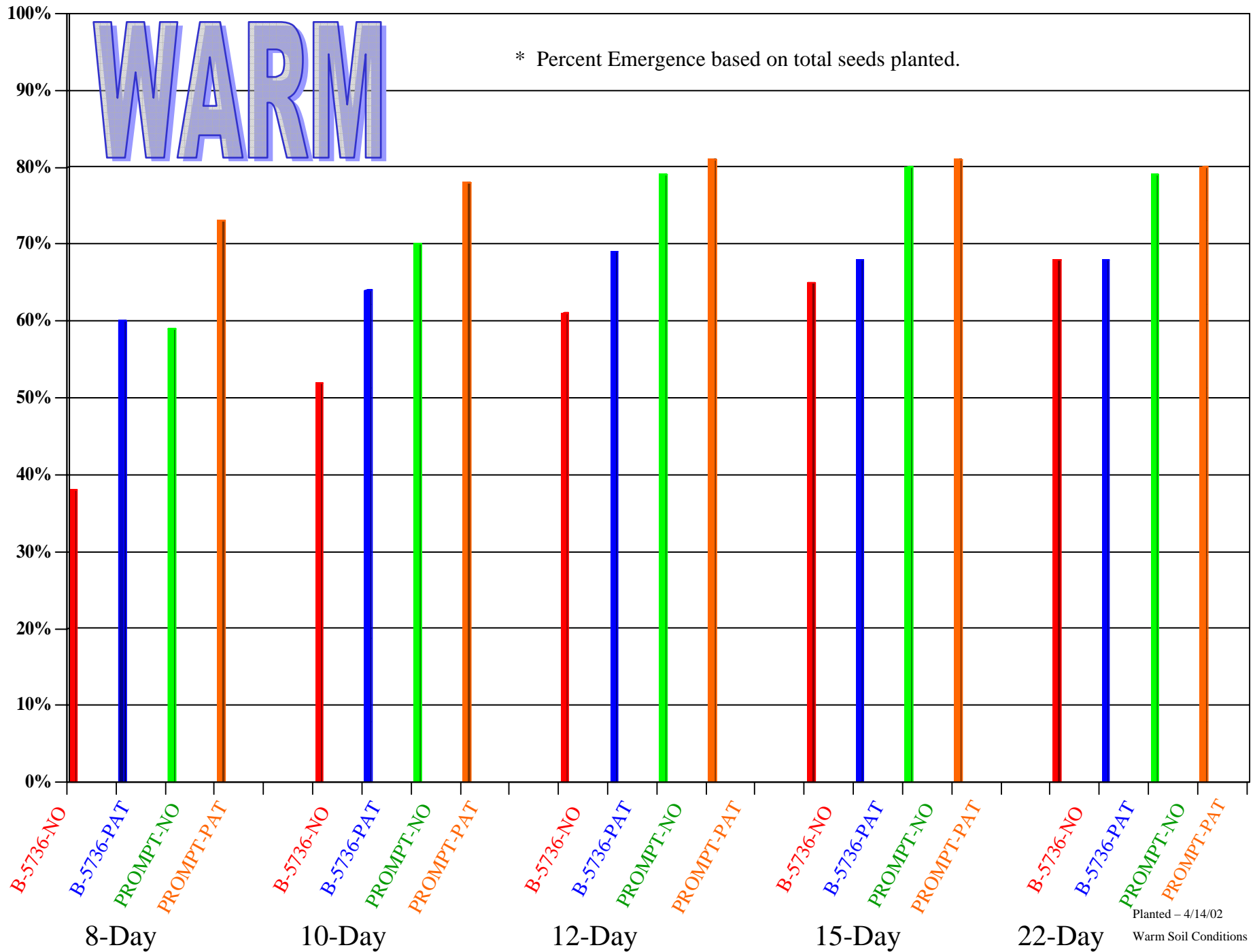
Results and Discussion – Trial was conducted to look at the effects of PAT Treatment (Seed Systems) on the speed of emergence of two varieties – B-5736 (slow emerger) and PROMPT (fast emerger). Treatments for each variety were from the same seed lot. Four replications of each variety were planted under cool (5/5/02) and warm (4/14/02) soil planting conditions. The April planting date experienced several days of unseasonably hot temperatures while the May planting date had very cold conditions. No crusting of soil occurred for either planting date. There wasn't any significant difference on the final stand for PAT vs. NON PAT treated pellets for either variety.

PAT pellets improved the speed of emergence for both varieties under both warm and cool soil conditions. The largest response to PAT treatment occurred under cool soil conditions and with the slow emerging variety (Beta 5736). Final emergence occurred most rapidly with PAT treatments. Previous Sugarbeet Advancement research indicates fast emergence can be beneficial for seedlings to get through a crust before it hardens and can also improve tonnage and sugar content when compared to slow emerging treatments.

PAT vs NON-PAT PELLETS

Warm Soil Emergence

* Emergence



Planted - 4/14/02

Warm Soil Conditions

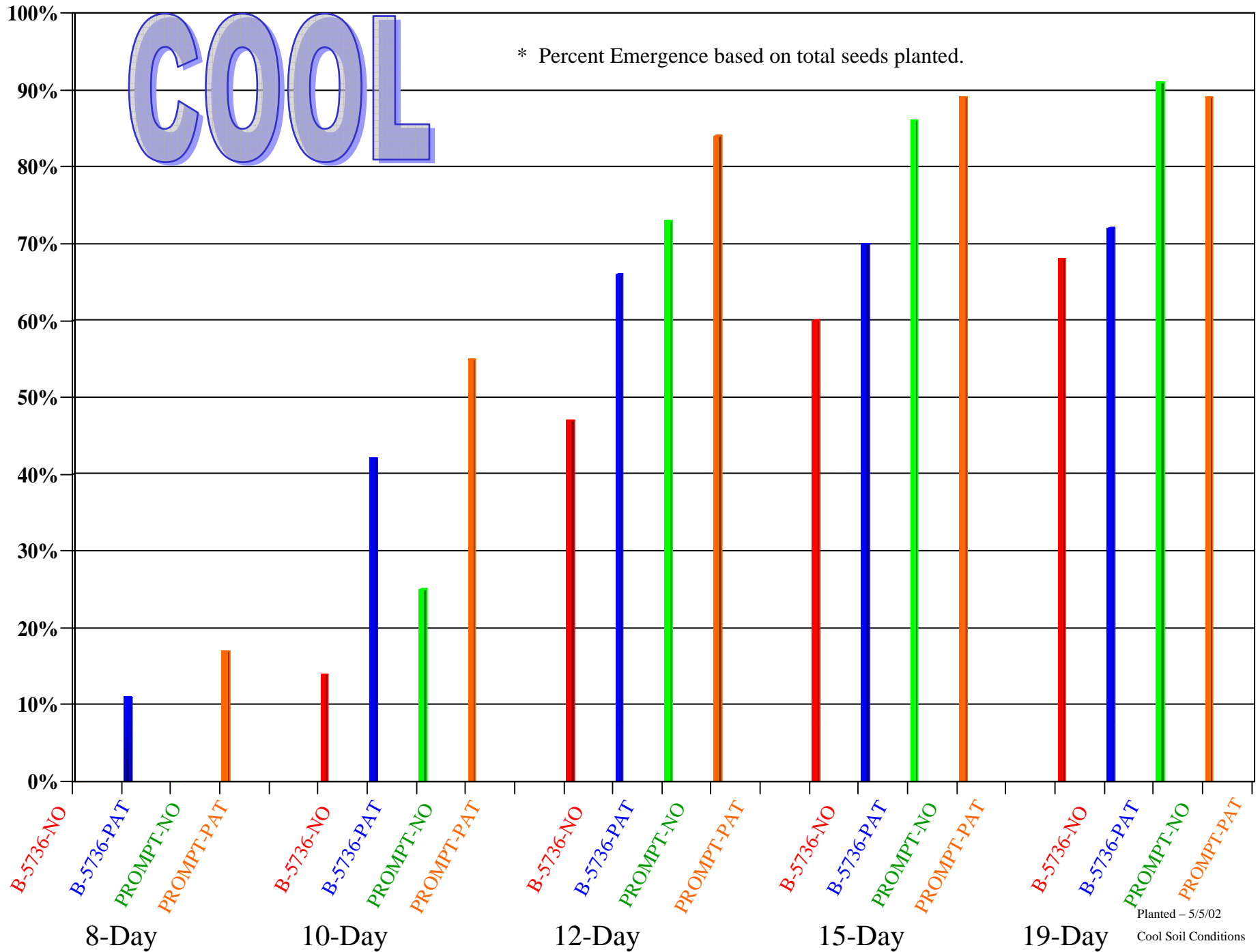
Sugarbeet Advancement - 2002

Bean & Beet Farm

PAT vs NON-PAT PELLETS

Cool Soil Emergence

* Emergence



Planted - 5/5/02

Cool Soil Conditions

Sugarbeet Advancement - 2002

Bean and Beet Farm

SUGARBEET ADVANCEMENT

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Sugar Beet Growers
Michigan Sugar Company
Monitor Sugar Company
Michigan State University
Agribusiness

BEETCAST PREDICTION MODEL

ON-FARM RESEARCH AND DEMONSTRATION

How It Works

Dr. Ron Pitblado, at RIDGETOWN COLLEGE University of Guelph, has developed an advisory system that utilizes specific weather conditions such as temperature and leaf wetness to help growers decide when to apply fungicides for the control of Cercospora leafspot in sugar beets. It is a program delivered by the Ontario Weather Network, OWN.

BeetCast rates each day on a scale of zero to four with a value of four indicating the weather conditions where very favorable for the disease while a zero indicates that either the number of hours the leaves were wet was low or the temperature was too cool for the leafspot disease to grow. These daily disease severity values (DSV) are added up until you reach a number recommending a spray application. You then zero your counter and apply additional sprays based on the next interval of cumulative DSV's.

This program maximizes the dollars spent on disease control when using fungicides. Critical information in a timely manner is provided by OWN over the internet that can be immediately used by growers to make informed decisions.

Growers can tailor-make their spray program based on any level of risk management they are comfortable with.

A fungicide spray program for the control of Cercospora leafspot is based on:

- Level of cultivar or varietal genetic resistance – talk to your fieldman
- Disease pressure based on crop rotation or proximity to other Sugarbeet fields
- Choice of fungicides available – relative effectiveness of the products used
- Spray coverage – application techniques
- Level of disease control desired – a personal decision
- Favorable weather conditions that promote leafspot disease

OWN can help indicate the critical spray dates based on “Favorable weather conditions,” through its extensive weather station network but only the grower can determine the other factors.

BeetCast helps but GROWERS make the decisions

SUGARBEET ADVANCEMENT

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Michigan Sugar Company
Monitor Sugar Company
Michigan State University
Agribusiness

BEETCAST PREDICTION MODEL

ON-FARM RESEARCH AND DEMONSTRATION

Accumulated Disease Severity Values for the Growing Season

Growers can tailor-make their spray program based on any level of risk management they are comfortable with.

Maximum

Spray early & often

- Start at 55 DSV
- Repeat every 35 DSV

Conventional

Spray early & extend

- Start at 55 DSV
- Or..
- Spray later & often
- Start at 70 DSV
- Repeat every 35 DSV

Minimum

Spray later and extend

- Start at 70 DSV
- Repeat every 70 DSV



SUGARBEET ADVANCEMENT

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EVALUATION OF BEETCAST AT UEBLER'S
SUGAR BEET FARM, MICHIGAN - 2002

Sugar Beet Growers
Michigan Sugar Company
Monitor Sugar Company
Michigan State University
Agribusiness

ON-FARM RESEARCH AND DEMONSTRATION

RESEARCHER: – Ron Pitblado, PH.D, Ridgetown University of Guelph

COOPERATORS: - L. Hubbell, D. Wishowski, Monitor Sugar Company, S. Poindexter, Michigan Sugarbeet Advancement, Ian Nichols, Ontario Weather Network, Ridgetown College University of Guelph, Wayne Uebler.

MATERIALS: - EMINENT 125 SL (tetraconazole), GEM 25% (trifloxystrobin), TOPSIN M (70% thiophanate-methyl), PENNCOZEB 75 DF (mancozeb), SUPER TIN 80 WP (triphenyltin hydroxide).

METHODS: - The Sugarbeet Advancement committee set out to evaluate the effectiveness of a weather timed fungicide spray program developed by Dr. Ron Pitblado at Ridgetown College University of Guelph called BeetCast. The Uebler site was managed by the Monitor Sugar Company Representatives while Pitblado's involvement was to evaluate the level of disease across each plot. The trial was conducted in a commercial sugar beet field owned by Uebler located 2 1/2 miles south of M-46. The plots were four rows by 40 feet in length replicated eight times in a randomized complete block design. Treatments were sprayed according to the protocol established at the beginning of the season with sprays applied as close to those targeted DSV's as possible. Plots were set out, sprayed and managed by David Wishowski of Monitor Sugar Company. Plots were sprayed using a specialized small plot research CO₂ sprayer at 80 psi. The Disease Severity Values were calculated using the BeetCast disease forecasting model using weather data from a weather station operated by the Ontario Weather Network (OWN) located within a 1/2 mile from the research field. Daily DSV values were calculated and sent by the Internet to the cooperators to determine when to spray the appropriate treatments. Foliar disease assessments were made by several of the cooperators. Spray dates were as follows: **Treatment One:** July 25th, Aug. 9th and Sept. 4th; **Treatment Two:** July 25th and August 28th; **Treatment Three:** July 25th and September 6th; **Treatment Four:** August 1st, 28th, and September 13th; **Treatment Five:** August 1st, and September 4th; **Treatment Six:** August 1st and September 13th; **Treatment Seven:** untreated control; **Treatment Eight:** August 1st and September 13th. Foliar disease assessments were made on September 17th and 29th by counting the number of clusters of Cercospora fungal disease spots observed on the sugar beet foliage, with the plots re-evaluated on the September 29th assessment day based on a scale from 0-10, with "10" representing excellent disease control while "0" indicated no control with the foliage severely infected by the pathogen turning the foliage completely black.

Each plant was examined along the length of the plot row, accumulating the number of disease symptom clusters per plot. The number of disease sites reflects the level of fungicide control. Treatments with lower numbers are more effective than those with higher disease counts. The eight replicated results were analyzed using the Duncan's multiple range test ($P \leq 0.05$).

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EVALUATION OF BEETCAST AT UEBLER'S SUGARBEET FARM, MICHIGAN - 2002

*Sugar Beet Growers
Michigan Sugar Company
Monitor Sugar Company
Michigan State University
Agribusiness*

ON-FARM RESEARCH AND DEMONSTRATION

An additional evaluation was made on the surrounding sugar beets within the test field assessing the level of disease control obtained by the owner growers personally chosen spray program. Assessments were made on September 29th by counting the number of clusters of Cercospora leaf disease spots observed on the sugar beet foliage per 44 feet of treated rows. The number of disease sites reflects the level of fungicide control.

Treatments with lower numbers are more effective than those with higher disease cluster counts. The growers field was also assessed based on a foliar disease rating of 0-10, where "10" reflects excellent control with the foliage being healthy with no disease symptoms where "0" indicates severe leaf infections.

RESULTS: Data is presented in Table 1. Treatments are listed in order of effectiveness.

CONCLUSIONS: The disease pressure at the Uebler site was lighter early in the season which was reflected by the late initial spray applications on July 25th and August 1st. This resulted in a number of spray timings which provided high levels of Cercospora leafspot disease control with all showing statistically significant control over the non-sprayed plots. The level of disease control with sugar beet cultivar E17 more accurately reflected differences in spray timing intervals than B5736. Using data gained from E17 the order listed in Table One reflects the relative effectiveness of the spray timings based on the numerical score of disease symptoms. Treatments with the lowest number of disease symptoms based on disease cluster counts were when the initiation of the first spray commenced at 55 with the subsequent sprays applied either at 35 or 55 DSV's. If the sprays were delayed until 70 DSV's, more effective control was noted only when the subsequent sprays were closely applied every 35 DSV's vs. waiting until 55 or 70 DSV's had accumulated. Treatments six and eight had the highest numerical score of Cercospora leafspot counts with sprays being delayed until 70 DSV's with the next spray also delayed until another 70 DSV's had accumulated. These numerical differences were not so well observed in the sugar beet cultivar B5736.

The growers commercial spray program (no spray) produced a foliar disease rating similar to control strips in small plots. The grower presumably could have achieved a higher level of Cercospora leafspot control using the same number of fungicide sprays, however, timed more effectively based on a weather timed spray model such as BeetCast.

EVALUATION OF BEETCAST AT UEBLER'S
SUGAR BEET FARM, MICHIGAN - 2002

ON-FARM RESEARCH AND DEMONSTRATION

SUGARBEET ADVANCEMENT

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Table 1. – Foliar disease control ratings across two sugar beet cultivars E17 and B5736, (Pitblado).

#	Treatments Application timing - DSV's ¹ (Choice of fungicide)	ACTUAL Spray Intervals (DSV's)	Timing of Application		Disease Cluster Counts ²				Foliar Disease Rating (0 -10) ³	
			Initial Spray Appl	# of Sprays	Sept. 17th		Sept. 29 th		Sept. 29 th	
					E17	B5736	E17	B5736	E17	B5736
1	55/35/35 E/TP/ST	59/25/42	July 25	3	3.0 d *	5.5 b	19.3 b	25.4 c	7.9 a	7.0 ab
2	55/55 E/G	59/59	July 25	2	6.3 cd	5.8 b	26.1 b	34.3 bc	8.0 a	7.7 ab
4	70/35/35 E/G/P	76/42/20	Aug. 1	3	7.8 cd	5.5 b	30.8 b	28.0 c	7.5 a	8.2 ab
5	70/55 E/ST	76/50	Aug. 1	2	7.0 cd	6.8 b	34.5 b	19.9 c	7.9 a	8.4 a
3	55/70 E/ST	59/69	July 25	2	7.0 cd	8.3 b	31.4 b	49.6 b	7.6 a	6.6 b
6	70/70 E/P	76/62	Aug. 1	2	11.3 bc	13.0 b	34.0 b	31.4 bc	7.3 a	7.8 ab
8	First Spots 43 days E/P		Aug. 1	2	16.5 b	12.5 b	33.0 b	23.4 c	6.8 a	7.9 ab
7	CONTROL			0	39.8 a	23.3 a	69.6 a	71.0 a	4.3 b	4.6 c
	Grower Plot						91.8		4.1	
	ANOVA P ≤ 0.05				s	s	s	s	s	s
	Coefficient of variation (%)				37.8	58.9	54.2	52.9	20.8	19.6

* These values are the means of eight replications. Numbers within a column followed by the same small letter are not significantly different according to a Duncan's Multiple Range Test ($P \leq 0.05$).

¹ **Application Timing:** Treatment spray intervals, Disease Severity Values (DSV's) calculated using BeetCast model Choice of fungicide; E = Eminent, G = Gem, TP = Topsin M + Penncozebe, ST = SuperTin, P = Penncozebe

² **Disease Cluster Counts:** The number of clusters of Cercospora fungal disease spots observed on the sugar beet foliage. The number of disease sites reflects the level of fungicide control. Treatments with lower numbers are more effective than those with higher disease counts.

³ **Foliar Disease Ratings:** (0-10) – "0" = no control, foliage severely damaged; "10" = complete control.

2002
Monitor Sugar Company

Test Type: BEETCAST

Location: FRANKENMUTH, MI.

TREATMENT*	RWSA	% SUGAR	RWST	TON/A	% PURITY	BEETS/ 100' AT HARVEST	Fungicide Applied** Target DSV's / Actual DSV's		
Beta 5736									
55/35	5688	17.62	242.4	23.39	91.82	129.1	A	B	D
							55/59	90/84	125/126
55/55	6065	17.79	243.9	24.89	91.67	132.1	A	C	
							55/59	110/118	
55/70	5905	17.77	245.3	24.10	91.95	137.1	A	D	
							55/59	125/128	
70/35	6108	17.90	249.3	24.50	92.32	139.4	A	C	E
							70/76	105/118	140/138
70/55	6200	17.94	247.0	25.12	91.82	131.9	A	D	
							70/76	125/126	
70/70	5916	17.78	246.2	23.97	92.10	122.4	A	E	
							70/76	140/138	
Check	5577	17.63	242.8	23.00	91.89	133.0	No Treatments		
First Spot/ Label Interval	6391	17.86	250.7	25.36	92.66	146.7	A	E	
							70/1 st Spot	2 nd App.	
HM E-17									
55/35	5818	17.81	249.5	23.28	92.57	150.2	A	B	D
							55/59	90/84	125/126
55/55	5670	17.85	247.6	22.93	92.15	153.3	A	C	
							55/59	110/118	
55/70	5983	17.67	247.8	24.11	92.63	154.6	A	D	
							55/59	125/128	
70/35	5784	17.94	253.8	22.77	93.00	154.6	A	C	E
							70/76	105/118	140/138
70/55	5929	17.81	249.7	23.72	92.62	146.6	A	D	
							70/76	125/126	
70/70	5188	17.28	239.6	21.38	92.18	150.5	A	E	
							70/76	140/138	
Check	5723	17.77	249.8	22.94	92.72	156.4	No Treatments		
First Spot/ Label Interval	6001	17.80	251.3	23.91	92.91	151.6	A	E	
							70/1 st Spot	2 nd App.	
GM	5872	17.77	247.4	23.71	92.32	143.0			
LSD (5%)	539	0.58	12.4	1.95	0.81	12.5			
CV%	8.6	3.09	4.7	7.74	0.82	8.2			
							Fungicides Applied		
EXACT LOCATION: WAYNE UEHLER							A	Eminent	
Harvested: October 9 Replications: 7							B	Topsin + Penncozeb	
Rows: 4 Row Length: 40' Row Width: 30"							C	Gem	
							D	Super Tin	
							E	Penncozeb	

Very Good Test

* These numbers indicate a "Disease Severity Value". They are calculated using temperature and leaf wetness and the Beetcast disease forecasting model.

SUGARBEET ADVANCEMENT

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EVALUATION OF BEETCAST AT SYLVESTER'S
SUGAR BEET FARM, MICHIGAN - 2002

*Sugar Beet Growers
Michigan Sugar Company
Monitor Sugar Company
Michigan State University
Agribusiness*

ON-FARM RESEARCH AND DEMONSTRATION

RESEARCHER: – Ron Pitblado, PH.D, Ridgetown University of Guelph

COOPERATORS: - J. Stewart, T. Crook, Michigan Sugar Company, S. Poindexter, Michigan Sugarbeet Advancement, Ian Nichols, Ontario Weather Network, Ridgetown College University of Guelph, R. Sylvester.

MATERIALS: - EMINENT 125 SL (tetraconazole), GEM 25% (trifloxystrobin), TOPSIN M (70% thiophanate-methyl), PENNCOZEB 75 DF (mancozeb), SUPER TIN 80 WP (triphenyltin hydroxide).

METHODS: - The Michigan Sugarbeet Advancement committee set out to evaluate the effectiveness of a weather timed fungicide spray program developed by Dr. Ron Pitblado at Ridgetown College University of Guelph called BeetCast. The Sylvester site was managed by the Michigan Sugar Company Representatives while Pitblado's involvement was to evaluate the level of disease across each plot. The trial was conducted in a commercial sugar beet field owned by Richard Sylvester located North of M-81 on Bradleyville Road, West of Dutcher Road, between Bradleyville and Bradford Roads. The plots were six rows by 44 feet in length replicated four times. Treatments were sprayed according to the protocol established at the beginning of the season with sprays applied as close to those targeted DSV's as possible. Plots were set out, sprayed and managed by Jim Stewart of Michigan Sugar Company. Plots were sprayed using an IH 504 tractor with a roller pump set at 100 psi delivering 20 gpa. A single 8002 nozzle was centered over each row, 20 inches above the crop. The Disease Severity Values were calculated using the BeetCast disease forecasting model using weather data from a weather station operated by the Ontario Weather Network (OWN) located within a one mile distance from the research field. Daily DSV values were calculated and sent by the Internet to the Cooperators to determine when to spray the appropriate treatments. Foliar disease assessments were made by several of the Cooperators. Spray dates were as follows: **Treatment One:** July 1st, 22nd and August 8th and 28th; **Treatment Two:** July 1st, 31st and August 28th; **Treatment Three:** July 1st and August 8th; **Treatment Four:** July 9th, 31st and August 17th and September 9th; **Treatment Five:** July 9th and August 8th; **Treatment Six:** July 9th and August 17th; **Treatment Seven:** July 18th, August 8th and 28th. Foliar disease assessments were made on September 17th and 29th by counting the number of clusters of Cercospora fungal disease spots observed on the sugar beet foliage, with the plots re-evaluated on the September 29th assessment day based on a scale from "0-10", with "10" representing excellent disease control while "0" indicated no control with the foliage severely infected by the pathogen turning the foliage completely black. An attempt was also made to transform the field observations based on disease cluster counts to a rating scale of "0-9" to aid in the comparison with the other cooperators, where "9" reflected the highest level of Cercospora leaf spot disease infection and symptom expression.

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ON-FARM RESEARCH AND DEMONSTRATION

Each plant was examined along the length of the plot row, accumulating the number of disease symptom clusters per plot. The number of disease sites reflects the level of fungicide control. Treatments with lower numbers are more effective than those with higher disease counts. The eight replicated results were analyzed using the Duncan's multiple range test ($P \leq 0.05$).

An additional trial was conducted selecting three treatments and applying them to a much larger field scale application, six rows x ½ mile row lengths replicated four times. This also included the surrounding 57 acre field where the grower applied his normal commercial treatments and decided his own spray timings. The commercial sugar beet cultivar was Prompt. Spray dates were as follows: **Treatment One:** July 1st and August 8th; **Treatment Two:** July 9th, August 8th and September 10th; **Treatment Three:** July 18th, August 1st and 28th; **Treatment Four:** Grower spray timing, July 25th and August 20th. Foliar disease assessments were made on September 17th and 29th by counting the number of clusters of *Cercospora* fungal disease spots observed on sugar beet foliage, per 44 feet of treated rows. The number of disease sites reflects the level of fungicide control. Treatments with lower numbers are more effective than those with higher disease counts. An attempt was also made to transform the field observations based on disease cluster counts to a rating scale of "0-9" to aid in the comparison with the other Cooperators, where "9" reflected the highest level of *Cercospora* leaf spot disease infection and symptom expression. Results were analyzed using the Duncan's multiple range test ($P \leq 0.05$).

RESULTS: Data is presented in **Table 1** and **Table 2**. Treatments are listed in order of effectiveness.

CONCLUSIONS: The most effective spray schedules for reducing the foliar "burn" caused by *Cercospora* leaf spot in sugar beets were treatments one and four. Both treatments required subsequent spray applications every 35 DSV's with the only difference being when the initial application was to be applied. The first application in treatment one was to be applied at a starting DSV of 55 while in treatment four the first spray was to be delayed until 70 DSV's had accumulated. It is interesting to note that both of these most effective treatments had the first application protecting the foliage at least 10 DSV's before symptom expression. A total of four applications significantly reduced the foliar symptoms in sugar beets. The next best spray program was treatment two, where the initial spray was applied at 55 DSV's and thereafter at 55 DSV. Starting at the same 55 DSV but extending the next spray interval to 70 DSV's also proved effective. The least effective spray programs were when the initial spray program was delayed either to 70 DSV's or when the first *Cercospora* leaf spots were observed at what was later determined a DSV of 83. If the initial spray application was delayed until 70 DSV's, then the only schedule that seemed to be able to recover was the use of the shorter subsequent spray interval of 35. All spray programs provided significant reduction of *Cercospora* leaf spot in sugar beets.

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**EVALUATION OF BEETCAST AT SYLVESTER'S
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Although treatments one and four proved to reduce *Cercospora* leaf spot to the greatest numerical value with subsequent or repeated spray intervals of 35 DSV's, a more cost effective spray interval of 55/55 might be considered the more practical interval recommendation for BeetCast.

In the large plot trial the most effective treatment was when the initial fungicide application was applied early. Treatment one, 55/70 with a second application extended to 70 DSV's (actually was shorter at 61 DSV's). The actual timing of this treatment and the level of control was more similar to when fungicide were applied starting at 55 and repeating every 55 DSV's. When comparing the levels of *Cercospora* leaf spot control between the larger plots vs. the smaller plots, it appears that disease control is achieved to a greater extent in a larger plot vs. a smaller plot. This may be due to the interference of the less effective spray programs within a smaller area influencing an accompanying plot result. In any event, treatment one, with only two sprays applied, was significantly more effective than either of the two applications used in the grower spray program or even the sprays applied using the commercial standard program starting when the first leaf spots are observed, Treatments three and four.

Clearly the standard approaches in controlling *Cercospora* leaf spot using the commercially accepted timing methods (treatments three and four) are less effective than the proposed weather-based BeetCast model recommendations. BeetCast is able to identify when the first spray needs to be applied prior to symptom expression while extending subsequent spray applications in a most cost effective manner. It appears from these trials that a conservative BeetCast timing of 55/55 should be considered.

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EVALUATION OF BEETCAST AT SYLVESTER'S SUGAR BEET FARM, MICHIGAN - 2002

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ON-FARM RESEARCH AND DEMONSTRATION

Table 1: Foliar disease control ratings, small plot trial (Pitblado).

#	Treatments Application timing - DSV's ¹ (Choice of fungicide)	ACTUAL Spray Intervals (DSV's)	Timing of Application		Disease Cluster Counts ²				Foliar Disease Ratings
			Initial Spray Appl.	# of Sprays	Sept. 17th	(0-9) ³ Ratings	Sept. 29 th	(0-9) Ratings	Sept. 29 th (0-10) ⁴
1	55/35/35/35 E/G/TP/ST	60/31/30/39	July 1 st	4	4.3 d *	0.81	15.0 d	1.88	8.5 a
4	70/35/35/35 E/TP/G/ST	73/38/30/39	July 1 st	4	5.0 d	0.87	14.3 d	1.83	8.3 a
2	55/55/55 E/TP/ST	60/51/60	July 1 st	3	11.5 cd	1.45	27.0 cd	2.82	7.1 b
3	55/70 E/TP	60/61	July 9 th	2	14.3 bc	1.70	36.0 bc	3.52	6.5 bc
5	70/55/55 E/TP/ST	73/48/62	July 9 th	3	19.3 bc	2.15	47.8 b	4.43	6.0 c
6	70/70 E/G	73/68	July 9 th	2	16.8 bc	1.93	46.5 b	4.33	6.0 c
7	First Spots 14-21 Days E/TP/G	83/37/39	July 18th	3	22.8 b	2.46	61.0 a	5.46	5.8 c
8	CONTROL			0	56.8 a	5.50	72.8 a	6.38	3.5 d
ANOVA P ≤ 0.05/ Coefficient of variation (%)					s 30.9		s 21.4		s 8.5

* These values are the means of four replications. Numbers within a column followed by the same small letter are not significantly different according to a Duncan's Multiple Range Test (P ≤ 0.05)

¹ **Application Timing:** Treatment spray intervals, Disease Severity Values (DSV's) calculated using BeetCast model Choice of fungicide; E = Eminent, G = Gem, TP = Topsin M + Penconazole, ST = SuperTin, P = Penconazole

² **Disease Cluster Counts:** The number of clusters of Cercospora fungal disease spots observed on the sugar beet foliage. The number of disease sites reflects the level of fungicide control. Treatments with lower numbers are more effective than those with higher disease counts.

³ **(0-9) Foliar Damage Ratings:** "0" = Complete Control; "9" = No Control, Foliage Severely Damaged.

⁴ **(0-10) Foliar Damage Ratings:** "0" = No Control, Foliage Severely Damaged; "10" = Complete Control.

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EVALUATION OF BEETCAST AT SYLVESTER'S SUGAR BEET FARM, MICHIGAN - 2002

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ON-FARM RESEARCH AND DEMONSTRATION

Table 2: Foliar disease control ratings, large plot trial (Pitblado).

#	Treatments Application timing - DSV's ¹ (Choice of fungicide)	ACTUAL Spray Intervals (DSV's)	Timing of Application		Disease Cluster Counts ²		Foliar Disease Ratings ³
			Initial Spray Appl.	# of Sprays	Sept. 17th	Sept. 29th	(0-9) Ratings
1	55/70 E/TP	60/61	July 1 st	2	-	29.3 b *	3.81
2	70/55/55 E/TP/S	73/48/62	July 9 th	3	-	42.3 ab	4.17
3	First Spot 14-21 Days E/TP/G	84/37/39	July 18 th	3	-	47.4 a	4.31
4	Grower Field E/G	94/50	July 25th	2	24.8	58.0	4.60
5	Control (Small Plot)			0	56.8	72.8	6.38
ANOVA P ≤ 0.05/ Coefficient of variation (%)						s 20.4	

* These values are the means of four replications. Numbers within a column followed by the same small letter are not significantly different according to a Duncan's Multiple Range Test (P ≤ 0.05)

¹ **Application Timing:** Treatment spray intervals, Disease Severity Values (DSV's) calculated using BeetCast model Choice of fungicide; E = Eminent, G = Gem, TP = Topsin M + Penncozebe, ST = SuperTin, P = Penncozebe

² **Disease Cluster Counts:** The number of clusters of Cercospora fungal disease spots observed on the sugar beet foliage. The number of disease sites reflects the level of fungicide control. Treatments with lower numbers are more effective than those with higher disease counts.

³ **(0-9) Foliar Damage Ratings:** "0" = Complete Control; "9" = No Control, Foliage Severely Damaged.

SUGARBEET ADVANCEMENT

LEAF SPOT SPRAY TIMING TRIAL

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Sugar Beet Growers
Michigan Sugar Company
Monitor Sugar Company
Michigan State University
Agribusiness

ON-FARM RESEARCH AND DEMONSTRATION

Cooperator: **Sylvester Farms** Tillage: Fall – Plowed Spring – Spring Toothed
 Location: Fairgrove – Tuscola County Harvest Date: 10/30 Sugar Sampled: 10/28
 Planting Date: 4/14/2002 Type of Harvester: Artsway
 Row Spacing: 30 Inches # of Rows Harvested: 6 # Defoliated: 6
 Previous Crop: Corn Soil Type: Loam
 Fertilizer: 3 ¼ gal 9-18-9 + Kickoff +Mn + Herbicides: Microrates – Banded 6X
 25gal 1/3 28%N – 2/3 Thiosul Seed Space: 4 1/16 Inches
 33gal 28%N Sidedress Fungicide: DSV: 55/70 - 7/1-Eminent 8/8-Topsin&Penncozeb
 Variety: Prompt 70/55/50 – 7/8-Eminent 8/8-Topsin&Penncozeb 9/10-SuperTin
 Replicated: 4X Row Length: 2180' 1st Spot – 7/18-Eminent 8/8-Topsin&Penncozeb 8/28-Gem

D S V = DISEASE SEVERITY VALUE based on BEETCAST prediction model

TREATMENT NAME	RWSA	ACTUAL YIELD T/A	RWST	% SUGAR	CJP %	POPULATION 100 FT. ROW			
						10 Day	20 Day	30 Day	Harvest
70 D S V + 55	5230	20.60	254	18.7	91.7	-	-	-	137
55 D S V + 70	5188	20.26	257	18.5	91.9	-	-	-	156
1 st Spot	5062	20.40	248	18.4	91.4	-	-	-	147
AVERAGE	5160	20.42	253	18.6	91.7	-	-	-	147
L S D (5%)	n.s. (642)	n.s. (1.00)	n.s. (23)	n.s. (.7)	n.s. (1.8)	-	-	-	-
C.V. (%)	7	3	5	2	1	-	-	-	-

Comments: Trial was conducted to evaluate the BEETCAST SPRAY PREDICTION MODEL for the control of Cercospora Leaf Spot. Small plot trials were conducted on the site by Jim Stewart, research agronomist for Michigan Sugar Co. The small trials used several different spray timing scenarios as compared to the strip trials which tested only three treatments. Spray at first spot was considered standard for comparison. Comparing yield and quality found no significant differences in the strip treatments. Late season leaf spot did effect all treatments. Under high Cercospora Leaf Spot pressure spraying at every 55 D S V should be evaluated. Trial Results Reliability: **Excellent**

Cooperating Agriculturalist: Craig Reiman – Michigan Sugar Co.
 Trial Conducted In Cooperation of Jim Stewart, Michigan Sugar Company Research Manager

Michigan Sugar Company

BeetCast Cercospora Program - Small Plots - 2002

Trial ID: M02-BeetCastSP

Researchers: Stewart, Poindexter,

Location: Rich Sylvester, Fairgrove, MI

Crook, Pitblado

No.	DSV ¹ Timings Fungicide ²	Actual Spray Interval (DSV)	Date of 1st Applic	# of Sprays	CLS Rating 0-9 ³	CLS Cluster Counts ⁴	RWSA	Ton/A	%Suc
1	55/35/35/35 Emin/Gem/Top+Pen/S.Tin	60/31/30/39	1-Jul	4	1.94	15.0 d	6230	23.2	19.5
4	70/35/35/35 Emin/Gem/Top+Pen/S.Tin	73/38/30/39	9-Jul	4	2.81	14.3 d	6228	22.7	19.7
2	55/55/55 Emin/Top+Pen/S.Tin	60/51/60	1-Jul	3	3.56	27.0 cd	6071	22.6	19.3
7	1 Spot / 18 Days Emin/Top+Pen/Gem	84/37/39	18-Jul	3	4.31	61.0 a	5860	22.5	18.9
5	70/55/55 Emin/Top+Pen/S.Tin	73/48/62	9-Jul	3	4.38	47.8 b	5767	21.9	19.0
6	70/70 Emin/Gem	73/68	9-Jul	2	4.69	46.5 b	5735	21.7	18.9
3	55/70 Emin/Top+Penn	60/61	1-Jul	2	4.50	36.0 bc	5687	21.6	19.1
8	Untreated Check	None	None	0	6.88	72.8 a	5119	20.5	18.2
LSD (P=.05)					0.51		505	1.5	0.8
CV					8.4	21.4	5.6	3.2	2.9
Grand Mean					4.13		5837	22.1	19.1

In the Cluster Count Column, means followed by the same letter are not significantly different (Duncans MRT .05)

¹ DSV = Disease Severity Index, calculated from BeetCast Model.

²Fungicide: Emin = Eminent, Gem = Gem, Top+Pen = Topsin + Penncozeb, S.Tin = Super Tin

³0-9 CLS Rating Scale: 0 = no damage, 9 = complete burndown

⁴Cluster Counts: # of CLS clusters on leaves, lower numbers = better disease control

Starter Trial in Sugarbeets - 2002 - Two B Farm, Inc.

Cooperator: **Bushey (west)**

Fertilizer: Ag Spectrum: 12.8 oz/acre Grozyme

Location: Huron County (Elkton and Kinde Rds.)

3.0 gal/acre Cleanstart; 4 lbs/acre Kickoff

Planted: April 25, 2002 Variety: E17

5.5 gal/acre 28% with planter

Seed Spacing: 57,500 Plants/Acre

Harvested: October 16, 2002

Row width: 22 inches Length: 1104 feet average

Harvester: 8-Row Wilrich; 3.7 MPH

Previous Crop: Alfalfa

Herbicides: Microrate 4 X ; Assure II 1 X

Replicated: 4 Reps

Fungicide: Eminent

									BEETS/100		
Treatment	RWSA	CLEAN Tons/Acre	RWST	% Sugar	% CJP	HARVESTED B/100	Plants/ Acre	WT/Beet	8-DAP	27-DAP	42-DAP
Ag Spectrum Plus 28%	6544	24.1	271.6	19.3	92.6	99	23587	2.2	0	49	111
Ag Spectrum No 28%	6330	23.7	266.6	18.8	93.0	89	21107	2.4	0	52	95
No Ag Spectrum No 28%	6139	22.6	271.9	19.4	92.4	98	23316	2.1	0	36	108
No Ag Spectrum Plus 28%	6053	23.0	263.9	18.9	92.1	90	21467	2.4	0	47	110
Average	6267	23.3	268.5	19.1	92.5	94	22369	2.3	0	46	106
LSD (0.05)	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
	707	2.0	20.7	1.2	0.9	30	6966	0.8		31	25
CV (%)	7.1	5.4	4.8	3.8	0.6	19.7	19.5	20.9		42.2	14.9

Comments: Trial was conducted to determine the impact of Ag Spectrum and 28%.

Weights were determined with a calibrated scaled cart. Quality samples were randomly dropped from the harvester.

Rhizoctonia pressure was low. No differences were observed between any treatments

Trial reliability **FAIR**.

Cooperating Agriculturalist: Roger Elston, Michigan Sugar Company

Lab Analysis Performed At: MARL (Michigan Agricultural Research Laboratory).

Note: Tons/Acre are net or clean (tare 3.98% off).

Starter Trial in Sugarbeets - 2002 - Two B Farm, Inc.

Cooperator: **Bushey (east)**

Fertilizer: Ag Spectrum: 12.8 oz/acre Grozyme

Location: Huron County (Elkton and Kinde Rds.)

3.0 gal/acre Cleanstart; 4 lbs./acre Kickoff

Planted: April 25, 2002 Variety: E17

25 gal/acre 28 % with planter

Seed Spacing: 57,500 plants/A

Harvested: October 16, 2002

Row width: 22 inches Length: 1158 feet average

Harvester: Wilrich; 3.0 MPH

Previous Crop: alfalfa/dry edible beans

Herbicides: 1.0 pt/acre Roundup before emergence; microrate 4 X

Replicated: 4 reps: cultivated 1 X

Fungicide: Eminent

Treatment	RWSA	CLEAN Tons/ Acre	RWST	% Sugar	% CJP	HARVESTED B/100	Plants/ Acre	WT/ Beet	BEETS/100		
									8-DAP	27-DAP	42-DAP
No Ag Spectrum No 28%	5346	19.6	273.5	19.2	93.2	68	16148	2.7	0	67	74
Ag Spectrum Plus 28%	5297	19.8	267.1	18.8	93.1	79	18789	2.3	0	83	79
No Ag Spectrum Plus 28%	5271	19.5	270.0	19.1	92.8	78	18475	2.4	0	71	71
Ag Spectrum No 28%	5254	19.5	269.9	19.0	92.9	82	19485	2.2	0	65	87
Average	5292	19.6	270.1	19.0	93.0	77	18224	2.4	0	71	77
LSD (0.05)	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
	561	1.6	15.8	0.8	0.8	35	8442	1.1		26	44
CV (%)	6.6	5.0	3.7	2.7	0.5	28.9	29.0	27.9		22.8	35.2

Comments: Trial was conducted to determine the impact of Ag Spectrum and 28%.

Weights were determined with a calibrated scaled cart. Quality samples were randomly dropped from the harvester.

Rhizoctonia pressure was low. No differences were observed between any treatments

Trial reliability **FAIR**.

Cooperating Agriculturalist: Roger Elston, Michigan Sugar Company;

Lab Analysis Performed At: MARL (Michigan Agricultural Research Laboratory).

Note: Tons/Acre are net or clean (tare 3.68% off).

Foliar Feed Trial in Sugarbeets - 2002 - LaRaCha Farms

Cooperator: **LaRaCha (C. Bauer)**

Harvested: October 27, 2002

Location: Saginaw County (Block and Wadsworth Rds.)

Harvester: 6-row Artsway

Planted: May 7, 2002 Variety: HM E17

Herbicides: microrate 3 X

Seed Spacing: 57,000 Plants/Acre; 28-Inch Rows

Fungicide: Gem 8-6-02; Eminent 9-7-02

Previous Crop: Soybeans

This field was cultivated: One Time

Replicated: 4 Reps

Plot Length: 2,225 Feet

TREATMENT	Appl. Date	RWSA	CLEAN Tons/Acre	RWST	% Sugar	% CJP	HARVESTED B/100	Plants/A	WT/Beet
Stoller Load / Ureamate	7/27; 9/10	5343	18.5	288.6	20.1	93.4	169	31484	1.3
Bianary CQ	7/2	5270	18.6	282.8	19.8	93.0	144	26745	1.5
Solubor + 28% N	7/02; 7/27; 8/12	5265	18.3	287.0	19.9	93.5	162	30195	1.3
TechMag + 28% N	7/02 ; 7/27	5245	18.5	283.8	19.8	93.2	198	36940	1.0
CNB	7/02 ; 7/27	5236	18.4	285.5	20.0	93.0	150	27987	1.3
Crop Completer Gold/II	7/02 ; 7/27 ; 8/12	5220	18.6	280.1	19.7	92.8	154	28817	1.4
Untreated		4997	18.1	276.1	19.6	92.5	183	34195	1.2
Average		5225	18.4	283.4	19.8	93.1	166	15	1.3
LSD (0.05)		n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
		425	1.2	12.4	0.5	0.9	53	9771	0.4
CV (%)		5.5	4.3	2.9	1.8	0.6	21.4	21.3	20.7

Comments : Trial was conducted to determine the impact of foliar feed products. Weights were determined with individual truck loads. Quality samples were randomly dropped from harvester.

Trial reliability: **EXCELLENT**

Cooperating Agriculturalist: Charlie Neuenfeld, Michigan Sugar Company

Lab Analysis Performed At: MARL (Michigan Agricultural Research Laboratory).

Note: Tons/Acre are net or clean (tare 2.12% off).

Foliar Feed Trial with Stoller products in Sugarbeets - 2002 - LaRaCha Farms

Cooperator: **LaRaCha (C. Bauer)**

Fertility: 392 lbs/acre of 2-9-48 1.1 Mg 1.3 S

Location: Saginaw County (Block and King Rds.)

50 gal/acre 28% N

Planted: April 24, 2002 Variety: E33 ; E17 ; Prompt

Stoller: Nitrate Balancer 5.0 qt/acre Applied: 9-7-02

Seed Spacing: 56,00 Plants/Acre; 28-Inch Rows

Harvested: October 27, 2002

Previous Crop: Corn

Harvester: 6-row Artsway

Replicated: 5 reps

Herbicides: microrate 4 X

Tillage: Fall Plow (1 X Field Cultivated - Spring)

Fungicide: Gem 8-6-02; Eminent 9-7-02

This field was cultivated: One Time

TREATMENT	RWSA	CLEAN Tons/Acre	RWST	% Sugar	% CJP	HARVESTED B/100	Plants/Acre	WT/Beet
NO STOLLER	8420	28.5	295.5	19.8	95.1	175	32,715	1.9
STOLLER	8134	28.0	290.8	19.7	94.6	183	34,162	1.7
Average	8277	28.2	293.1	19.8	94.9	179	15	1.8
LSD (0.05)	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
	407	1.0	10.1	0.5	0.9	79	14741	0.9
CV (%)	2.8	2.1	2.0	1.5	0.5	25.2	25.1	27.0

Comments: Trial was conducted to determine the impact of Stoller foliar feed products. Weights were determined with individual truck loads. Quality samples dropped from harvester. Stoller FF application did not improve yield or quality. Trial reliability: **EXCELLENT**.

Cooperating Agriculturalist Charlie Neuenfeld, Michigan Sugar Company

Lab Analysis Performed At MARL (Michigan Agricultural Research Laboratory).

Note: Tons/Acre are net or clean (tare 2.12% off).

Starter Fertilizer and Foliar Feed - Maurer - 2002

Cooperator: **Maurer Farms (Dave's planter)**

Planter: 18-row (wheel tracks center 6 rows)

Location: Huron County (Section Line Rd.)

Harvested: October 12, 2002

Planted: April 16, 2002 Variety: Beta 5736 PRO200 PAT

Harvester: 6-row Artsway; 3.5 MPH

Seed Spacing: 50-52,000 plants/acre

Herbicides: 1/2 pt/acre Roundup before emergence; microrate 4 X

Row width: 28 inches Length: 1052 feet

(Banded 2 X and Broadcast 2 X)

Previous Crop: Dry Beans

Replicated: 4 Reps

Treatment	RWSA	CLEAN Tons/Acre	RWST	% Sugar	% CJP	Harvested B/100	Plants/Acre	WT/Beet	B/100		
									13 DAP	21 DAP	30 DAP
Stoller IF	6565	19.2	342.7	22.9	94.9	166	31,079	1.3	8	210	228
Stoller IF with Stoller FF	6553	19.2	340.6	22.7	94.9	150	27,951	1.5	4	205	225
Ag Spectrum IF with Stoller FF	6508	19.3	337.4	22.6	94.7	190	35,533	1.2	2	173	190
Ag Spectrum IF	6452	19.2	336.5	22.7	94.4	170	31,701	1.3	7	199	211
Ag Spectrum IF wheel tracks	6122	18.4	332.5	22.3	94.7	178	33,183	1.2	3	179	198
Stoller IF wheel tracks	5979	17.6	339.4	22.6	95.1	176	32,791	1.1	3	200	218
Average	6363	18.8	338.2	22.6	94.8	172	32,040	1.3	4	194	211
LSD (0.05)	252	1.0	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	4	24	21
CV (%)	2.6	3.5	1.7	1.5	0.5	19.1	19.0	24.2	62.2	8.3	6.6

Comments: Trial was conducted to determine the impact of liquid starter fertilizer applied in-furrow (IF); track were the six-rows under the tractor. The west six row of 18 had Stoller foliar feed (FF) applied 5.0 qt./acre. Weights were determined with individual truck loads. Quality samples were randomly dropped from the harvester. Stoller FF applications did not improve yield or quality compared to the same treatment without. The wheel tracks decreased yield and RWSA in both treatments. Trial reliability: **Excellent**.

Cooperating Agriculturalist: Robert Corrigan, Michigan Sugar Company

Lab Analysis Performed At: MARL (Michigan Agricultural Research Laboratory).

Note: Tons/Acre are net or clean (tare 2.53% off).

Starter Fertilizer and Foliar Feed - Maurer - 2002

Cooperator: **Maurer Farms (Rich's planter)**

Planter: 18-Row (wheel tracks center 6-Rows)

Location: Huron County (Section Line Rd.)

Harvested: October 12, 2002

Planted: April 16, 2002 Variety: Beta 5736 PRO200 PAT

Harvester: 6-row Artsway; 3.5 MPH;

Seed Spacing: 50-52,000 Plants/Acre

Herbicides: 1/2 pt/acre Roundup before emergence; microrate 4 X

Row width: 28 inches Length: 1052 feet

(Banded 2 X and Broadcast 2 X)

Previous Crop: Dry Beans

Replicated: 3 Reps

Treatment	RWSA	CLEAN Tons/Acre	RWST	% Sugar	% CJP	Harvested B/100	Plants/ Acre	WT/ Beet	B/100		
									13 DAP	21 DAP	30 DAP
Alpine IF	6449	19.6	329.8	22.2	94.6	131	24,537	1.6	1	111	125
UNT CHK IF	6308	19.0	331.6	22.3	94.6	175	32,612	1.2	3	147	162
UNT CHK IF with Stoller FF	6294	19.1	330.2	22.4	94.3	151	28,224	1.4	4	145	162
Alpine IF wheel tracks	6245	18.9	330.4	22.2	94.7	118	22,102	1.9	2	133	152
Alpine IF with Stoller FF	6230	19.3	322.9	22.0	94.1	112	20,843	2.0	1	106	129
UNT CHK IF wheel tracks	6013	18.3	327.7	21.9	95.0	128	23,847	1.6	1	157	182
Average	6257	19.0	328.8	22.2	94.6	136	25,361	1.6	2	133	152
LSD (0.05)	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	30	34
CV (%)	3.6	2.6	1.7	1.3	0.5	20.4	20.4	22.4	92.3	12.51	12.47

Comments: Trial was conducted to determine the impact of liquid starter fertilizer applied in-furrow (IF); track were the six-rows under the tractor. The west six row of 18 had Stoller foliar feed (FF) applied 5.0 qt./acre. Weights were determined with individual truck loads. Quality samples were randomly dropped from the harvester. Stoller FF applications did not improve yield or quality compared to the same treatment without. Trial reliability: **VERY GOOD.**

Cooperating Agriculturalist: Robert Corrigan, Michigan Sugar Company;

Lab Analysis Performed At: MARL (Michigan Agricultural Research Laboratory).

Note: Tons/Acre are net or clean (tare 2.53% off).

Starter and Foliar Feed Trial in Sugarbeets - 2002 - Three R Farm, Inc.

Cooperator: **Three R Farm (Gremel)**

Row width: 22 inches Length: 1160 feet

Location: Tuscola County (Sheridan and Ashmore Rds.)

Harvested: October 28, 2002

Planted: April 15, 2001 Variety: B5736

Harvester: 8-row Artsway

Seed Spacing: 68,000 Plants/Acre

TREATMENT	RWSA	CLEAN Tons/Acre	RWST	% Sugar	% CJP	HARVESTED B/100	Plants/Acre	WT/Beet
NEW NO FOLIAR FEED	9172	31.3	293.5	20.4	93.5	139	33,143	2.0
OLD FOLIAR FEED	9100	31.2	291.8	20.2	93.4	96	22,773	2.9
NEW FOLIAR FEED	9069	31.1	291.2	20.1	93.8	113	26,888	2.8
Average	9114	31.2	292.2	20.2	93.6	116	27601	2.6
LSD (0.05)	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
	498	1.1	13.0	0.6	1.1	50	11835	1.5
CV (%)	3.2	2.1	2.6	1.6	0.7	25.0	24.8	34.1

NEW: 165 N 60 P 140 K

OLD: 180 N 80 P 180 K 7% B 12% Mn

Foliar Feed: 2 qt./acre crop completer

Comments: Trial was conducted to determine the need starter and foliar feed applications. Weights were determined with individual truck loads. Quality samples dropped from harvester.

Trial reliability **EXCELLENT**.

Cooperating Agriculturalist: Craig Reiman, Michigan Sugar Company

Lab Analysis Performed At: MARL (Michigan Agricultural Research Laboratory).

Note: Tons/Acre are net or clean (tare 4.128% off)

SUGARBEET ADVANCEMENT

Partnership
of:



VARIETY TRIAL * RAINFALL DATA – NEAREST LOCATION

*Sugar Beet Growers
Michigan Sugar Company
Monitor Sugar Company
Michigan State University
Agribusiness*

ON-FARM RESEARCH AND DEMONSTRATION

	YEAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	TOTAL RAINFAL L
Akron Lakke Ewald	2002	3.32	5.24	4.22	3.31	2.55	.25	2.00	20.89
	2001	1.53	1.84	2.85	.42	2.17	4.27	5.50	18.58
	2000	2.55	5.60	5.24	4.64	2.00	2.70	1.41	24.14
Ruth Scott Roggenbuck	2002	3.65	3.68	3.35	4.45	3.10	.60	2.50	21.33
	2001	1.80	2.02	3.51	.35	1.98	5.10	5.47	20.23
	2000	2.16	6.14	5.93	4.9	3.80	3.90	1.86	28.69
Breckenridge Gulick Farms	2002	2.68	4.26	3.05	4.52	7.27	.86	2.60	25.24
	2001	2.20	5.87	1.74	.40	3.8	5.24	5.80	25.05
	2000	2.97	5.60	4.80	1.35	4.52	2.8	1.08	23.12
Pigeon	2002	4.09	3.28	3.15	5.95	3.41	.66	2.16	22.70
	2001	1.45	2.58	2.53	.67	3.03	6.59	5.34	22.19
	2000	3.08	9.62	2.78	5.53	3.62	3.03	1.88	29.54
Sandusky Rick Gerstenberger	2002	3.44	4.05	4.41	4.39	1.81	.60	2.45	21.15
	2001	2.10	4.13	5.05	.71	1.82	5.34	8.13	27.28
	2000	2.51	3.75	3.14	3.69	1.79	2.34	1.90	19.12
Bay City Schindler Farms	2002	3.22	4.21	3.46	4.36	3.03	.68	2.48	21.44
	2001	2.2	3.25	3.6	1.05	2.2	4.35	4.85	21.5
	2000	1.18	5.66	3.68	2.06	5.31	3.36	1.49	22.74

* Rainfall data is at the nearest monitoring point to field. This data was not taken at field, so some difference may occur at the actual location.